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Keynote

Chapter 1

Degrees of Freedom, Dimensions of Power (Yochai Benkler)

Degrees of Freedom, Dimensions of Power

Yochai Benkler

Abstract: The original Internet design combined technical, organizational, and cultural characteristics that decentralized power along diverse dimensions. Decentralized institutional, technical, and market power maximized freedom to operate and innovate at the expense of control. Market developments have introduced new points of control. Mobile and cloud computing, the Internet of Things, fiber transition, big data, surveillance, and behavioral marketing introduce new control points and dimensions of power into the Internet as a social-cultural-economic platform. Unlike in the Internet's first generation, companies and governments are well aware of the significance of design choices, and are jostling to acquire power over, and appropriate value from, networked activity. If we are to preserve the democratic and creative promise of the Internet, we must continuously diagnose control points as they emerge and devise mechanisms of recreating diversity of constraint and degrees of freedom in the network to work around these forms of reconcentrated power.

In March 2000, AOL tried to pull a program that two of its employees had released online twenty-four hours earlier. Gnutella was a peer-to-peer file sharing program, and AOL was concerned about copyright liability. But Gnutella was free software, and it had been released, along with its source code, under the GNU General Public License. Gnutella was quickly adopted and developed by diverse groups, becoming the basis for a range of peer-to-peer (P2P) networks that either used or improved upon its source code. Technical architecture, cultural practice, social production, market structure, and timing had prevented AOL from halting the development of Gnutella.

Fourteen years later, in February 2014, Apple's app store rejected a game that mocked North Korean leader Kim Jong Un. Apple already had a history of blocking applications of which it disapproved: cartoons that mocked President Obama, an app for browsing State Department cables on WikiLeaks, or a game that criticized the company's treatment of its workers in iPhone manufacturing processes. Initially, Apple had also forced Skype to block usage on 3G mobile networks, rejected the Google Voice app, and disabled Google Maps on the iPhone. Here developments en-

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abled Apple to exert power over users and developers in a manner that was simply impossible a decade and a half earlier: smartphones running over proprietary cellular networks, an operating system integrated with hardware that controlled what software is preloaded and made available, and an “app store” model of software distribution.

In 1993, *The New Yorker* published a Peter Steiner cartoon with the caption, “On the Internet, nobody knows you’re a dog.” By 2014, Maidan protesters in Kiev could receive text messages that read, “Dear subscriber, you are registered as a participant in a mass disturbance.”¹ Whether Internet design ultimately will support a high degree of freedom, as was offered by the first generation Internet, or will evolve toward a system that amplifies power in the hands of the state and a concentrated class of private actors, is the central design challenge of the coming decade.

In its first quarter-century, “the Internet” was not only a technical system, but also an innovative organizational system; an institutional system pervaded by commons; a competitive market with low barriers to entry; and, finally, a zeitgeist, cultural habit of mind, or ideology, perhaps best captured by the saying from computer scientist and early architect of the Internet, David Clark: “We reject: kings, presidents and voting. We believe in: rough consensus and running code.”² It is the integrated effect of all these dimensions that should properly be understood as the Internet in its first twenty-five years, and it is changes in several of these elements that underwrite the transformation of the Internet into a more effective platform for the reconcentration of power.

The introduction of the iPhone in 2007 marked the shift to handheld computing and ushered in a shift to proprietary, controlled devices, software, and networks. Amazon’s Elastic Compute Cloud (EC2) –

introduced in 2006 – created another potential point of control. The coming of age of advertiser-supported platforms and the emergence, in 2008, of “big data” as both a working concept and catchphrase marked a new drive to collect data and deploy it. Big data may ultimately allow a small number of companies – those large enough to control, access, and analyze sufficient data – to predict, shape, and “nudge” the behaviors of hundreds of millions of people. Since the mid-2000s, home broadband has been replicating some of telecommunications’ older monopoly characteristics, while ever-higher speeds are shifting usage further toward streaming video. Consumer demand for high-grade commercial video services, most prominently Netflix, has in turn increased the pressure to implement technical control measures in basic infrastructure, capped by the adoption of Digital Rights Management (DRM) as a core component of HTML5 in 2014. Together, these changes have destabilized the diverse open systems that had made up what we thought of as the Internet.

The design of the original Internet was biased in favor of decentralization of power and freedom to act. As a result, we benefited from an explosion of decentralized entrepreneurial activity and expressive individual work, as well as extensive participatory activity. But the design characteristics that underwrote these gains also supported cybercrime, spam, and malice.

By *power*, I mean the capacity of an entity to alter the behaviors, beliefs, outcomes, or configurations of some other entity. Power, in itself, is not good or bad; centralization and decentralization are not good or bad, in and of themselves. Centralized power may be in the hands of the state (legitimate or authoritarian) or big companies (responsive and efficient or extractive), and decentralized power may be distributed among individuals (participating citizens, expressive users, entrepreneurs, or criminals) or

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loose collectives (engaged crowds or wild mobs). To imagine either that all centralized power is good and all decentralized power is criminal and mob-like, or that all decentralized power is participatory and expressive and all centralized power is extractive and authoritarian is wildly ahistorical.

Internet architecture shapes power, and unlike in the early days, everyone knows this now. Because power often involves the capacity to reshape terms of engagement, we are seeing extensive efforts to lock and extend existing power. If one were naïve enough to imagine that all efforts at centralization were aimed merely at taming the “bad” decentralization, one might be sanguine about the fact that governments and companies are pushing toward greater centralization. Further, if one is paranoid enough to imagine that decentralization necessarily resolves to mob rule, then a similar sanguinity is called for. But in the absence of these assumptions, we are left with the task of maintaining an Internet both open enough and resistant enough to power to allow, at least, continued contestation of decisions to create points of control in the networked environment. If we allow that power can be good or bad, whether centralized or decentralized, and that existing dynamics are tending toward greater centralization and stabilization of power, then we are left with a singular task: to design a system that will disrupt forms of power – old and new – as they emerge, and that will provide a range of degrees of freedom, allowing individuals and groups to bob and weave among the sources and forms of power that the Internet is coming to instantiate.

That the original TCP/IP protocol outlines an open, loosely coupled system is, at this point, trivial. The basic end-to-end design principle it instantiates allows any application developer to use the networking protocol to send its payload, whatever that

is, to its destination, wherever that may be, on a best-efforts basis. The generality of the protocol disabled crisp identification of the nature of parties to a communication, and offered no control points through which an entity could exclude or constrain another discrete entity attempting to use it. While the Internet protocol itself was a critical element, it was not, by itself, sufficient to diffuse power.

What typified the first quarter-century of the Internet was an integrated system of open systems. These included: the technical standards of the Internet and the World Wide Web; the decentralized, open organizational models of the Internet Engineering Task Force (IETF) and the World Wide Web Consortium (W3C); and the competitive market structure for connectivity (the low cost of copper wire, subject to common carriage rules, resulted in over five thousand Internet service providers, or ISPs) and devices (PCs became a commodity item). These systems were complemented by widespread use of open, standards-based devices (such as PCs running software developed and distributed by a diverse range of entities); the emergence of commons-based production, particularly free and open-source software (FOSS); and the culture of openness and resistance to authority shared by most early users and developers of components of the Internet ecosystem and its core applications. Together, these created a system designed to resist the application of power from any centralized authority, whether it pertained to free speech or to free innovation without permission, which was very much at the core of the Internet’s architectural design principles.

Several developments suggest that we are shifting to an Internet that facilitates the accumulation of power by a relatively small set of influential state and nonstate actors. While the Internet protocol itself remains

open, as does the IETF, other control points counter the dynamics of the early Internet.

The first is the emergence of smartphones and the iOS app store. By the middle of 2014, Internet access by smartphone had surpassed Internet access from desktops or laptops.³ Handheld and tablet users overwhelmingly used apps, rather than browser-based Internet access (Internet access via apps constituted 88 percent of handheld use and 82 percent of tablet use), and the growth rate of desktop use was 1 percent per year, while mobile app use grew more than 50 percent. Unless something dramatic changes these trends, the future of conscious Internet use is based in handheld devices running apps. Moreover, as connected sensors and controllers (origin of the “Internet of Things” as a concept) become pervasive, an increasingly larger portion of Internet use will not be conscious at all. The general-purpose device – owned and managed by its user and capable of running any software from any source – will continue to serve the portion of the population particularly interested in preserving its computational autonomy and in executing more challenging and complex tasks. But, as legal scholar Jonathan Zittrain warned in 2008, the majority of Internet-mediated practice will be undertaken with devices that are either narrowly customizable appliances or controlled on the app store model.⁴

The primary source of constraint on the Apple app store’s center of power is competition from Android. In principle, Android OS (operating system) phones can use app stores other than Google’s, and relatively simple alteration of the default settings allows users to sideload apps without the app store. In practice, while reliable numbers are scant, it appears that most Android apps are downloaded from Google Play or Amazon’s app store. Habits of use and consumer convenience seem to largely negate the effects of the technical feasibility of sideloading. Limits, if any, on the

power of the app store owners come from market competition between iOS and Android, and – perhaps, to the extent these constraints exist and are, further, given voice in the organizational cultures of these companies – from internal ethical or cultural constraints imposed by Google or Apple insiders on what counts as acceptable applications of power.

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The increasing importance of mobile wireless cellular networks as core Internet infrastructure and these networks’ management models are a second control point for us to consider. Wireless carriers have organizational habits rooted in a controlled and optimized network model. The carrier controls what devices are permitted, and knows, manages, and bills all users and usage. Congestion management and quality of service were early initial requirements for these companies, and the use of auctions to allocate spectrum to wireless carriers meant that they saw the physical infrastructure as privately owned and integrated with carriage services. The models of wireless telephony – technical, legal ownership, engineering culture, and business practice – were fundamentally built to enable control by the owner and service provider so as to optimize a known set of services to known paying consumers. These characteristics stood in contrast to the Internet model, through which carriers were legally excluded from control over the network; users and usage were unknown and assumed unknowable; resilient best-efforts, not quality of service, were the core commitment; flexibility to unknown, new uses and users trumped optimization for known uses and users; and any network and open-standards-compliant device could be connected to the network on an equal basis.

The most obvious example of power that follows directly from the historical model of wireless telephony was AT&T’s requirement that Apple prevent Skype from using cellular (as opposed to WiFi) data on the

iPhone. Similarly, when carriers impose data caps, but then exclude favored services from counting against those data caps, they nudge users to adopt the preferred applications. In both cases, ownership of the spectrum and the service, the concept of optimization, and the integration of use with known paying users permit the company to exert control over what users can do and what companies unaffiliated with the service providers can offer. The controlled infrastructure, even where built to support control by commercial providers, also facilitates greater control by government agencies. The NSA's collection of bulk metadata from U.S. phone providers offers an obvious example of the more systemic shift in power that this new, more centralized architecture enables.

Packet discrimination and the end of legacy telephone copper-wire as physical infrastructure for broadband form a third control point. The first generation of Internet access by the public took place over dial-up connections. Becoming an ISP required little more than a modem bank connected to a phone line for users to dial; providers numbered in the thousands. The move to cable broadband and DSL over telephone lines increased the complexity of providing service and reduced the number of potential competitors. The deployment of the cable broadband DOCSIS 3.0 standard after 2006 meant that, in the long term, no more upgrades to the copper-wire telephone infrastructure would do. Only fiber-to-the-home could compete with cable for speed. The substantial civil engineering costs of fiber, in turn, reintroduced natural monopoly economics into home broadband markets, making competition a relatively weaker source of discipline for providers.⁵

The practical implication of the death of copper was that the home broadband provider became a significant point of control. At no point was this clearer than in the

net neutrality debates. Most prominently, from late 2013 to early 2014, Netflix, Comcast, and Verizon FiOS clashed over whether the carriers were slowing Netflix's service in order to extract payment for adequate service. Independent studies confirmed that the slowdown occurred at the peering point – where Cogent and Level 3, carriers that Netflix uses to carry its traffic, connected to the Comcast and Verizon networks – and was likely caused by business disputes, not technical issues.⁶ The parties blamed each other; but for our understanding, the vital development is that the gateway to the home broadband connection has become a central point of control, over which large corporations struggle (to the detriment of both end-users and competitors in the cloud who are not party to negotiations).

The re-emergence of natural monopoly economics in home broadband leaves us with a market or regulatory design choice, not a technical design choice. Barriers to entry into the wired home broadband market will continue to be high in the foreseeable future, hampering the efficacy of market solutions. Regulation in a number of forms seems most likely to diffuse power; this will likely require a combination of utility regulation – interconnection and interoperability on nondiscriminatory terms – and net neutrality rules requiring nondiscrimination among applications and content.

The emergence of cloud computing – enabled by increased speed of communications and widespread adoption of mobile computing – forms a third vital control point. Increasingly, individuals and businesses run their computation and storage remotely, on large computing and storage clusters owned and managed by third-party providers. This shift allows firms to economize on capital expenditures, enhance robustness and security, and scale computation, storage, and applications more flexibly than provisioning their own capacity would permit.

Despite the obvious benefits of cloud computing to individual users and firms, the technology also has the effect of centralizing power. The now-iconic example is Amazon's decision, in 2009, to delete copies of George Orwell's *1984* and *Animal Farm* from users' Kindles. The company claimed that the books were uploaded to the Kindle Store by a company that did not have the rights to them. Because Kindles are clients to a cloud service that stores and delivers the e-books, Amazon was in a position to delete these unapproved editions unilaterally. The platform, content, and software providers for cloud services all retain technical control over the data and operations of the customer in ways that were simply impossible when data and software were stored locally on the end-user's owned machine. The inherent power concern is not only about what the owner of the cloud provider can do, but also what third parties can do given the concentration of data and software in a single spot. One of the many revelations made by Edward Snowden was that the National Security Agency (NSA) project MUSCULAR had compromised both Google and Yahoo cloud storage facilities to enable the NSA to collect millions of records from e-mails, text, audio, and video from these companies.

What is important here is not that the NSA acted improperly; it is that cloud computing shifted the locus of power. When the data and software of hundreds of millions of people exist or run in a single place, whoever can compromise and gain control over it – legitimately or illegitimately – can exercise power over these hundreds of millions of people, at least to the extent that the data and applications extend power over their users and subjects.

The fourth control point is big data and its uses in behavioral control. In 2014, the *Proceedings of the National Academy of Sciences* reported on an experiment that manipulated the number of positive and neg-

ative emotional expressions on users' Facebook news feeds, which correlated with increased expressions by the subjects, of similarly positive and negative emotional content.⁷ In sum, people's moods could be altered through manipulation of their news feeds. These findings complemented an earlier Facebook-based study that showed that users who received social messages notifying them that their friends had voted were more likely to vote than users who received no such message, or who received informational messages (as opposed to social).⁸ The effect size was small in both cases, but statistically significant. The implication was quickly identified by scholars concerned with the power of Facebook and other companies that both control data and can integrate it, altering the user experience.⁹

Big data collection and processing, combined with ubiquitous sensing and connectivity, create extremely powerful insights on mass populations available to relatively few entities. These insights, together with new computational methods, make up what we think of as "big data." As Zeynep Tufekci has explained, when these methods combine with widespread experimentation (as in the Facebook experiments), behavioral science that analyzes individuals in a stimulus-response framework, and increasingly on-the-fly personalization of platforms, platform companies can nudge users to form beliefs and preferences, follow behaviors, and increase the probability of outcomes with ever-finer precision. These form the foundation of what management scholar Shoshana Zuboff has called "surveillance capitalism."¹⁰ As consumers become more precisely and individually predictable in their behavioral response to experimentally derived stimuli, and platforms become ever-more programmable at an individual level to obtain desired behavioral responses, the idea of individual "preferences" that are exogenous and preexist market relations, and whose satisfaction drives mar-

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kets and produces “welfare,” becomes incoherent. While the endogeneity of preferences has been a central theme of critiques of markets, at least since economist Thorstein Veblen’s *Theory of the Leisure Class*, behavioral manipulation has never been scientifically studied and integrated into service design on such a mass scale as has become possible, and increasingly standard, in big data/surveillance-informed behavioral marketing.

As part of the president’s response to the political uproar caused by the Snowden disclosures, the President’s Council of Advisors on Science and Technology (PCAST) issued a report on big data. The PCAST report was remarkable in that it repudiated two of the primary approaches we had previously used to preserve privacy: consent and anonymization. Since the emergence of “email privacy” as an issue in the early 1990s, regulatory efforts, particularly in the United States, focused on notice of collection and consent by the data subject. But as the PCAST report put it: “Notice and consent creates a nonlevel playing field in the implicit privacy negotiation between provider and user. The provider offers a complex, take-it-or-leave-it set of terms, while the user, in practice, can allocate only a few seconds to evaluating the offer. This is a kind of market failure.”¹¹ As for anonymization, PCAST found that “[a]nonymization is increasingly easily defeated by the very techniques that are being developed for many legitimate applications of big data. In general, as the size and diversity of available data grow, the likelihood of being able to re-identify individuals (that is, reassociate their records with their names) grows substantially.”¹² Both kinds of obsolescence mark a centralization of power, from individuals to the smaller set of entities capable of setting the terms of standard contracts or collecting, purchasing, and processing sufficient amounts of the ambient data surrounding individuals to

defeat efforts at self-protection through anonymization.

PCAST’s core recommendation was to accept the futility of regulating data collection and processing and implement more rigorous regulations on uses of collected data. Having diagnosed that both the technical systems involved in anonymization and the market systems involved in consent and contracting cannot alone carry the weight of preserving the *desiderata* we associate with privacy, PCAST shifted the onus of protection to the legal system. But this recommendation is undermined by the fact that the report in which it appears is itself the result of public exposure of a widely perceived failure of legal oversight. The Snowden revelations exposed that the complexity and opacity of the national security establishment rendered legal oversight and control highly imperfect. And this imperfection is not unique to government entities. The literature – ranging from rational-actor modeling through organizational sociology and cognitive bias – tells us that formalized rules imposed externally by a regulatory body are likely to function as imperfectly and incompletely as the technological or contractual subsystems that PCAST rejected. (This could be the case for a number of reasons, whether individual self-interest and agency problems; the force of habits, processes, and routines; or the dynamics of groupthink and bureaucratic culture.) All of these systems are radically incomplete and flawed, and it will be exceedingly difficult for any one of them to carry the burden of reversing a power flow instantiated in the basic architecture of the interaction.

The Netflix effect, and the increased identification of content as culture, form the final new control point I will discuss here. In January 2014, author and activist Cory Doctorow wrote a short post on his website, “We Are Huxleying Ourselves Into the Full Orwell.” Doctorow was commenting on

the possibility that the W3C would adopt a standard for HTML5 that implements Digital Rights Management (DRM) in the basic browser standard.¹³ The W3C was then being pushed to do this by browser manufacturers Microsoft, Apple, and Google, who were, in turn, being pushed by Netflix, which demanded DRM to assure its capacity to prevent users from creating unauthorized copies of its licensed content. By May 2014, not only had the W3C adopted the DRM standard, but the Mozilla Foundation, developer of the leading FOSS browser, had bowed to the perceived necessity of enabling users to view Netflix and released its own implementation of the DRM standard for HTML5. Together, these events reflect both the shift in cultural power and erosion of one of the core institutional and organizational mechanisms that made the Internet a force for decentralization of social, economic, and cultural power.

These events implicate several of the core design features of the early Internet and the policy battles to make it more readily susceptible to control. First, DRM technologies are a perfect example of an effort to impose power through technology. The essence of these technical measures is to allow one entity, originally a copyright owner, to determine who may make what uses of digital objects protected by DRM. The point is not legitimacy or legality, but power. DRM may be used equally to prevent unauthorized copying or to prevent legitimate fair uses of, or permissible innovation with, the encrypted materials. DRM technologies are designed to remove practical capacity to make a judgment about the legitimacy of a use from the possessor of the materials, and to locate that power with the copyright owner.

Although the U.S. Congress passed the Digital Millennium Copyright Act (DMCA) in 1998, which prohibited DRM circumvention, circumvention practices and devices have been trivially available to anyone

who has chosen to use them. The practical capacity of copyright holders to control circumvention was nonexistent for music, and marginal for video. The adoption of DRM for video streaming as part of HTML5 sees the Web, one of the core open standards underlying a major use of the Internet, embed the control mechanism within it. The process of doing so exemplified an increasing role for major companies in the governance of standards, which had previously been more anarchic. Moreover, the adoption occurred due to widespread consumption patterns that put the Mozilla Foundation, a nonprofit organization dedicated to coordinate a FOSS project, in the position of either implementing a version of DRM or losing user share and becoming marginalized. It therefore suggests that the shift to widespread passive consumption usage patterns weakens the role that FOSS development could play to provision a separate, power-diffusing alternative infrastructure. The result is not only the singular decision to implement a particular technology; it is diagnostic of basic pressures created when the Internet intersects with mass media culture.

If commercial video is so important, what can we make of the claimed democratizing effect of Internet culture? Nielsen surveys suggest that watching video on the Internet represents about one-third of the amount of personal computer Internet use time for eighteen- to thirty-four-year-olds, about one-quarter for thirty-five- to forty-nine-year-olds, and about 15 percent for fifty- to sixty-four-year-olds.¹⁴ Video on smartphones represented a smaller category of use. Imperfect measures, such as the relatively large share of Internet bandwidth consumed by Netflix in North America (about 35 percent),¹⁵ and the high and growing rates of Netflix subscriptions among North American Internet users (rising from 31 percent to 38 percent of U.S. consumers from 2012 to 2013)¹⁶ reflect the growing

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significance of passive watching of professionally produced video entertainment online. Perhaps we are observing a shift toward using the Internet in ways more reminiscent of mass media than of the more culturally decentralized manner celebrated in the middle of the last decade, when fan videos and remixes were all the rage. Data from the Pew Research Center have suggested otherwise.¹⁷ The proportion of adult American Internet users who have uploaded videos more than doubled from 2009 to 2013, reaching about one-third of Internet users. About 18 percent of users uploaded videos they produced for others to watch. Almost three-quarters of American adults online watch videos on YouTube, with comedy (57 percent), “how-to” (57 percent), educational (50 percent), and music videos (50 percent) being the most commonly viewed. These statistics suggest that while Internet users indeed seek Netflix and similar subscription services extensively, they also seek online video rooted in user-created, fan-shared videos. Importantly, the proportions of copyright-connected practices (comedy and music videos) and educational and free knowledge exchange (“how-to”) videos are roughly similar.

From the perspective of cultural power, the rise of Netflix does not seem to imply displacement of distributed creativity. Rather, it occurs alongside continued expansion of decentralized cultural creation and decentralization of power, which can encourage, for instance, inserting memes and new frameworks into cultural discourse. Commercial platforms, like YouTube, Vimeo, and Flickr, developed to facilitate creation and distribution of culture by diverse users, offer one important pathway through controlled frameworks – like the app store on the handheld device – for continued sources of cultural decentralization to persist online. Nonetheless, the rise of proprietary video streaming as a major application seems to have been enough both to put pressure

on the standards-setting process and to push a major actor in the FOSS development world to abandon a twenty-year-old battle against implementing DRM in the basic standards of core network platforms. Consumption choices appear to severely constrain the freedom of action of public-facing software development FOSS projects; interventions, if any, must be at the level of shaping demand, on the model of ethical or environmentally conscious consumption campaigns, rather than focusing solely on ethical design.

From the early days of public adoption of the Internet, there have been those who have seen decentralization primarily as a threat, empowering the nefarious, from criminals and pirates to pedophiles and terrorists to run-of-the-mill trolls and spammers. But because adaptive, flexible, loosely coupled systems were more likely to improve innovation and resilience in the face of rapid change and high uncertainty than controlled, optimized, well-behaved systems, the original Internet’s design reflected a sensibility that treated stasis as far more detrimental than disruption. Unless one is willing to claim that, on balance, that assumption was wrong for the past thirty-two years, that the next thirty-two years are likely to be less rapidly changing and uncertain, or that the risks that agility and rapid innovation present vastly and reliably outweigh their benefits, it seems that the Internet’s original design sensibility should continue to guide our future design choices. While defending that commitment is beyond the scope of this essay, I here outline a set of design interventions and challenges implied by present concentration trends, for those who wish to preserve the decentralizing effects of the early Internet.

Major companies and the state are the primary loci of centralizing power in contemporary society. One of the core lessons of the Internet has been that with the ap-

appropriate platforms, individuals acting in peer networks can cooperate effectively without relying on the state or the market. In doing so, they create their own (however imperfect) alternative platforms for interaction, which, in turn, impose different constraints than do state-based or market-based organizations. That diversity of constraint (rather than an unattainable absence of power) allows individuals to bob and weave between different efforts – from diverse sources – to impose power on them. This both diffuses some of the centralized power and creates avenues for decentralized power.

User-owned and commons-based infrastructure are one major space of intervention. Perhaps the clearest design targets are the emerging wireless networks necessary to ubiquitous computing, including both handheld networks and the Internet of Things. For many years, proprietary spectrum allocations owned by wireless carriers – coupled with proprietary cell towers – were deemed necessary for mobile computing. It has now become clear, to the contrary, that unlicensed wireless allocations (spectrum commons) running over small-cell networks, owned by diverse organizations and individuals, are likely to be the infrastructure of first and last resort for data, with large-cell proprietary spectrum networks offering the backup for highly mobile, latency-sensitive communications.¹⁸ The main challenge to leveraging this fact into a decentralization of power over wireless networks is to design technical and contractual systems that can permit unrelated individuals to share access to their diversely owned wireless spots. With the exception of relatively few community networks, most widespread WiFi networks are operated by companies like BT Group's system in the United Kingdom or Comcast's emerging model in the United States. Nothing technical prevents these companies' consumers from sharing their

access with each other without the carrier. The constraints, instead, are contracts and social habits. One of the core design targets of any future effort to keep the Internet open, decentralized, and resistant to control is to develop technically instantiated mechanisms to achieve user-owned and -shared capacity that offers no proprietary point of control for centralizing actors.

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What is true of wireless also holds for cloud storage and computing resources, though it may be more difficult to implement. Past efforts to develop distributed storage or computing include computer scientist Ian Clarke's Freenet, an early peer-to-peer data storage and communications network focused on assuring a secure system for dissidents. Oceanstore, a storage utility built atop an infrastructure of servers, and developed at the University of California, Berkeley, was a later development. Freedombox is an aspirational plug-server architecture proposed to create secure, user-owned servers that would offer much of the robustness and temporary scaling of servers provided by corporate actors, without the centralization of power. These efforts outline a critical area of open infrastructure innovation necessary to counter the centralization effects of cloud storage.

Another major design question concerns open defaults. In the case of the Android app stores explored above, Android OS phones' default settings do not permit side-loading. In WiFi devices, closed, encrypted networks are the default setting. Even though these defaults can be overridden by the user, long-term experience suggests that defaults stick. A critical target of consumer advocacy needs to be for firms that sell infrastructure and basic tools to ship them with open and secure defaults, so that user choice becomes the easy default option.

Open standards, FOSS, and law in the handheld and app-store space must also be directed to open these major control points. Deconcentrating power around the hand-

held and the app store suggest, first and foremost, efforts to develop alternatives through Web-based standards. HTML5 created the possibility of creating the look and feel of an app using an open-Web interface that need not be downloaded from an app store. As of 2015, substantial numbers of developers use HTML5 for its capacity to run across platforms, and its independence from platform-specific training and knowledge. But at this stage, it appears to sacrifice performance and optimization for generality. As long as this is true, and the rate of improvement in handheld operating systems is high, it seems unlikely that the general Web standards-based application development environment will outpace native application development. The power of the app store will remain.

An alternative would be the development of a FOSS handheld operating system (OS), such as the OS that the Mozilla Foundation is developing. As in the case of the Firefox browser, the presence of a FOSS alternative, with a strong institutional basis incorporated as a foundation dedicated to keeping the platform open, can play a role in preserving an open, decentralizing Internet. However, as the earlier discussion of DRM clarifies, that affordance is not an absolute bulwark against centralization; it is, nonetheless, a pathway to preventing additional concentration of power around the app store. If both pathways fail, it is possible that app stores will reach a point when they exercise so much control over effective access to a majority of Internet users that a legal intervention will be necessary to require app-store owners to adopt some form of nondiscrimination policy. Legal action may also be necessary to change defaults so that an app developer can initiate including itself in the app store, and the owner can only constrain access under well-specified, harm-prevention terms.

The adoption of strong, user-controlled encryption by default is one design inter-

vention that seems both feasible and, on balance, justified. By “user-controlled,” I mean encryption that provides affordances to the owner of the device on which the encryption is implemented, and constrains action on that device by others. This is by contradistinction from DRM software, which also involves end-device encryption but treats the device owner as the potential attacker, and permits some external third party (such as the copyright owner or the employer of the device owner) to use the encryption to control both uses of and access to the device. Universal strong encryption protects against both centralizing forces – primarily states and companies other than those with which the user has contracts – and decentralized sources of power, such as black hat hackers (crackers), thieves, and terrorists.

The primary opposition to adoption of universal strong encryption comes from those who suggest that the risks associated with technologically supported decentralization outweigh its benefits, and that the risks of centralization can be counterbalanced by institutional constraints on the centralizing power more flexibly and accurately than by technical barriers managed by users. The primary position of major governments is that bodies like the FBI or the NSA, properly constrained by legal oversight, will do far more good than harm if they can access any communication or device. The basic problem with this argument is that it assumes both the effectiveness of the government agencies responsible for order, and the effectiveness of the institutional controls.

As the Internet of Things blossoms, the sheer magnitude of data flows and potential points of attack becomes overwhelming to any system that seeks to read all networked information, predict events based on this data, and interdict those events. By contrast, the possibility of protecting targets locally at the individual-device level

substantially increases the cost and difficulty of harming devices and the data they store, or the processes they control. Defense will be largely imperfect, particularly against a determined and focused attack, but abuse will be more contained than with a universally less-secure system.

Moreover, the assumption that abuses by governments or companies can be adequately constrained by institutional and organizational processes is questionable at best. First, it applies, at most, to democracies with robust rule of law. For billions of Internet users in countries with weak or no rule of law, ubiquitously available strong encryption is the sole defense against abuses. Second, in democratic countries, the fifteen years since September 11, 2001, have seen persistent, repeated, and pervasive violations of human and civil rights and a persistent reluctance by authorities and courts to redress government excesses and mistakes. Multinational companies, in turn, often use jurisdictional arbitrage to escape regulation legally. The fact of the matter is that institutional systems are highly imperfect, no less so than technological systems, and only a combination of the two is likely to address the vulnerability of individuals to the diverse sources of power and coercion they face.

Future design must also take into account the resilience, redundancy, and diversity of systems resources and pathways. A central lesson of the original Internet design – its successes and failures – is that perfection is a fool's errand. Complexity is a basic condition of a connected, dynamic, open society, and with it comes persistent uncertainty and imperfection. Just as the original Internet design rejected perfectibility and optimization for openness, loose-coupling, and continuous experimentation, learning, and adaptation; so, too, must the future Internet. Any effort to finely design the environment so that it will generally permit legitimate power to flow in the le-

gitimate direction, but constrain illegitimate power, will fail often and, sometimes, spectacularly. We need systems that are resilient, robust, and rich in redundant pathways that are open to users to achieve any given range of goals they adopt for themselves. Freedom from power, in this context, inheres in diversity of constraint; and freedom of action is maintained by bobbing and weaving between diverse efforts to impose power on the individual, rather than by following prescribed paths, such as asserting one's rights through proper channels or living on a mountaintop. The practical implication of this rather abstract statement is a simple one: design efforts need to resist calls for optimization and greater control by trusted parties if these come at the expense of open, redundant pathways and resilient capabilities.

One way of constraining power in various arenas is to create mechanisms for assuring distributed audit and accountability, rather than permission. We have auditors in government bodies and require independent auditors to certify company books; the rising call for police officers to wear body cameras so as to deter police abuse and enable redress are also (highly contested) examples of technologically instantiated audit and accountability systems. So, too, could one imagine building an effective audit and accountability system into the Internet design to enable identification and accountability of abusive power. A major concern with any such system is that it would itself create a point of centralization: in the hands of whoever controls the audit trails, or breaks into them.

It is also possible that approaches based on the blockchain could provide a useful space for developing automated audit trails. Blockchain, the technology underlying the cryptocurrency Bitcoin, is still in its infancy. But the core design characteristic may outline a solution for distributed audit trails and accountability that would avoid the

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risks of reconcentration. At its core, the technology consists of three components. The first is a ledger that records all assets and transactions in a given domain. The second is encryption, which protects this ledger from tampering. And the third is distributed, redundant storage with mutual accountability such that tampering anywhere becomes evident unless it can be achieved everywhere simultaneously. This outlines an open system that would nonetheless withstand many attacks (both official and unofficial) and provide distributed users with a higher degree of confidence that abuse can be traced, documented, and ultimately fed into a system of accountability than might be possible with a more centralized and institutionalized audit system. Of course, real world accountability will require institutional and organizational adaptations; an automated audit system, decentralized or otherwise, will not be self-executing. But building an audit system with a distributed, robust architecture may offer a technical foundation around which institutions can develop.

A final proposed space for design intervention is user-owned and/or ethical governance in platforms. One of the most remarkable features of the early Internet was the emergence of working anarchies as functioning organizations with substantial social and economic impact. The IETF was the clearest example, in which an organization with practically no recognized order, functioning on self-organized, distributed, discursive arrangements independent of market, state, or other well-behaved sources of accreditation or empowerment, came to manage the core piece of global infrastructure of the late twentieth century. FOSS projects and Wikipedia followed, as the idea of self-motivated action and effective, collective work in self-governing communities matured and came to fulfill a significant part of our core utilities in networked society and economy. As

these organizations matured, they began to develop hybrid approaches, mixing formal nonprofit incorporation with internal meritocratic, nonhierarchical structures (such as the W3C, the Apache Foundation, and the Mozilla Foundation), or independent community structures, alongside and of superior legitimate power than the formal foundation set up alongside them (Wikimedia Foundation and the Wikipedia community). As we look ahead toward the design of the future Internet, many challenges will appear to require structured organizational responses, like state-based agency intervention or market-based, proprietary companies. What the past twenty years of self-organized communities suggest is that peer production and social self-organization offer a diverse and rich design space for solving collective action problems and implementing organizational effectiveness without necessarily falling into the trap of state or market, and without simply permitting the emergence of unaccountable oligarchies instead.

When the Internet was first designed, few knew about it, and fewer understood its significance. The major design decisions were made in a power vacuum. By now, everyone knows that Internet-design decisions will affect political, economic, institutional, social, and cultural arrangements, and decisions that will influence the next quarter-century are all being influenced themselves by sustained efforts of diverse parties that stand to benefit from them.

Much virtual ink has been spilled on democracy, innovation, privacy, and cyberracking, which all address the fundamental problem of power. In all these more familiar framings, how the Internet enables or disables some people to influence the perceptions, beliefs, and behaviors, as well as the outcomes and configurations that other people hold and inhabit, is at stake. In the second half of the twentieth century

ry, core values of individual autonomy and self-authorship, creativity and ingenuity, community cooperation, and collective self-governance were all associated with representative democracy; civil rights; the rule of law in property, contracts, and the state; coordination through prices in markets; and stable social institutions, like the family, church, union, and civic association. In the past quarter-century, looser associations have become effective, while these more traditional institutions continued to offer some degrees of freedom and effective action, but also became sources of constraint vis-a-vis the new forms of action and association.

As we struggle with diverse design choices, it is important to recognize the substantial emancipatory and creative power of the open and loosely coupled action systems that the early Internet enabled and empowered. Their force in supporting creativity, autonomy, and chosen association is often linked with relatively weaker gov-

ernability and less-focused capacity to express a coherent voice. While we have had examples of successful collective action by distributed, Internet-enabled forces over the past few years, the steady grind of policy-making and standards-setting mean that the values of a genuinely open Internet that diffuses and decentralizes power are often underrepresented where the future of power is designed and implemented. Thus, it falls to those primarily in the relatively independent domain of academia to pursue these values and insist on diagnosing design choices in terms of their effects on the distribution of power, as well as to develop and advocate design options that will preserve the possibility of decentralized, autonomous, and organically chosen collective action. Our alternative would be transmitting the power of those organizations that have the wherewithal to sit at every table, and in every conference room, to assure their own interests in the design of our future.

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Chapter 2

Why Freedom of Thought Requires Free Media and Why Free Media Require Free Technology (Eben Moglen)



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Why Freedom of Thought Requires Free Media and Why Free Media Require Free Technology

Talk by [Eben Moglen](#) at re:publica, Berlin, May 2, 2012

(Event records)

Good morning.

It's a pleasure to be here and an honor to be at Re:publica.

For the last thousand years, we, our mothers, and our fathers have been struggling for freedom of thought. We have sustained many horrible losses and some immense victories and we are now at a very serious time.

From the adoption of printing by Europeans in the 15th century we began to be concerned primarily with access to printed material.

The right to read, and the right to publish were the central subjects of our struggle for freedom of thought for most of the last half millennium.

The basic concern was for the right to read in private and to think and speak and act on the basis of a free and uncensored will.

The primary antagonist for freedom of thought in the beginning of our struggle was the Universal Catholic Church, an institution directed at the control of thought in the European world, based around weekly surveillance of the conduct and thoughts of every human being, based around the censorship of all reading material and in the end based upon the ability to predict and to punish unorthodox thought.

The tools available for thought control in early modern Europe were poor even by 20th century standards, but they worked. And for hundreds of years, the struggle primarily centered around that increasingly important first mass manufactured article in Western culture: the book. Whether you could print them, possess them, traffic in them, read them, teach from them without the permission or control of an entity empowered to punish thought.

By the end of the 17th century censorship of written material in Europe had begun to break down first in the Netherlands then in the UK then afterwards in waves throughout the European world and the book became an article of subversive commerce and began eating away at the control of thought.

By the late 18th century that struggle for the freedom of reading had begun to attack the substance of Christianity itself and the European world trembled on the brink of the first great revolution of the mind. It spoke of “liberté, égalité, fraternité”, but actually it meant freedom to think differently.

The “Ancien Régime” begun to struggle against thinking and we moved into the next phase of the struggle for freedom of thought which presumed the possibility of unorthodox thinking and revolutionary acting.

And for 200 years we struggled with the consequences of those changes.

That was then and this is now.

Now we begin a new phase in the history of the human race. We are building a single nervous system which will embrace every human mind.

We are less than two generations now from the moment at which every single human being will be connected to a single network in which all thoughts, plans, dreams and actions will flow as nervous impulses in the network.

And the fate of freedom of thought, indeed the fate of human freedom altogether, everything that we have fought for for a thousand years will depend upon the neuron anatomy of that network.

Ours are the last generations of human brains that will be formed without contact with the net. From here on out, every human brain, by two generations from now, every single human brain will be formed from early life in direct connection to the network. Humanity will become a super-organism in which each of us is but a neuron in the brain.

And we are describing now, now, all of us now, this generation unique in the history of the human race, in this generation we will decide how that network is organized. Unfortunately we are beginning badly.

Here’s the problem.

We grew up to be consumers of media. That’s what they taught us. We were consumers of media. Now media is consuming us. The things we read watch us read them. The things we listen to listen to us listen to them. We are tracked. We are monitored. We are predicted by the media we use.

The process of the building of the network institutionalizes basic principles of information flow. It determines whether there is such a thing as anonymous reading.

And it is determining against anonymous reading.

20 years ago, I began working as a lawyer for a man called Philip Zimmermann who had created a form of public key encryption for mass use called Pretty Good Privacy. The effort to create Pretty Good Privacy was the effort to retain the possibility of secrets in the late 20th century. Phil was trying to prevent government from reading everything.

And as a result he was at least threatened with prosecution by the United States government for sharing military secrets which is what we called public key encryption back then.

We said, “You shouldn’t do this. There will be trillions of dollar of electronic commerce if everybody has strong encryption.” Nobody was interested.

But what was important about Pretty Good Privacy, about the struggle for freedom that public key encryption in civil society represented, what was crucial became clear when we began to win.

In 1995, there was a debate at Harvard Law School – four of us discussing the future of public key encryption and its control. I was on the side, I suppose, of freedom. It's where I try to be. With me at that debate was a man called Daniel Weitzner who now works in the White House making Internet policy for the Obama administration.

On the other side was the then Deputy Attorney General of the United States and a lawyer in private practice named Stewart Baker who had been chief counsel to the National Security Agency, our listeners, and who was then in private life helping businesses to deal with the listeners. He then became, later on, the deputy for policy planning in the Department of Homeland Security in the United States and has much to do with what happened in our network after 2001.

At any rate, the four of us spent two pleasant hours debating the right to encrypt and at the end there was a little dinner party at the Harvard faculty club, and at the end, after all the food had been taken away and just the port and the walnuts were left on the table, Stuart said, "All right, among us now that we are all in private, just us girls, I'll let our hair down."

He didn't have much hair even then, but he let it down.

"We are not going to prosecute your client, Mr. Zimmermann," he said. "Public key encryption will become available. We fought a long, losing battle against it, but it was just a delaying tactic." And then he looked around the room and he said, "But nobody cares about anonymity, do they?"

And a cold chill went up my spine and I thought, all right, Stuart, and now I know you're going to spend the next twenty years trying to eliminate anonymity in human society and I am going to try to stop you and we'll see how it goes.

And it's going badly.

We didn't build the net with anonymity built in. That was a mistake. Now we are paying for it. Our network assumes that you can be tracked everywhere. And we have taken the Web, and we've made Facebook out of it. We put one man in the middle of everything.

We live our social lives, our private lives, in the Web and we share everything with our friends and also with our "superfriend", the one who reports to anybody who makes him, who pays him, who helps him or who gives him the hundred billion dollars he desires.

We are creating a media that consume us and media loves it. The primary purpose of 21st century commerce is to predict how we can be made to buy. And the thing that people most want us to buy is debt. So we are going into debt. We are getting heavier – heavier with debt, heavier with doubt, heavier with all we need we didn't know we needed until they told us we were thinking about it because they own the search box and we put our dreams in it.

Everything we want, everything we hope, everything we'd like, everything we wish we knew about is in the search box and they own it.

We are reported everywhere all the time.

In the 20th century you had to build Lubyanka. You had to torture people. You had to threaten people. You had to press people to inform on their friends. I don't need to talk about that in Berlin.

In the 21st century, why bother? You just build social networking and everybody informs on everybody else for you.

Why waste time and money having buildings full of little men who check who is in which photographs? Just tell everybody to tag their friends and bing! You're done! Ooh, did I use that word? Bing! You're done!

There is a search box and they own it and we put our dreams in it and they eat them and they tell us who we are, right back. "If you liked that, you'll love this!" And we do.

They figure us out, the machines do. Every time you make a link you are teaching the machine. Every time you make a link about someone else you are teaching the machine about someone else. We need to build that network. We need to make that brain. This is humanity's highest purpose. We're fulfilling it, but we mustn't do it wrong.

Once upon a time, the technological mistakes were mistakes. We made them. They were the unintended consequences of our thoughtful behavior. That's not the way it is right now. The things that are going wrong are not mistakes. They're designs. They have purpose and the purpose is to make the human population readable.

I was talking to a senior government official in the United States a few weeks ago. Our government has been misbehaving. We had rules. We made them after 9/11. They said we will keep databases about people and some of those people will be innocent. They won't be suspected of anything. The rules we made in 2001 said we will keep information about people not suspected of anything for a maximum of 180 days, then we will discard it.

In March, in the middle of the night, on a Wednesday, after everything shut down, when it was raining, the Department of Justice and the Director of the National Intelligence in the United States said, "Oh, we are changing those rules. This small change. We used to say we will keep information on people not suspected of anything for only 180 days maximum. We're changing that a little bit to 5 years." Which is infinity.

I joke with the lawyer I work with in New York they only wrote 5 years into the press release because they couldn't get the sideways 8 into the font for the press release. Otherwise they'd have just said infinity which is what they mean.

So I was having a conversation with a senior government official I have known all these many years who works in the White House and I said, "You're changing American society."

He said, "Well, we realized that we need a robust social graph of the United States."

I said, "You need a robust social graph of the United States."

"Yes," he said.

I said, "You mean the United States government is, from now on, going to keep a list of everybody every American knows. Do you think by any chance that should require a law?" And he just laughed because they did it in a press release in the middle of the night on Wednesday when it was raining.

We're going to live in a world, unless we do something quickly, in which our media consume us and spit in the government's cup. There will never have been any place like it before and if we let it happen, there will never be any place different from it again.

Humanity will all have been wired together and media will consume us and spit in the government's cup. And the State will own our minds.

The soon to be ex-president of France campaigned as you will recall last month on a proposition that there will be criminal penalties for repeat visiting of Jihadi websites. That was a threat to criminalize reading in France.

Well, he will be soon the ex-president of France, but that doesn't mean that that will be an ex-idea in France at all.

The criminalization of reading is well advanced. In the United States, in what we call terrorism prosecutions, we now routinely see evidence of people's Google searches submitted as proof of their conspiratorial behavior. The act of seeking knowledge has become an overt act in conspiracy prosecution. We are criminalizing thinking, reading, and

research. We are doing this in so-called free societies. We are doing this in a place with the First Amendment. We are doing this despite everything our history teaches us because we are forgetting even as we learn.

We don't have much time. The generation that grew up outside the Net is the last generation that can fix it without force.

Governments all over the world are falling in love with the idea of data-mining their populations.

I used to think that we were going to be fighting the Chinese Communist Party in the third decade of the 21st century. I didn't anticipate that we were going to be fighting the United States government and the government of the People's Republic of China and when Mrs. Kroes is here on Friday, perhaps you'll ask her whether we going to be fighting her too.

Governments are falling in love with data-mining because it really, really works. It's good. It's good for good things as well as evil things. It's good for helping government understand how to deliver services. It's good for government to understand what the problems are going to be. It's good for politicians to understand how voters are going to think. But it creates the possibility of kinds of social control that were previously very difficult, very expensive and very cumbersome, in very simple and efficient ways.

It is no longer necessary to maintain enormous networks of informants as I have pointed out. Stasi gets a bargain now, if it comes back, because Zuckerberg does its work for it.

But it's more than just the ease of surveillance. It's more than just the permanence of data. It's the relentlessness of living after the end of forgetting. Nothing ever goes away anymore.

What isn't understood today will be understood tomorrow. The encrypted traffic you use today in relative security is simply waiting until there is enough of it for the cryptanalysis to work, for the breakers to succeed in breaking it. We're going to have to redo all our security all the time, forever, because no encrypted packet is ever lost again. Nothing is unconnected infinitely, only finitely. Every piece of information can be retained and everything eventually gets linked to something else. That's the rationale for the government official who says, "We need a robust social graph of the United States."

Why do you need it? So the dots you don't connect today you can connect tomorrow or next year or the year after next. Nothing is ever lost. Nothing ever goes away. Nothing is forgotten anymore.

So the primary form of collection that should concern us most is media that spy on us while we use them: Books that watch us read them, music that listens to us listen to it, search boxes that report what we are searching for to whoever is searching for us and doesn't know us yet.

There is a lot of talk about data coming out of Facebook. Is it coming to me? Is it coming to him? Is it coming to them? They want you to think that the threat is data coming out. You should know that the threat is code going in.

For the last 15 years what has been happening in enterprise computing is the addition of that layer of analytics on top of the data warehouse that mostly goes in enterprise computing by the name of "business intelligence". What it means is you've been building these vast data warehouses in your company for a decade or two now. You have all the information about your own operations, your suppliers, your competitors, your customers. Now you want to make that data start to do tricks by adding it to all the open source data out there in the world, and using it to tell you the answers to questions you didn't know you had. That's business intelligence.

The real threat of Facebook is the BI layer on top of the Facebook warehouse. The Facebook data warehouse contains the behavior, not just the thinking, but also the behavior of somewhere nearing a billion people. The business intelligence layer on top of it which is just all that code they get to run covered by the terms of service that say they can run any code

they want for improvement of the experience. The business intelligence layer on top of Facebook is where every intelligence service of the world wants to go.

Imagine that you are a tiny little secret police organisation in some not very important country. Let's put ourselves in their position. Let's call them, I don't know what, you know ... "Kyrgyzstan".

You are a secret police. You are in the "people business". Secret policing is "people business". You have classes of people that you want. You want agents. You want sources. You have adversaries. And you have influencables, that is, people you can torture who are related to adversaries: Wives, husbands, fathers, daughters. You know, those people.

So you are looking for classes of people. You don't know their names, but you know what they are like. You know who is recruitable for you as an agent. You know who are likely sources. You can give the social characteristics of your adversaries, and once you know your adversaries, you can find the influencables.

So what you want to do is run code inside Facebook. It will help you find the people that you want. It will show you the people whose behavior and whose social circles tell you that they are what you want by way of agents, sources, what the adversaries are and who you can torture to get to them.

So you don't want data out of Facebook. The day you take data out of Facebook, it is dead. You want to put code into Facebook and run it there and get the results you want to cooperate.

Facebook wants to be a media company. It wants to own the Web. It wants you to punch "Like" buttons. "Like" buttons are terrific even if you don't punch them because they are web bugs, because they show Facebook every other webpage that you touch that has a "Like" button on it. Whether you punch it or you don't they still get a record. The record is: "You read a page which had a like button on it" and either you said yes or you said no. And either way, you made data. You taught the machine.

So media want to know you better than you know yourself and we shouldn't let anybody do that.

We fought for a thousand years for the internal space, the space where we read, think, reflect and become unorthodox inside our own minds. That's the space that everybody wants to take away.

"Tell us your dreams. Tell us your thoughts. Tell us what you hope. Tell us what you fear." This is not weekly auricular confession. This is confession 24 by 7.

The mobile robot that you carry around with you, the one that knows where you are all the time and listens to all your conversations, the one you hope isn't reporting in at headquarters, but it's only hope, the one that runs all that software you can't read, can't study, can't see, can't modify, and can't understand. That one, that one is taking your confession all the time.

When you hold it up to your face from now on, it's gonna know your heartbeat. That's an android app, right now. Microchanges in the color of your face reveal your heart rate. That's a little lie detector you're carrying around with you. Pretty soon I'll be able to sit in a classroom and watch the blood pressure of my students go up and down. In a law school classroom in the United States that's really important information. But it's not just me, of course. It's everybody, right? Because it's just data and people will have access to it.

The inside of your head becomes the outside of your face, becomes the inside of your smartphone, becomes the inside of the network, becomes the front of the file at headquarters.

So we need free media or we lose freedom of thought. It's that's simple.

What does free media mean?

Media that you can read, that you can think about, that you can add to, that you can participate in without being monitored, without being surveilled, without being reported in on. That's free media. If we don't have it, we lose freedom of thought possibly forever.

Having free media means having a network that behaves according to the needs of the people at the edge, not according to the needs of the servers in the middle. Making free media requires a network of peers, not a network of masters and servants, not a network of clients and servers, not a network where network operators control all the packets they move. This is not simple, but it's still possible.

We require free technology.

The last time I gave a political speech in Berlin it was in 2004. It was called "die Gedancken sind frei". I said we need 3 things:

- Free software
- Free hardware
- Free bandwidth

Now we need them more. It's 8 years later. We've made some mistakes. We're in more trouble. We haven't come forward. We've gone back.

We need free software. That means software you can copy, modify, and redistribute. We need that because we need the software that runs the network to be modifiable by the people the network embraces.

The death of Mr. Jobs is a positive event. I'm sorry to break it to you like that. He was a great artist and a moral monster. And he brought us closer to the end of freedom every single time he put something out because he hated sharing. It wasn't his fault. He was an artist. He hated sharing because he believed he invented everything even though he didn't.

Inside those fine little boxes with the lit-up apples on them I see all around the room is a bunch of free software tailored to give him control. Nothing illegal. Nothing wrong. He obeyed the licenses. He screwed us every time he could and he took everything we gave him and he made beautiful stuff that controlled its users.

Once upon a time, there was a man here who built stuff, in Berlin, for Albert Speer. His name was Philip Johnson and he was a wonderful artist and a moral monster. And he said he went to work building buildings for the Nazis because they had all the best graphics. And he meant it, because he was an artist, as Mr. Jobs was an artist. But artistry is no guarantee of morality.

We need free software. The tablets that you use, that Mr. Jobs designed, are made to control you. You can't change the software. It's hard even to do ordinary programming. It doesn't really matter, they're just tablets. We just use them. We're just consuming the glories of what they give us, but they are consuming you too.

We live, as the science fiction we read when we were children suggested we would, among robots now. We live commensally with robots, but they don't have hands and feet. We are their hands and feet. We carry the robots around with us. They know everywhere we go. They see everything we see. Everything we say they listen to and there is no first law of robotics. They hurt us, everyday. And there is no programming to prevent it so we need free software. Unless we control the software in the network, the network will in the end control us.

We need free hardware. What that means is that when we buy an electronic something it should be ours not someone else's. We should be free to change it, to use it our way, to assure that it is not working for anyone other than ourselves. Of course most of us will never change anything, but the fact that we can change it will keep us safe.

Of course we will never be the people that they most want to surveil. The man who will not be president of France, for sure, but who thought he would, now says that he was trapped and his political career was destroyed not because he raped a hotel housekeeper, but because he was setup by spying inside his smartphone. Maybe he is telling the truth and maybe he isn't. But he is not wrong about the smartphone. Maybe it happened, maybe it didn't, but it will.

We carry dangerous stuff around with us everywhere we go. It doesn't work for us. It works for someone else. We put up with it. We have to stop.

We need free bandwidth. That means we need network operators who are common carriers whose only job is to move the packet from A to B. They are merely pipes. They are not allowed to get involved. It used to be that when you ship the thing from point A to point B if the guy in the middle opened it up and looked inside it, he was committing a crime. Not anymore.

In the United States the House of Representatives voted last week that the network operators in the United States should be completely immunized against lawsuits for cooperating with illegal government spying so long as they do it "in good faith". And capitalism means never having to say you are sorry. You are always doing it in good faith. In good faith all we wanted to do is make money, Your Honor. Let us out. Okay, you are gone.

We must have free bandwidth. We still own the electromagnetic spectrum. It still belongs to all of us. It doesn't belong to anybody else. Government is a trustee, not an owner. We have to have spectrum we control, equal for everybody. Nobody is allowed to listen to anybody else, no inspecting, no checking, no record-keeping. Those have to be the rules. Those have to be the rules in the same way that censorship had to go. If we don't have rules for free communication, we are reintroducing censorship whether we know it or not.

So we have very little choice now. Our space has gotten smaller. Our opportunity for change has gotten less.

We have to have free software. We have to have free hardware. We have to have free bandwidth. Only from them can we make free media.

But we have to work on media too. Directly. Not intermittently. Not off hand.

We need to demand of media organisations that they obey primary ethics. A first law of media robotics: Do no harm.

The first rule is do not surveil the reader.

We can't live in a world where every book reports every reader. If we are, we are living in libraries operated by the KGB.

Well, Amazon.com, or the KGB, or both. You'll never know.

The book, that wonderful printed article, that first commodity of mass capitalism, the book is dying. It's a shame, but it's dying. And the replacement is a box which either surveils the reader or it doesn't.

You will remember that Amazon.com decided that a book by George Orwell could not be distributed in the United States for copyright reasons and they went and erased it out of all the little Amazon book reading devices where customers had purchased copies of *Animal Farm*.

"Oh, you may have bought it, but that doesn't mean you are allowed to read it."

That's censorship. That's book burning. That's what we all lived through in the 20th century. We burned people, places and art. We fought. We killed tens of millions of people to bring an end to a world in which the state would burn books and then we watched as it was done again and again and now we are preparing to allow it to be done without matches. Everywhere. Anytime.

We must have media ethics and we have the power to enforce those ethics because we are still the people who pay the freight. We should not deal with people who sell surveilled books. We should not deal with people who sell surveilled music. We should not deal with movie companies that sell surveilled movies.

We are going to have to say that, even as we work on the technology, because otherwise capitalism will move as fast as possible to make our efforts at freedom irrelevant, and there are children growing up who will never know what freedom means.

So we have to make a point about it. It will cost us a little bit, not much, but a little bit. We will have to forgo and make a few sacrifices in our lives to enforce ethics on media. But that's our role. Along with making free technology, that's our role.

We are the last generation capable of understanding directly what the changes are because we have lived on both sides of them and we know. So we have a responsibility. You understand that.

It's always a surprise to me though it is deeply true that of all the cities in the world I travel to Berlin is the freest. You cannot wear a hat in the Hong Kong airport anymore. I found out last month trying to wear my hat in the Hong Kong airport. You are not allowed. It disrupts the facial recognition. There will be a new airport here. Will it be so heavily surveilled that you won't be allowed to wear a hat because it disrupts the facial recognition?

We have a responsibility. We know. That's how Berlin became the freest city that I go to because we know, because we have a responsibility, because we remember, because we have been on both sides of the wall. That must not be lost now. If we forget, no other forgetting will ever happen. Everything will be remembered. Everything you read, all through life, everything you listened to, everything you watched, everything you searched for. Surely we can pass along to the next generation a world freer than that. Surely we must. What if we don't?

What will they say when they realize that we lived at the end of a thousand years of struggling for freedom of thought. At the end when we had almost everything, we gave it away, for convenience, for social networking, because Mr. Zuckerberg asked us to, because we couldn't find a better way to talk to our friends, because we loved the beautiful pretty things that felt so warm in the hand, because we didn't really care about the future of freedom of thought, because we considered that to be someone else's business, because we thought it was over, because we believed we were free, because we didn't think there was any struggling left to do.

That's why we gave it all away.

Is that what we're going to tell them? Is that what we're going to tell them?

Free thought requires free media. Free media requires free technology. We require ethical treatment when we go to read, to write, to listen and to watch.

Those are the hallmarks of our politics. We need to keep those politics until we die because if we don't, something else will die: Something so precious that many, many of our fathers and mothers gave their lives for it, something so precious that we understood it to define what it meant to be human. It will die if we don't keep those politics for the rest of our lives. And if we do, then all the things we had struggled for we will get because everywhere on earth everybody will be able to read freely because all the Einsteins in the street will be allowed to learn, because all the Stravinskys will become

composers, because all the Salks will become research physicians, because humanity will be connected and every brain will be allowed to learn and no brain will be crushed for thinking wrong.

We are at the moment where we get to pick whether we carry through that great revolution we've been making bit by bloody bit for a thousand years or whether we give it away for convenience, for simplicity of talking to our friends, for speed in the search, and other really important stuff.

I said in 2004 when I was here and I say now: We can win. We can be the generation of people who completed the work of building freedom of thought. I didn't say then, and I must say now that we are also potentially the generation that can lose. We can slip back into an Inquisition worse than any inquisition that ever existed. It may not use as much torture, it may not be as bloody, but it will more effective and we mustn't, mustn't let that happen.

Too many people fought for us. Too many people died for us. Too many people hoped and dreamed for what we can still make possible. We must not fail.

Thank you very much.

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Part I

Licenses and Compliance

Chapter 3

Open source licenses are shared resources (Scott K Peterson)



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Open source licenses are shared resources


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One can easily see examples of *software* as a shared resource, whether shared by a few people or a few million people. Of course, these shared resources are not always as fully appreciated as they should be. They can pass underappreciated until drama such

as a security vulnerability draws attention and illuminates the importance of what is being shared.

But a *license*? A shared resource?

Yes, open source licenses are shared resources. And, they, too, may be underappreciated until a vulnerability is exploited. Legal documents (contracts, licenses, whatever they may be called) are typically unique to each commercial enterprise. Certainly, there is some commonality. Lawyers adapt from what others have done. Patterns are followed. Text is reused.

A court's interpretation of a detail in one license may impact a future court's decision regarding other licenses that use the same text or pattern. On the other hand, there may be reasons (differences in the license text, differences in business situation) to treat each license as a different license. But, consider the licenses that begin "GNU GENERAL PUBLIC LICENSE Version 3 29 June 2007" or "Apache License Version 2.0 January 2004" or "Eclipse Public License - v 1.0." Those and other commonly used free and open source software licenses are used each time with exactly the same text, starting with the title.

This sharing is good.

Many have thought that their situations were so different as to merit different licenses. But, when it comes to open source software licensing, history strongly suggests that situations are less different than one might think. Observations of the consequences of these (mis)perceptions of need for a new license led to a negative meme about "license proliferation." Now, selecting from a list of existing licenses has become a widely recommended practice, rather than drafting yet another license variant.

OK. License text is shared. Why might that matter?

License text, like natural language text generally, is not absolutely precise or complete. For example:

- What is the copyleft scope of the GPL? As applied to a program written in Python?
- What does "module" mean in the EPL? How about when classes in an object-oriented program are subclassed?
- What does "by combination" encompass in the Apache License?

Focusing on a small number of licenses has an upside. Experiences and discussions can more readily reduce uncertainty through broader common understanding of a few licenses than if license-related actions and debates were divided among hundreds or thousands of different licenses.

This upside can include judicial interpretations. Judicial rulings on points about which people might have differing views can increase certainty more readily if there are fewer licenses. If you are using the Foo License, a ruling on the similar but slightly different language in the Bar License is less helpful than a ruling on the license that you are using.

But, there is risk, too. Judicial interpretations are informed by the facts of the particular dispute before the court. In the legal profession, there is an adage, "Bad facts make bad law." Getting nervous? It gets worse. The court forms its judgment based on the arguments of the parties to the dispute at hand. The interests of the particular parties and the nature of their dispute can lead to presentation of arguments for license interpretation that would not be made by most other users of the license.

A court's ability to look beyond what the parties provide is limited—in most courts, very limited. There can be opportunity for others to offer additional views, such as *amicus curiae*. Most frequently, this additional input occurs at the appellate level, which may never be reached if the parties settle after trial but before appeal.

In common law jurisdictions, precedent plays a particular role in the judicial decision-making. Civil law jurisdictions take a different approach to achieving judicial consistency. There are also considerations of judicial comity. In short, even though the outcome in one court is generally not determinative of the outcome in another, what courts decide can have varying degrees of impact on what other courts will do.

Here are two examples.

The [decision in 2008 \(https://scholar.google.com/scholar_case?case=17776182574171214893\)](https://scholar.google.com/scholar_case?case=17776182574171214893) by the U. S. Court of Appeals for the Federal Circuit in *Jacobsen v. Katzer* addresses (with a good result) a legal point of great consequence for open source licensing. Awkwardly, the open source licensing issue arose as a side issue in a dispute involving domain names, trademarks, patents, and, ultimately, the Artistic License. It almost went very badly. The trial court saw the issue concerning the Artistic License as a contract dispute for which damages for breach of contract might be

obtained. Fortunately, the appellate court saw the issue differently and reversed the trial court's decision on this point: actions were unlicensed and thus subject to copyright infringement remedies. The record of that case suggests that input from a group of *amicus curiae* may have played a significant role in convincing the appeals court to see the case differently than did the trial court.

The complex set of disputes involving Versata Software, American Financial Services, and Ximpleware appears to have been settled. But, what might have happened? Versata and AFS had a dispute having nothing to do with open source software—until AFS discovered some. That brought on the author of that GPL-licensed software, but who focused on the revenue generating potential of his patent claims. (See "[Lawsuit threatens to break new ground on the GPL and software licensing issues](https://opensource.com/law/14/7/lawsuit-threatens-break-new-ground-gpl-and-software-licensing-issues) (<https://opensource.com/law/14/7/lawsuit-threatens-break-new-ground-gpl-and-software-licensing-issues>)" and "[GPLv2 goes to court: More decisions from the Versata tarpit](https://opensource.com/law/14/12/gplv2-court-decisions-versata) (<https://opensource.com/law/14/12/gplv2-court-decisions-versata>).") What interpretations of the GPL might have been advocated by the several parties? What might a court have ruled as to what certain parts of the GPL mean? It is possible that none of the parties to that litigation tangle would have had an open source community perspective.

In cases that lead to judicial interpretation of licenses, it matters who the parties are.

Licenses are valuable shared resources. What might we do to support these shared resources?

Topics: [Law \(/tags/law\)](/tags/law) [Licensing \(/tags/licensing\)](/tags/licensing)



[\(/users/skpeterson/\)](/users/skpeterson/)

About the author

Scott K Peterson - Scott Peterson is a member of the Red Hat legal team. Long ago, an engineer asked Scott for legal advice on a curious document known as the GPL. That fateful question began a twisting path of exploration of the legal aspects of collaborative development, including both technical standards and open source software.

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Chapter 4

Jacobsen v. Katzer

**U.S. Court of Appeals, Federal
Circuit**

535 F3d 1373 (2008)

Robert JACOBSEN, Plaintiff-Appellant,
v.
Matthew KATZER and Kamind Associates, Inc. (doing business as KAM Industries), Defendants-
Appellees.

No. 2008-1001.

United States Court of Appeals, Federal Circuit.

August 13, 2008.

1375 *1375 Victoria K. Hall, Law Office of Victoria K. Hall, of Bethesda, MD, argued for plaintiff-appellant.

R. Scott Jerger, Field Jerger LLP, of Portland, OR, argued for defendants-appellees.

Anthony T. Falzone, Stanford Law School, Center for Internet and Society, of Stanford, CA, for amici curiae Creative Commons Corporation, et al. With him on the brief was Christopher K. Ridder.

Before MICHEL, Chief Judge, PROST, Circuit Judge, and HOCHBERG,^[1] District Judge.

HOCHBERG, District Judge.

We consider here the ability of a copyright holder to dedicate certain work to free public use and yet enforce an "open source" copyright license to control the future distribution and modification of that work. Appellant Robert Jacobsen ("Jacobsen") appeals from an order denying a motion for preliminary injunction. Jacobsen v. Katzer, No. 06-CV-01905 JSW, 2007 WL 2358628 (N.D.Cal. Aug. 17, 2007). Jacobsen holds a copyright to computer programming *1376 code. He makes that code available for public download from a website without a financial fee pursuant to the Artistic License, an "open source" or public license. Appellees Matthew Katzer and Kamind Associates, Inc. (collectively "Katzer/Kamind") develop commercial software products for the model train industry and hobbyists. Jacobsen accused Katzer/Kamind of copying certain materials from Jacobsen's website and incorporating them into one of Katzer/Kamind's software packages without following the terms of the Artistic License. Jacobsen brought an action for copyright infringement and moved for a preliminary injunction.

The District Court held that the open source Artistic License created an "intentionally broad" nonexclusive license which was unlimited in scope and thus did not create liability for copyright infringement. The District Court reasoned:

The plaintiff claimed that by modifying the software the defendant had exceeded the scope of the license and therefore infringed the copyright. Here, however, the JMRI Project license provides that a user may copy the files verbatim or may otherwise modify the material in anyway, including as part of a larger, possibly commercial software distribution. The license explicitly gives the users of the material, any member of the public, "the right to use and distribute the [material] in a more-or-less customary fashion, plus the right to make reasonable accommodations." The scope of the nonexclusive license is, therefore, intentionally broad. The condition that the user insert a prominent notice of attribution does not limit the scope of the license. Rather, Defendants' alleged violation of the conditions of the license may have constituted a breach of the nonexclusive license, but does not create liability for copyright infringement where it would not otherwise exist.

Jacobsen, 2007 WL 2358628 at *7 (internal citations omitted).

On this basis, the District Court denied the motion for a preliminary injunction. We vacate and remand.

I.

Jacobsen manages an open source software group called Java Model Railroad Interface ("JMRI"). Through the collective work of many participants, JMRI created a computer programming application called DecoderPro, which allows model railroad enthusiasts to use their computers to program the decoder chips that control model trains. DecoderPro files are

available for download and use by the public free of charge from an open source incubator website called SourceForge; Jacobsen maintains the JMRI site on SourceForge. The downloadable files contain copyright notices and refer the user to a "COPYING" file, which clearly sets forth the terms of the Artistic License.

Katzer/Kamind offers a competing software product, Decoder Commander, which is also used to program decoder chips. During development of Decoder Commander, one of Katzer/Kamind's predecessors or employees is alleged to have downloaded the decoder definition files from DecoderPro and used portions of these files as part of the Decoder Commander software. The Decoder Commander software files that used DecoderPro definition files did not comply with the terms of the Artistic License. Specifically, the Decoder Commander software did not include (1) the author's names, (2) JMRI copyright notices, (3) references to the COPYING file, (4) an identification of SourceForge or JMRI as the original source of the definition files, and (5) a description of how the files or computer code had been changed from the original source code. The
 1377 Decoder Commander software also changed *1377 various computer file names of Decoder-Pro files without providing a reference to the original JMRI files or information on where to get the Standard Version.¹¹¹

Jacobsen moved for a preliminary injunction, arguing that the violation of the terms of the Artistic License constituted copyright infringement and that, under Ninth Circuit law, irreparable harm could be presumed in a copyright infringement case. The District Court reviewed the Artistic License and determined that "Defendants' alleged violation of the conditions of the license may have constituted a breach of the nonexclusive license, but does not create liability for copyright infringement where it would not otherwise exist." *Id.* at *7. The District Court found that Jacobsen had a cause of action only for breach of contract, rather than an action for copyright infringement based on a breach of the conditions of the Artistic License. Because a breach of contract creates no presumption of irreparable harm, the District Court denied the motion for a preliminary injunction.

Jacobsen appeals the finding that he does not have a cause of action for copyright infringement. Although an appeal concerning copyright law and not patent law is rare in our Circuit, here we indeed possess appellate jurisdiction. In the district court, Jacobsen's operative complaint against Katzer/Kamind included not only his claim for copyright infringement, but also claims seeking a declaratory judgment that a patent issued to Katzer is not infringed by Jacobsen and is invalid. Therefore the complaint arose in part under the patent laws. See 28 U.S.C. § 2201(a); Golan v. Pingel Enter., 310 F.3d 1360, 1367 (Fed.Cir.2002) (explaining that "[i]n the context of a complaint seeking a declaration of noninfringement, the action threatened by the declaratory defendant... would be an action for patent infringement," and "[s]uch an action clearly arises under the patent laws"). Thus the district court's jurisdiction was based, at least in part, on 28 U.S.C. § 1338(a) as it relates to the patent laws, and we have appellate jurisdiction under 28 U.S.C. § 1292(c)(1). See 28 U.S.C. § 1338(a) ("The district courts shall have original jurisdiction of any civil action arising under any Act of Congress relating to patents, plant variety protection, copyrights and trademarks."); *id.* at § 1295(a)(1) (The Federal Circuit shall have exclusive jurisdiction "of an appeal from a final decision of a district court of the United States" if (1) "the jurisdiction of that court was based, in whole or in part, on section 1338 of this title" and (2) the case is not "a case involving a claim arising under any Act of Congress relating to copyrights, exclusive rights in mask works, or trademarks and no other claims under section 1338(a)."); *id.* at § 1292(c)(1) (Federal Circuit shall have jurisdiction over appeals from interlocutory orders of the district courts refusing injunctions "in any case over which the court would have jurisdiction of an appeal under section 1295").

II.

1378 This Court looks to the interpretive law of the regional circuit for issues *1378 not exclusively assigned to the Federal Circuit. Hutchins v. Zoll Med. Corp., 492 F.3d 1377, 1383 (Fed.Cir.2007). Under Ninth Circuit law, an order granting or denying a preliminary injunction will be reversed only if the district court relied on an erroneous legal premise or abused its discretion. Wright v. Rushen, 642 F.2d 1129, 1132 (9th Cir.1981). A district court's order denying a preliminary injunction is reversible for factual error only when the district court rests its conclusions on clearly erroneous findings of fact. Sports Form, Inc. v. United Press Int'l, Inc., 686 F.2d 750, 753 (9th Cir.1982).

In determining whether to issue a preliminary injunction, the Ninth Circuit requires demonstration of (1) a combination of probability of success on the merits and the possibility of irreparable harm; or (2) serious questions going to the merits where the balance of hardships tips sharply in the moving party's favor. Perfect 10, Inc. v. Amazon.com, Inc., 487 F.3d 701, 713-14 (9th Cir.2007); Dep't of Parks & Recreation v. Bazaar Del Mundo, Inc., 448 F.3d 1118, 1123 (9th Cir.2006). In cases involving copyright claims, where a copyright holder has shown likelihood of success on the merits of a copyright infringement claim, the Ninth Circuit has held that irreparable harm is presumed. LGS Architects, Inc. v. Concordia Homes of Nev., 434 F.3d 1150, 1155-56 (9th Cir. 2006). But see MGM Studios, Inc. v. Grokster, Ltd., 518 F.Supp.2d 1197, 1212

(C.D.Cal.2007) (noting that "the longstanding rule that irreparable harm can be presumed after a showing of likelihood of success for purposes of a copyright preliminary injunction motion may itself have to be reevaluated in light of eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 126 S.Ct. 1837, 164 L.Ed.2d 641 (2006)"]. Thus, for a preliminary injunction to issue, Jacobsen must either show (1) a likelihood of success on the merits of his copyright infringement claim from which irreparable harm is presumed; or (2) a fair chance of success on the merits and a clear disparity in the relative hardships that tips sharply in his favor.

A.

Public licenses, often referred to as "open source" licenses, are used by artists, authors, educators, software developers, and scientists who wish to create collaborative projects and to dedicate certain works to the public. Several types of public licenses have been designed to provide creators of copyrighted materials a means to protect and control their copyrights. Creative Commons, one of the amici curiae, provides free copyright licenses to allow parties to dedicate their works to the public or to license certain uses of their works while keeping some rights reserved.

Open source licensing has become a widely used method of creative collaboration that serves to advance the arts and sciences in a manner and at a pace that few could have imagined just a few decades ago. For example, the Massachusetts Institute of Technology ("MIT") uses a Creative Commons public license for an OpenCourseWare project that licenses all 1800 MIT courses. Other public licenses support the GNU/Linux operating system, the Perl programming language, the Apache web server programs, the Firefox web browser, and a collaborative web-based encyclopedia called Wikipedia. Creative Commons notes that, by some estimates, there are close to 100,000,000 works licensed under various Creative Commons licenses. The Wikimedia Foundation, another of the amici curiae, estimates that the Wikipedia website has more than 75,000 active contributors working on some 9,000,000 articles in more than 250 languages.

1379 Open Source software projects invite computer programmers from around the *1379 world to view software code and make changes and improvements to it. Through such collaboration, software programs can often be written and debugged faster and at lower cost than if the copyright holder were required to do all of the work independently. In exchange and in consideration for this collaborative work, the copyright holder permits users to copy, modify and distribute the software code subject to conditions that serve to protect downstream users and to keep the code accessible.^[2] By requiring that users copy and restate the license and attribution information, a copyright holder can ensure that recipients of the redistributed computer code know the identity of the owner as well as the scope of the license granted by the original owner. The Artistic License in this case also requires that changes to the computer code be tracked so that downstream users know what part of the computer code is the original code created by the copyright holder and what part has been newly added or altered by another collaborator.

Traditionally, copyright owners sold their copyrighted material in exchange for money. The lack of money changing hands in open source licensing should not be presumed to mean that there is no economic consideration, however. There are substantial benefits, including economic benefits, to the creation and distribution of copyrighted works under public licenses that range far beyond traditional license royalties. For example, program creators may generate market share for their programs by providing certain components free of charge. Similarly, a programmer or company may increase its national or international reputation by incubating open source projects. Improvement to a product can come rapidly and free of charge from an expert not even known to the copyright holder. The Eleventh Circuit has recognized the economic motives inherent in public licenses, even where profit is not immediate. See Planetary Motion, Inc. v. Techsplosion, Inc., 261 F.3d 1188, 1200 (11th Cir.2001) (Program creator "derived value from the distribution [under a public license] because he was able to improve his Software based on suggestions sent by end-users.... It is logical that as the Software improved, more end-users used his Software, thereby increasing [the programmer's] recognition in his profession and the likelihood that the Software would be improved even further.").

B.

The parties do not dispute that Jacobsen is the holder of a copyright for certain materials distributed through his website.^[3] Katzer/Kamind also admits that portions of the DecoderPro software were copied, modified, and distributed as part of the Decoder Commander software. Accordingly, Jacobsen has made out a prima facie case of copyright infringement. Katzer/Kamind argues that they cannot be liable for copyright infringement because they had a license to use the material.

Thus, the Court must evaluate whether the use by Katzer/Kamind was outside the scope of the license. See LGS Architects, 434 F.3d at 1156. The copyrighted materials in this case are downloadable by any user and are labeled to include a copyright notification and a COPYING file that includes the text of the Artistic License. *1380 The Artistic License grants users the right to copy, modify, and distribute the software:

provided that [the user] insert a prominent notice in each changed file stating how and when [the user] changed that file, and provided that [the user] do at least ONE of the following:

a) place [the user's] modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as ftp.uu.net, or by allowing the Copyright Holder to include [the user's] modifications in the Standard Version of the Package.

b) use the modified Package only within [the user's] corporation or organization.

c) rename any non-standard executables so the names do not conflict with the standard executables, which must also be provided, and provide a separate manual page for each nonstandard executable that clearly documents how it differs from the Standard Version, or

d) make other distribution arrangements with the Copyright Holder.

The heart of the argument on appeal concerns whether the terms of the Artistic License are conditions of, or merely covenants to, the copyright license. Generally, a "copyright owner who grants a nonexclusive license to use his copyrighted material waives his right to sue the licensee for copyright infringement" and can sue only for breach of contract. Sun Microsystems, Inc., v. Microsoft Corp., 188 F.3d 1115, 1121 (9th Cir.1999); Graham v. James, 144 F.3d 229, 236 (2d Cir.1998). If, however, a license is limited in scope and the licensee acts outside the scope, the licensor can bring an action for copyright infringement. See S.O.S., Inc. v. Payday, Inc., 886 F.2d 1081, 1087 (9th Cir.1989); Nimmer on Copyright, § 1015[A] (1999).

Thus, if the terms of the Artistic License allegedly violated are both covenants and conditions, they may serve to limit the scope of the license and are governed by copyright law. If they are merely covenants, by contrast, they are governed by contract law. See Graham, 144 F.3d at 236-37 (whether breach of license is actionable as copyright infringement or breach of contract turns on whether provision breached is condition of the license, or mere covenant); Sun Microsystems, 188 F.3d at 1121 (following Graham; independent covenant does not limit scope of copyright license). The District Court did not expressly state whether the limitations in the Artistic License are independent covenants or, rather, conditions to the scope; its analysis, however, clearly treated the license limitations as contractual covenants rather than conditions of the copyright license.⁴¹

Jacobsen argues that the terms of the Artistic License define the scope of the license and that any use outside of these restrictions is copyright infringement. Katzer/Kamind argues that these terms do not limit the scope of the license and are merely covenants providing contractual terms for the use of the materials, and that his violation of them is neither compensable in damages nor subject to injunctive relief. Katzer/Kamind's argument is premised upon the assumption that Jacobsen's copyright gave him no economic rights because he made his computer code available to the public at no charge.

1381 From *1381 this assumption, Katzer/Kamind argues that copyright law does not recognize a cause of action for non-economic rights, relying on Gilliam v. ABC, 538 F.2d 14, 20-21 (2d Cir.1976) ("American copyright law, as presently written, does not recognize moral rights or provide a cause of action for their violation, since the law seeks to vindicate the economic, rather than the personal rights of authors."). The District Court based its opinion on the breadth of the Artistic License terms, to which we now turn.

III.

The Artistic License states on its face that the document creates conditions: "The intent of this document is to state the conditions under which a Package may be copied." (Emphasis added.) The Artistic License also uses the traditional language of conditions by noting that the rights to copy, modify, and distribute are granted "provided that" the conditions are met. Under California contract law, "provided that" typically denotes a condition. See, e.g., Diepenbrock v. Luiz, 159 Cal. 716, 115 P. 743 (1911) (interpreting a real property lease reciting that when the property was sold, "this lease shall cease and be at an end, provided that the party of the first part shall then pay [certain compensation] to the party of the second part";

considering the appellant's "interesting and ingenious" argument for interpreting this language as creating a mere covenant rather than a condition; and holding that this argument "cannot change the fact that, attributing the usual and ordinary signification to the language of the parties, a *condition* is found in the provision in question") (emphases added).

The conditions set forth in the Artistic License are vital to enable the copyright holder to retain the ability to benefit from the work of downstream users. By requiring that users who modify or distribute the copyrighted material retain the reference to the original source files, downstream users are directed to Jacobsen's website. Thus, downstream users know about the collaborative effort to improve and expand the SourceForge project once they learn of the "upstream" project from a "downstream" distribution, and they may join in that effort.

The District Court interpreted the Artistic License to permit a user to "modify the material in any way" and did not find that any of the "provided that" limitations in the Artistic License served to limit this grant. The District Court's interpretation of the conditions of the Artistic License does not credit the explicit restrictions in the license that govern a downloader's right to modify and distribute the copyrighted work. The copyright holder here expressly stated the terms upon which the right to modify and distribute the material depended and invited direct contact if a downloader wished to negotiate other terms. These restrictions were both clear and necessary to accomplish the objectives of the open source licensing collaboration, including economic benefit. Moreover, the District Court did not address the other restrictions of the license, such as the requirement that all modification from the original be clearly shown with a new name and a separate page for any such modification that shows how it differs from the original.

Copyright holders who engage in open source licensing have the right to control the modification and distribution of copyrighted material. As the Second Circuit explained in Gilliam v. ABC, 538 F.2d 14, 21 (2d Cir.1976), the "unauthorized editing of the underlying work, if proven, would constitute an infringement of the copyright in that work similar to any other use of a work that exceeded the license granted by the proprietor of the copyright." Copyright licenses are designed to support the right to exclude; money damages *1382 alone do not support or enforce that right. The choice to exact consideration in the form of compliance with the open source requirements of disclosure and explanation of changes, rather than as a dollar-denominated fee, is entitled to no less legal recognition. Indeed, because a calculation of damages is inherently speculative, these types of license restrictions might well be rendered meaningless absent the ability to enforce through injunctive relief.

In this case, a user who downloads the JMRI copyrighted materials is authorized to make modifications and to distribute the materials "provided that" the user follows the restrictive terms of the Artistic License. A copyright holder can grant the right to make certain modifications, yet retain his right to prevent other modifications. Indeed, such a goal is exactly the purpose of adding conditions to a license grant.^[5] The Artistic License, like many other common copyright licenses, requires that any copies that are distributed contain the copyright notices and the COPYING file. See, e.g., 3-10 Nimmer on Copyright § 10.15 ("An express (or possibly an implied) condition that a licensee must affix a proper copyright notice to all copies of the work that he causes to be published will render a publication devoid of such notice without authority from the licensor and therefore, an infringing act.").

It is outside the scope of the Artistic License to modify and distribute the copyrighted materials without copyright notices and a tracking of modifications from the original computer files. If a down loader does not assent to these conditions stated in the COPYING file, he is instructed to "make other arrangements with the Copyright Holder." Katzer/Kamind did not make any such "other arrangements." The clear language of the Artistic License creates conditions to protect the economic rights at issue in the granting of a public license. These conditions govern the rights to modify and distribute the computer programs and files included in the downloadable software package. The attribution and modification transparency requirements directly serve to drive traffic to the open source incubation page and to inform downstream users of the project, which is a significant economic goal of the copyright holder that the law will enforce. Through this controlled spread of information, the copyright holder gains creative collaborators to the open source project; by requiring that changes made by downstream users be visible to the copyright holder and others, the copyright holder learns about the uses for his software and gains others' knowledge that can be used to advance future software releases.

IV.

For the aforementioned reasons, we vacate and remand. While Katzer/Kamind appears to have conceded that they did not comply with the aforescribed conditions of the Artistic License, the District Court did not make factual findings on the likelihood of success on the merits in proving that Katzer/Kamind violated the conditions of the Artistic License. Having

1383 determined *1383 that the terms of the Artistic License are enforceable copyright conditions, we remand to enable the District Court to determine whether Jacobsen has demonstrated (1) a likelihood of success on the merits and either a presumption of irreparable harm or a demonstration of irreparable harm; or (2) a fair chance of success on the merits and a clear disparity in the relative hardships and tipping in his favor.^[6]

The judgment of the District Court is vacated and the case is remanded for further proceedings consistent with this opinion.

VACATED and REMANDED

[*] The Honorable Faith S. Hochberg, District Judge, United States District Court for the District of New Jersey, sitting by designation.

[1] Katzer/Kamind represents that all potentially infringing activities using any of the disputed material have been voluntarily ceased. The district court held that it could not find as a matter of law that Katzer/Kamind's voluntary termination of allegedly wrongful activity renders the motion for preliminary injunction moot because it could not find as a matter of law that it is absolutely clear that the alleged behavior could not recur. Jacobsen, 2007 WL 2358628 at *5. We agree that this matter is not moot. See also Adarand Constructors, Inc. v. Slater, 528 U.S. 216, 222, 120 S.Ct. 722, 145 L.Ed.2d 650 (2000) ("Voluntary cessation of challenged conduct moots a case ... only if it is absolutely clear that the allegedly wrongful behavior could not reasonably be expected to recur." (emphasis in original)).

[2] For example, the GNU General Public License, which is used for the Linux operating system, prohibits downstream users from charging for a license to the software. See Wallace v. IBM Corp., 467 F.3d 1104, 1105-06 (7th Cir.2006).

[3] Jacobsen's copyright registration creates the presumption of a valid copyright. See, e.g., Triad Sys. Corp. v. SE Exp. Co., 64 F.3d 1330, 1335 (9th Cir.1995).

[4] The District Court held that "Defendants' alleged violation of the conditions of the license may have constituted a breach of the nonexclusive license ... [and] the Court finds that Plaintiff's claim properly sounds in contract." Jacobsen, 2007 WL 2358628 at *7. Thus, despite the use of the word "conditions," the District Court treated the terms of the Artistic License as contractual covenants which did not limit the scope of the license.

[5] Open source licensing restrictions are easily distinguished from mere "author attribution" cases. Copyright law does not automatically protect the rights of authors to credit for copyrighted materials. See Gilliam, 538 F.2d at 20-21 ("American copyright law, as presently written, does not recognize moral rights or provide a cause of action for their violation, since the law seeks to vindicate the economic, rather than the personal rights of authors."); Graham, 144 F.3d at 236. Whether such rights are protected by a specific license grant depends on the language of the license. See County of Ventura v. Blackburn, 362 F.2d 515, 520 (9th Cir.1966) (copyright infringement found where the county removed copyright notices from maps licensed to it where the license granted the county "the right to obtain duplicate tracings" from photographic negatives that contained copyright notices).

[6] At oral argument, the parties admitted that there might be no way to calculate any monetary damages under a contract theory.

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Chapter 5

OpenChain Specification



OpenChain Specification

Version 1.1



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1) Introduction

The OpenChain Initiative began in 2013 when a group of software supply chain open source practitioners observed two emerging patterns: 1) significant process similarities existed among organizations with mature open source compliance programs; and 2) there still remained a large number of organizations exchanging software with less developed programs. The latter observation resulted in a lack of trust in the consistency and quality of the compliance artifacts accompanying the software being exchanged. As a consequence, at each tier of the supply chain, downstream organizations were frequently redoing the compliance work already performed by other upstream organizations.

A study group was formed to consider whether a standard program specification could be created that would: i) facilitate greater quality and consistency of open source compliance information being shared across the industry; and ii) decrease the high transaction costs associated with open source resulting from compliance rework. The study group evolved into a work group, and in April 2016, formally organized as a Linux Foundation collaborative project.

The Vision and Mission of the OpenChain Initiative are as follows:

- **Vision:** A software supply chain where free/open source software (FOSS) is delivered with trustworthy and consistent compliance information.
- **Mission:** Establish requirements to achieve effective management of free/open source software (FOSS) for software supply chain participants, such that the requirements and associated collateral are developed collaboratively and openly by representatives from the software supply chain, open source community, and academia.

In accordance with the Vision and Mission, this specification defines a set of requirements that if met, would significantly increase the probability that an open source compliance program had achieved a sufficient level of quality, consistency and completeness; although a program that satisfies all the specification requirements does not guarantee full compliance. The requirements represent a base level (minimum) set of requirements a program must satisfy to be considered OpenChain Conforming. The specification focuses on the “what” and “why” qualities of a compliance program as opposed to the “how” and “when” considerations. This ensures a practical level of flexibility that enables different organizations to tailor their policies and processes to best fit their objectives.

Section 2 introduces definitions of key terms used throughout the specification. Section 3 presents the specification requirements where each one has a list of one or more Verification Artifacts. They represent the evidence that must exist in order for a given requirement to be considered satisfied. If all the requirements have been met for a given program, it would be considered OpenChain Conforming in accordance with version 1.1 of the specification. Verification Artifacts are not intended to be public, but could be provided under NDA or upon private request from the OpenChain organization to validate conformance.



2) Definitions

FOSS (Free and Open Source Software) - software subject to one or more licenses that meet the Open Source Definition published by the Open Source Initiative (OpenSource.org) or the Free Software Definition (published by the Free Software Foundation) or similar license.

FOSS Liaison - a designated person who is assigned to receive external FOSS inquiries.

Identified Licenses - a set of FOSS licenses identified as a result of following an appropriate method of identifying such licenses.

OpenChain Conforming - a program that satisfies all the requirements of this specification.

Software Staff - any employee or contractor that defines, contributes to or has responsibility for preparing Supplied Software. Depending on the organization, that may include (but is not limited to) software developers, release engineers, quality engineers, product marketing and product management.

SPDX or Software Package Data Exchange - the format standard created by the SPDX Working Group for exchanging license and copyright information for a given software package. A description of the SPDX specification can be found at www.spdx.org.

Supplied Software - software that an organization delivers to third parties (e.g., other organizations or individuals).

Verification Artifacts - evidence that must exist in order for a given requirement to be considered satisfied.

3) Requirements

G1: Know Your FOSS Responsibilities

- 1.1 A written FOSS policy exists that governs FOSS license compliance of the Supplied Software distribution.** The policy must be internally communicated.

Verification Artifact(s):

- ☐ 1.1.1 A documented FOSS policy exists.
- ☐ 1.1.2 A documented procedure exists that makes all Software Staff aware of the existence of the FOSS policy (e.g., via training, internal wiki, or other practical communication method).

Rationale:

Ensure steps were taken to create, record and make Software Staff aware of the existence of a FOSS policy. Although no requirements are provided here on what should be included in the policy, other sections may impose requirements on the policy.

- 1.2 Mandatory FOSS training for all Software Staff exists such that:**

- The training, at a minimum, covers the following topics:
 - The FOSS policy and where to find a copy;
 - Basics of Intellectual Property law pertaining to FOSS and FOSS licenses;
 - FOSS licensing concepts (including the concepts of permissive and copyleft licenses);
 - FOSS project licensing models;
 - Software Staff roles and responsibilities pertaining to FOSS compliance specifically and the FOSS policy in general; and
 - Process for identifying, recording and/or tracking of FOSS components contained in Supplied Software.
- Software Staff must have completed FOSS training within the last 24 months (to be considered current). A test may be used to allow Software Staff to satisfy the training requirement.

Verification Artifact(s):

- ☐ 1.2.1 FOSS training materials covering the above topics exists (e.g., slide decks, online course, or other training materials).
- ☐ 1.2.2 Method of tracking the completion of the training for all Software Staff.
- ☐ 1.2.3 At least 85% of the Software Staff are current, as per the definition in above section.

Rationale:

Ensure the Software Staff have recently attended FOSS training and that a core set of relevant FOSS topics are covered. The intent is to ensure a core base level set of topics are covered but a typical training program would likely be more comprehensive than what is required here.

- 1.3 A process exists for reviewing the Identified Licenses to determine the obligations, restrictions and rights granted by each license.**

**Verification Artifact(s):**

- ☐ 1.3.1 A documented procedure exists to review and document the obligations, restrictions and rights granted by each Identified License governing the Supplied Software.

Rationale:

To ensure a process exists for reviewing and identifying the license obligations for each Identified License for the various use cases.

G2: Assign Responsibility for Achieving Compliance

2.1 Identify FOSS Liaison Function ("FOSS Liaison").

- Assign individual(s) responsible for receiving external FOSS inquiries;
- FOSS Liaison must make commercially reasonable efforts to respond to FOSS compliance inquiries as appropriate; and
- Publicly identify a means by which one can contact the FOSS Liaison.

Verification Artifact(s):

- ☐ 2.1.1 FOSS Liaison function is publicly identified (e.g., via a published contact email address, or the Linux Foundation's Open Compliance Directory).
- ☐ 2.1.2 An internal documented procedure exists that assigns responsibility for receiving FOSS compliance inquiries.

Rationale:

Ensure there is a reasonable way for third parties to contact the organization with regard to FOSS compliance inquiries and that this responsibility has been effectively assigned.

2.2 Identify Internal FOSS Compliance Role(s).

- Assign individual(s) responsible for managing internal FOSS compliance. The FOSS Compliance role and the FOSS Liaison may be the same individual.
- FOSS compliance management activity is sufficiently resourced:
 - Time to perform the role has been allocated; and
 - Commercially reasonable budget has been allocated.
- Assign responsibilities to develop and maintain FOSS compliance policy and processes;
- Legal expertise pertaining to FOSS compliance is accessible to the FOSS Compliance role (e.g., could be internal or external); and
- A process exists for the resolution of FOSS compliance issues.

Verification Artifact(s):

- ☐ 2.2.1 Name of persons, group or function in FOSS Compliance role(s) internally identified.
- ☐ 2.2.2 Identify source of legal expertise available to FOSS Compliance role(s) which could be internal or external.
- ☐ 2.2.3 A documented procedure exists that assigns internal responsibilities for FOSS compliance.
- ☐ 2.2.4 A documented procedure exists for handling the review and remediation of non-compliant cases.

Rationale:

Ensure certain FOSS responsibilities have been effectively assigned.



G3: Review and Approve FOSS Content

- 3.1 A process exists for creating and managing a FOSS component bill of materials which includes each component (and its Identified Licenses) in a Supplied Software release.**

Verification Artifact(s):

- ☐ 3.1.1 A documented procedure exists for identifying, tracking and archiving information about the collection of FOSS components from which a Supplied Software release is comprised.
- ☐ 3.1.2 FOSS component records exist for each Supplied Software release which demonstrates the documented procedure was properly followed.

Rationale:

To ensure a process exists for creating and managing a FOSS component bill of materials used to construct the Supplied Software. A bill of materials is needed to support the systematic review of each component's license terms to understand the obligations and restrictions as it applies to the distribution of the Supplied Software.

- 3.2 The FOSS management program must be capable of handling common FOSS license use cases encountered by Software Staff for Supplied Software, which may include the following use cases (note that the list is neither exhaustive, nor may all of the use cases apply):**

- distributed in binary form;
- distributed in source form;
- integrated with other FOSS such that it may trigger copyleft obligations;
- contains modified FOSS;
- contains FOSS or other software under an incompatible license interacting with other components within the Supplied Software; and/or
- contains FOSS with attribution requirements.

Verification Artifact(s):

- ☐ 3.2.1 A procedure has been implemented that handles the common FOSS license use cases for the FOSS components of each Supplied Software release.

Rationale:

To ensure the program is sufficiently robust to handle an organization's common FOSS license use cases. That a procedure exists to support this activity and that the procedure is followed.

G4: Deliver FOSS Content Documentation and Artifacts

- 4.1** Prepare the set of artifacts which represent the output of the FOSS management program for each Supplied Software release. This set is referred to as the Compliance Artifacts which may include (but are not limited to) one or more of the following: source code, attribution notices, copyright notices, copy of licenses, modification notifications, written offers, SPDX documents and so forth.

Verification Artifact(s):

- ☐ 4.1.1 A documented procedure exists that ensures the Compliance Artifacts are prepared and distributed with Supplied Software release as required by the Identified Licenses.
- ☐ 4.1.2 Copies of the Compliance Artifacts of the Supplied Software release are archived and easily retrievable, and the archive is planned to exist for at least as long as the Supplied Software is offered or as required by the Identified Licenses (whichever is longer).

Rationale:

Ensure the complete collection of Compliance Artifacts accompany the Supplied Software as required by the Identified Licenses that govern the Supplied Software along with other reports created as part of the FOSS review process.



G5: Understand FOSS Community Engagement

- 5.1 A written policy exists that governs contributions to FOSS projects by the organization. The policy must be internally communicated.**

Verification Artifact(s):

- ☐ 5.1.1 A documented FOSS contribution policy exists;
- ☐ 5.1.2 A documented procedure exists that makes all Software Staff aware of the existence of the FOSS contribution policy (e.g., via training, internal wiki, or other practical communication method).

Rationale:

Ensure an organization has given reasonable consideration to developing a policy with respect to publicly contributing to FOSS. The FOSS contribution policy can be made a part of the overall FOSS policy of an organization or be its own separate policy. In the situation where contributions are not permitted at all, a policy should exist making that position clear.

- 5.2 If an organization permits contributions to FOSS projects then a process must exist that implements the FOSS contribution policy outlined in Section 5.1.**

Verification Artifact(s):

- ☐ 5.2.1 Provided the FOSS contribution policy permits contributions, a documented procedure exists that governs FOSS contributions.

Rationale:

Ensure an organization has a documented process for how the organization publicly contributes FOSS. A policy may exist such that contributions are not permitted at all. In that situation it is understood that no procedure may exist and this requirement would nevertheless be met.



G6: Certify Adherence to OpenChain Requirements

- 6.1** In order for an organization to be OpenChain certified, it must affirm that it has a FOSS management program that meets the criteria described in this OpenChain Specification version 1.1.

Verification Artifact(s):

- ☐ 6.1.1 The organization affirms that a FOSS management program exists that meets all the requirements of this OpenChain Specification version 1.1.

Rationale:

To ensure that if an organization declares that it has a program that is OpenChain Conforming, that such program has met all the requirements of this specification. The mere meeting of a subset of these requirements would not be considered sufficient to warrant a program be OpenChain certified.

- 6.2** Conformance with this version of the specification will last 18 months from the date conformance validation was achieved. Conformance validation requirements can be found on the OpenChain project's website.

Verification Artifact(s):

- ☐ 6.2.1 The organization affirms that a FOSS management program exists that meets all the requirements of this OpenChain Specification version 1.1 within the past 18 months of achieving conformance validation.

Rationale:

It is important for the organization to remain current with the specification if they want to assert program conformance overtime. This requirement ensures that the program's supporting processes and controls do not erode if they want to continue to assert conformance with the specification overtime.



Appendix I: Language Translations

To facilitate global adoption we welcome efforts to translate the specification into multiple languages. Because OpenChain functions as an open source project translations are driven by those willing to contribute their time and expertise to perform translations under the terms of the CC-BY 4.0 license and the project's translation policy. The details of the policy and available translations can be found on the OpenChain project [specification webpage](#).

Chapter 6

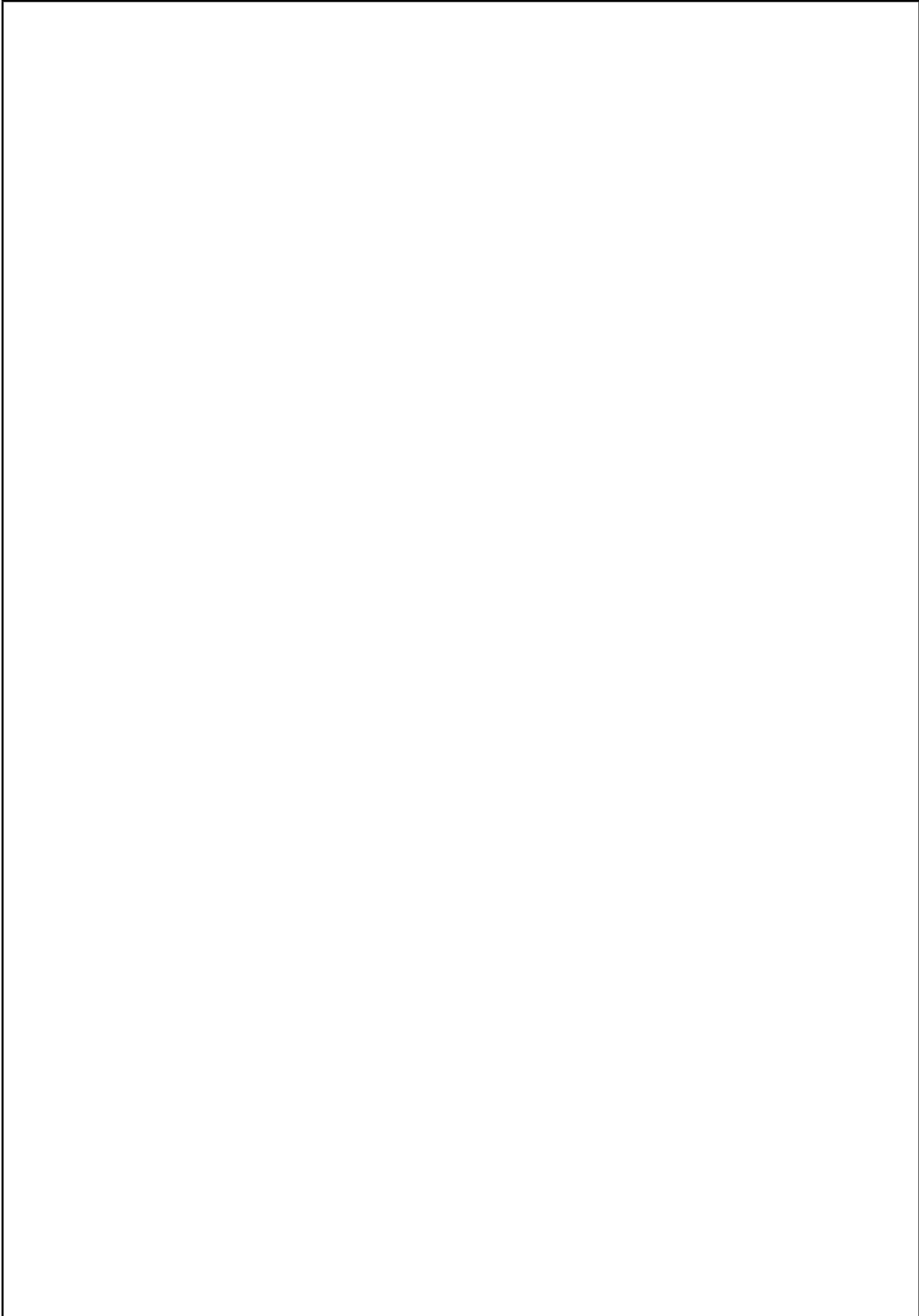
Openchain Documentation

Openchain Documentation

Release 0.7.0

Flavien Charlon

Sep 05, 2017



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Openchain Documentation, Release 0.7.0

Openchain is an open source distributed ledger technology. It is suited for organizations wishing to issue and manage digital assets in a robust, secure and scalable way.

Openchain Documentation, Release 0.7.0

CHAPTER 1

Overview

Overview of Openchain

What is Openchain?

Openchain is an open source distributed ledger technology. It is suited for organizations wishing to issue and manage digital assets in a robust, secure and scalable way.

Features of Openchain include:

1. Instant confirmation of transactions.
2. No mining fees.
3. Extremely high scalability.
4. Secured through digital signatures.
5. *Immutability*: Commit an anchor in the Bitcoin Blockchain to benefit from the irreversibility of its Proof of Work.
6. *Assign aliases* to users instead of using base-58 addresses.
7. Multiple levels of control:
 - Fully open ledger that can be joined anonymously.
 - *Closed-loop ledger* where participants must be approved by the administrator.
 - A mix of the above where approved users enjoy more rights than anonymous users.
8. *Hierarchical account system* allowing to set permissions at any level.
9. Transparency and auditability of transactions.
10. *Handle loss or theft* of private keys without any loss to the end users.
11. Ability to have multiple Openchain instances *replicating from each other*.

Openchain Documentation, Release 0.7.0

Getting started

To familiarize yourself with Openchain, you can:

- *Try the wallet* against the test endpoint
- *Deploy your own Openchain server*

Frequently Asked Questions

Is Openchain a block chain?

Openchain falls under the umbrella of Blockchain technology. However, if we take the term “block chain” literally, Openchain is not a “block chain”, but a close cousin. A block chain is a data structure that orders blocks of transactions and links them cryptographically through hashing.

Openchain doesn’t use the concept of blocks. Transactions are directly chained with one another, and they are no longer grouped in blocks. Having to group transactions in blocks introduces a delay. Even if some systems manage to reduce the block time to just a few seconds, a few seconds is still a long time for latency-sensitive applications, such as trading. In Openchain, transactions are linked to the chain as soon as they are submitted to the network. As a result, Openchain is able to offer real-time confirmations.

This means that a more appropriate term for Openchain is a “transaction chain” rather than a “block chain”.

Is Openchain a sidechain?

It is possible to use a pegging module that will act as a bridge between a Blockchain (such as Bitcoin) and an Openchain instance. When Bitcoins are sent to a specific address, a proxy for those coins will be created on the Openchain instance. Later on, these proxy tokens can be redeemed to unlock the Bitcoins on the main chain. This setup creates a 2-way peg between Bitcoin and the Openchain instance. In that scenario, the Openchain instance is behaving as a sidechain.

The pegging module is optional, and an instance doesn’t have to be setup as a sidechain if that is not required.

Does Openchain support multi-signature?

Multi-signature is supported. Permissions are expressed using a list of public keys, and a number of require signatures. If you provide 3 public keys, and require 2 signatures, you have a 2-of-3 multi-signature account. Read about *dynamic permissions* to learn more about it.

CHAPTER 2

Getting Started

Getting started with the wallet

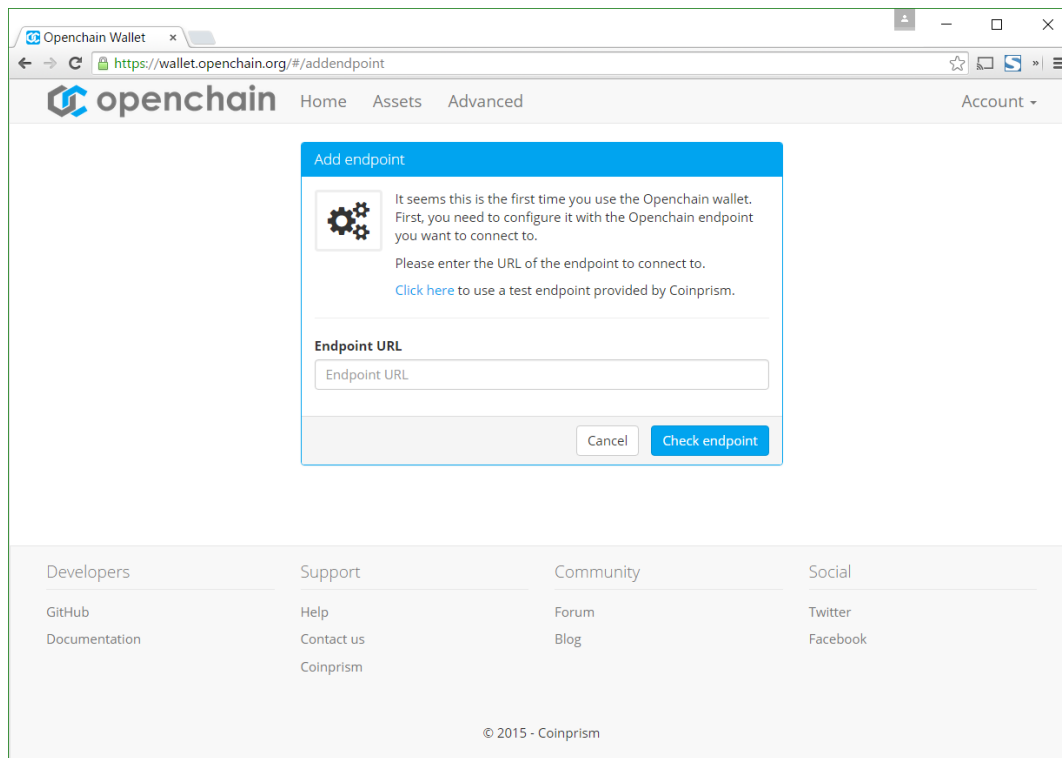
Openchain Server exposes a *public HTTP API*, which can be called by any program capable of making HTTP calls.

To wrap all those operations in a user-friendly user interface, we also provide a client: the Openchain Wallet.

The Openchain Wallet is an open source web based interface, available at wallet.openchain.org.

Connecting to a server

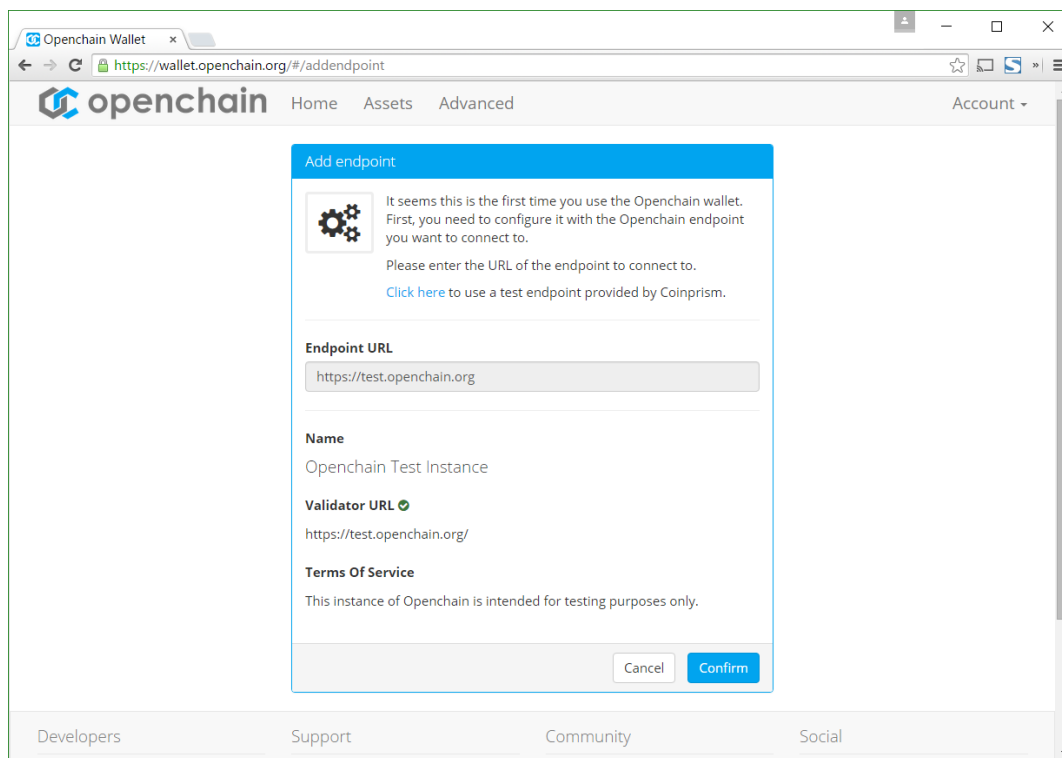
The wallet is a client side application running in the browser, and capable of connecting to any Openchain endpoint. It can connect to multiple endpoints at the same time, and pull information and submit transactions to multiple instances of Openchain, however the first time you use it, you need to connect to at least one endpoint.

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The screenshot shows a web browser window with the address bar displaying `https://wallet.openchain.org/#/addendpoint`. The page header includes the Openchain logo and navigation links: Home, Assets, Advanced, and Account. A modal dialog box titled "Add endpoint" is centered on the screen. It contains a gear icon and the following text: "It seems this is the first time you use the Openchain wallet. First, you need to configure it with the Openchain endpoint you want to connect to. Please enter the URL of the endpoint to connect to. [Click here](#) to use a test endpoint provided by Coinprism." Below this text is a text input field labeled "Endpoint URL" with the placeholder text "Endpoint URL". At the bottom of the dialog are two buttons: "Cancel" and "Check endpoint". The footer of the page contains four columns of links: Developers (GitHub, Documentation), Support (Help, Contact us, Coinprism), Community (Forum, Blog), and Social (Twitter, Facebook). A copyright notice "© 2015 - Coinprism" is centered at the bottom.

The first page invites you to connect to an endpoint. Click the link to use the test endpoint provided by Coinprism, then click “Check endpoint”. The wallet will then try to connect to the Openchain instance and retrieve the instance information.

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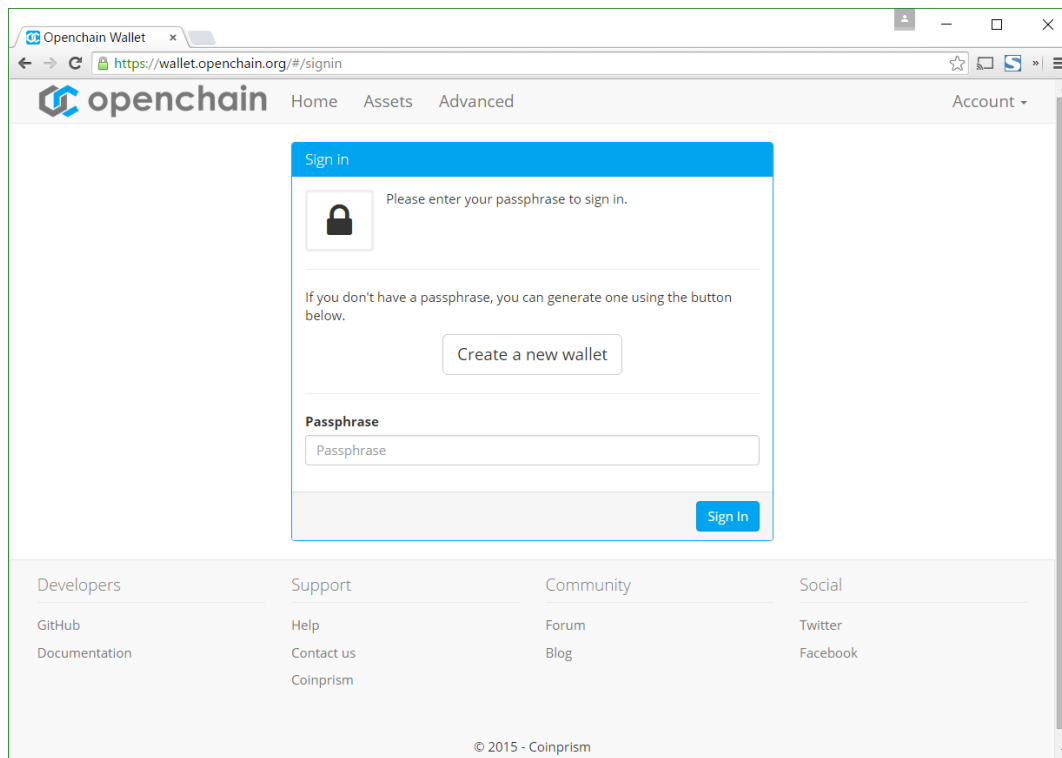


Confirm to connect to this endpoint.

Note: The Openchain wallet will memorize the endpoint you are connecting to, so you will only have to perform this step once.

Logging in

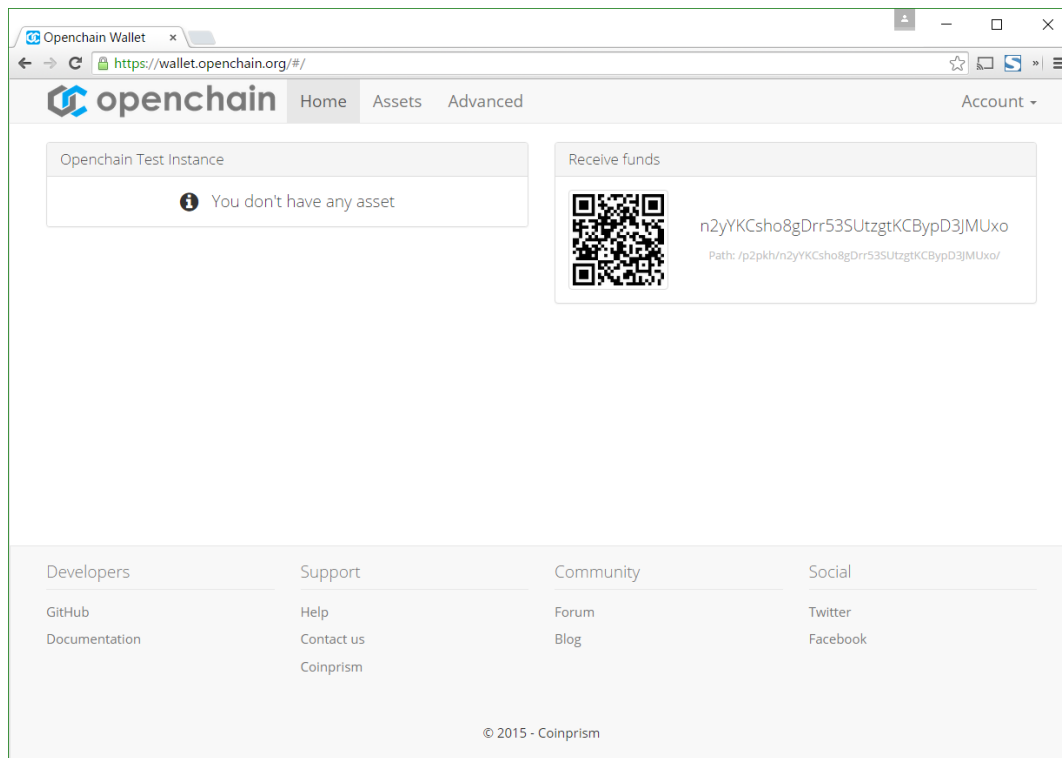
The wallet will now ask you to provide a mnemonic seed used to derive your private key and address.

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Click “Create a new wallet” if you want to generate a new mnemonic, and reuse one you have already generated. Click “Sign in” to confirm.

After the key has been derived from your seed, you should see your home screen:

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You are now able to receive payments on the Openchain instance by giving your account path to the payer (`/p2pkh/n2yYKCsho8gDrr53SutztgKCBypD3JMUxo/` in the example above).

Issue an asset

The test endpoint provided by Coinprism has third party asset issuance enabled, so we can now issue an asset.

To do this, click the “Assets” tab.


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Openchain Wallet x

← → ↻ <https://wallet.openchain.org/#/manageassets> ☆ 📄 🔍 ☰

openchain Home Assets Advanced Account ▾

Manage Asset

 Select the endpoint and asset path for the asset you want to edit.

Endpoint

Openchain Test Instance ▾

Asset Path

/asset/p2pkh/mfjHwBvZ74299rywVFisdXDpjH74kD4Lu5/ Select a slot... ▾

Confirm

Developers	Support	Community	Social
GitHub	Help	Forum	Twitter
Documentation	Contact us	Blog	Facebook
	Coinprism		

© 2015 - Coinprism

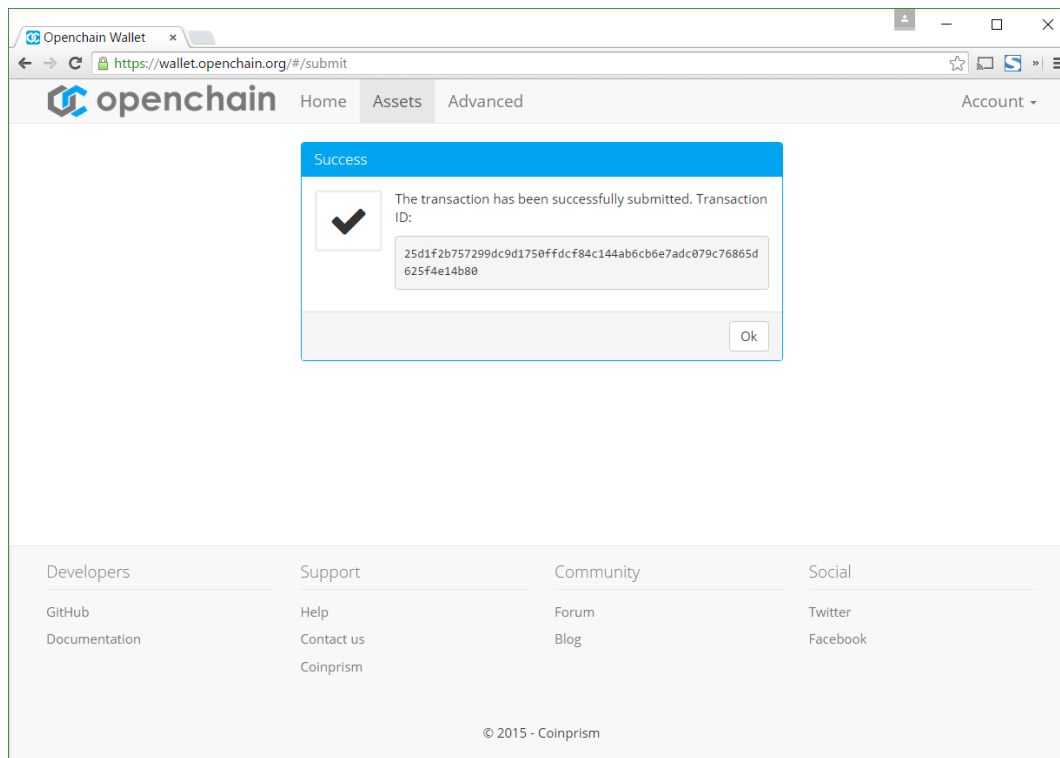
Select the endpoint and the first slot, and click “Confirm”.

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The screenshot shows the 'Manage Asset' page in the Openchain Wallet. The browser address bar shows 'https://wallet.openchain.org/#/manageassets'. The page has a navigation bar with 'Home', 'Assets', and 'Advanced' tabs, and an 'Account' dropdown. The main content area is titled 'Manage Asset' and contains a form. The form has a section for selecting an endpoint and asset path, followed by an 'Asset' section showing '(Unnamed asset)' and its path: 'https://test.openchain.org/asset/p2pkh/mfjHwBvZ74299rywVFisdXDpjH...'. Below this are buttons for 'Edit Asset Definition' and 'Issue Asset'. The 'Issue Asset' section prompts the user to 'Type the number of units of the asset to issue.' and features a 'Quantity Issued' input field with '10000' entered. An 'Issue' button is at the bottom right of the form. The footer contains links for 'Developers', 'Support', 'Community', and 'Social'.

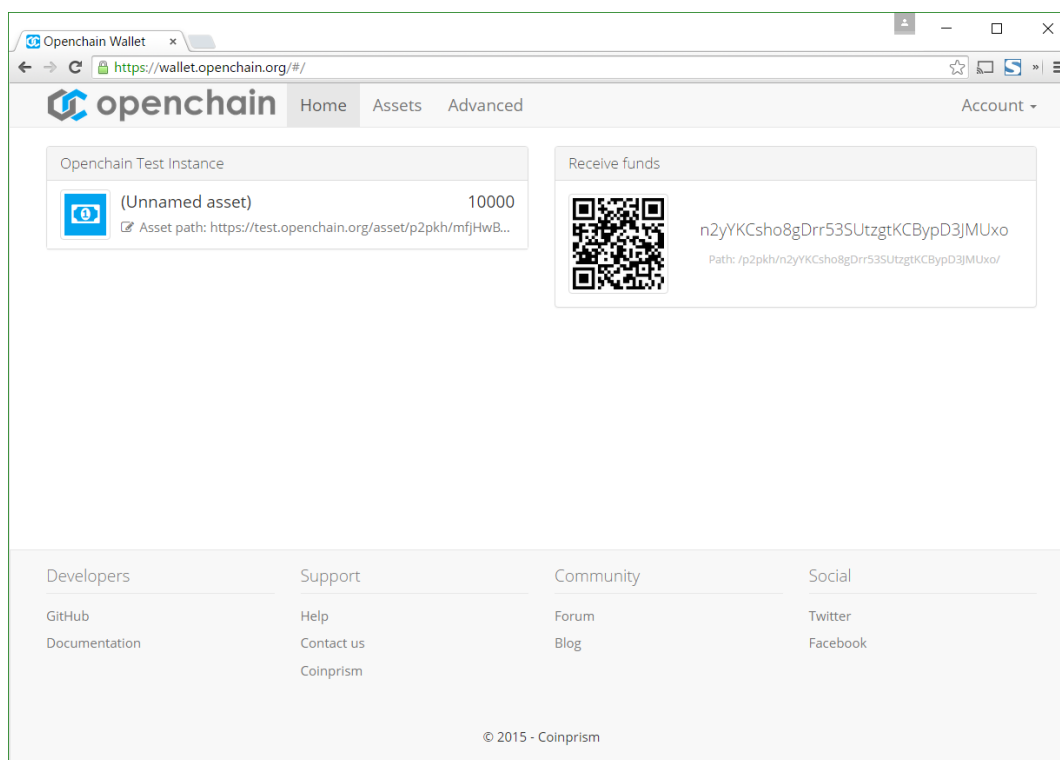
Click “Issue Asset” and type an amount to issue (10000 for example). Press “Issue”.

You should then see a confirmation of the transaction.

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Your account should have been updated with the newly issued asset.

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Tip: You can use the “Edit Asset Definition” box in the asset issuance page to define *metadata* about your asset, such as a name and icon.

Send a payment

Now that we have funds, we can send them.

Click the newly issued asset to be taken to the “Send” page.

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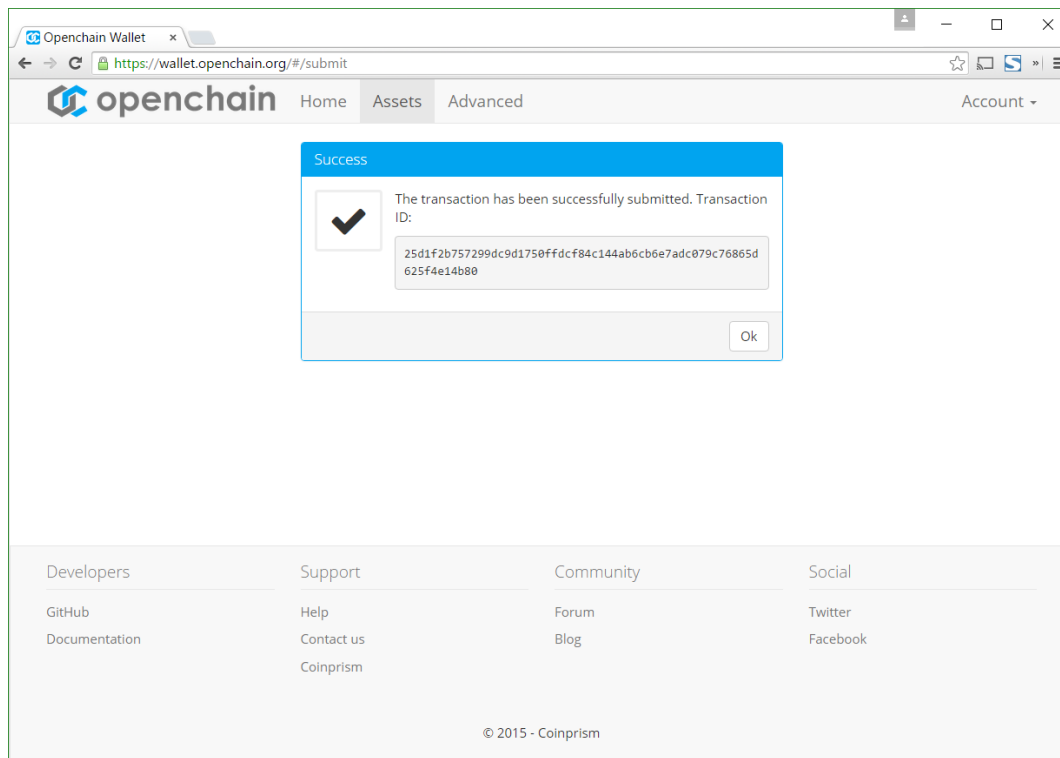
The screenshot displays the 'Send Funds' modal in the Openchain Wallet interface. The modal is titled 'Send Funds' and contains the following fields and information:

- Ledger:** Openchain Test Instance
https://test.openchain.org/
- Sending Asset:** (Unnamed asset) 10000
Asset path: https://test.openchain.org/asset/p2pkh/mfjH...
- From:** /p2pkh/n2yYKCsho8gDrr53SutzgtKCBypD3JMUxo/
- To:** Destination
- Amount:** Amount

At the bottom right of the modal are 'Cancel' and 'Send' buttons. The background shows the Openchain website with navigation links (Home, Assets, Advanced) and a footer with links for Developers, Support, Community, and Social.

Type a valid destination, such as `/p2pkh/mfiCwNxuFYMt5ytCacgzDAineD2GNCnYo/`, and a valid amount. Press “Send” to confirm. If the transaction went through successfully, you should see the transaction confirmation screen.

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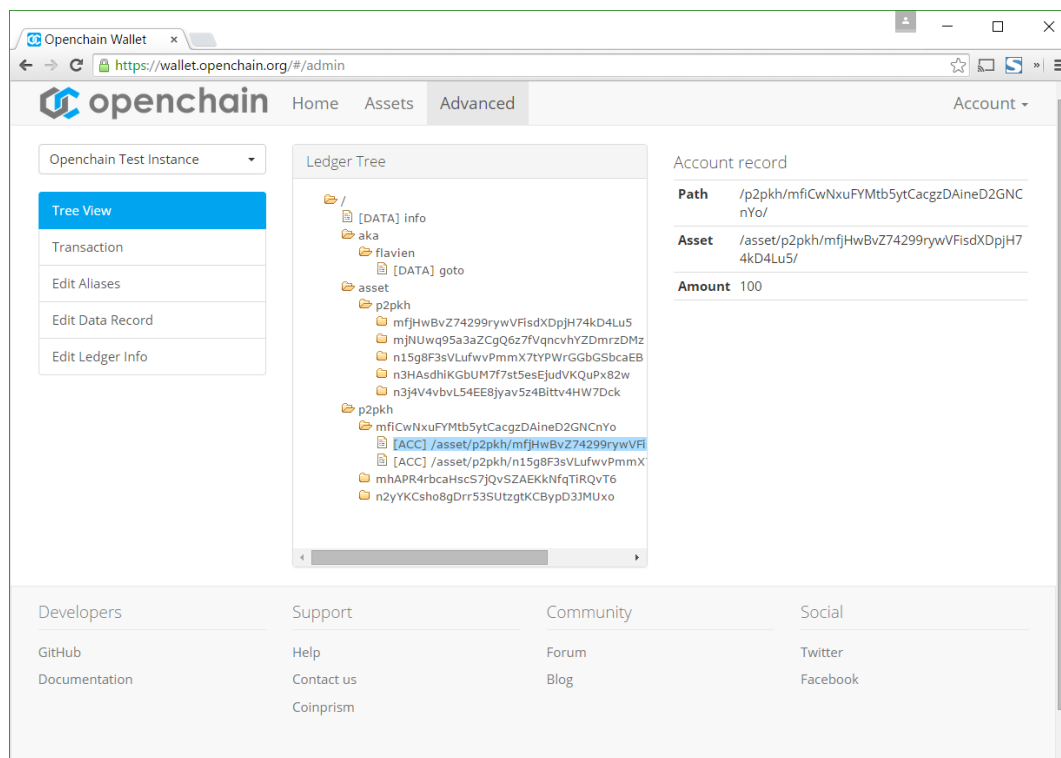
Admin tools

The wallet also has admin tools built-in.

Ledger tree view

The ledger tree view displays a visual representation of the *account hierarchy*. The details of the record selected on the left will be showed on the right hand side.

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Alias editor

The alias editor lets you configure *aliases* for specific paths. After an alias has been set, it is possible to send funds to the alias directly using the @ prefix. The wallet will automatically resolve the alias.

Note: In the default permission layout, aliases can only be modified by an administrator.

Openchain Server Docker deployment

Openchain Server is cross platform and can be deployed as a [DNX application](#) on Windows, OS X and Linux. However, to simplify dependency management and homogenize deployment of Openchain, we are shipping it as a Docker image.

This document explains the few steps necessary to have the Openchain server running. Refer to the [next section](#) to deploy Openchain directly.

Install Docker

Note: This assumes you are running Linux. Use [these instructions](#) if you are running Windows, and [these instructions](#) if you are running OS X.

First, install Docker if you don't have it:

```
wget -qO- https://get.docker.com/ | sh
```

Then install Docker Compose:

```
apt-get install python-pip
pip install -U docker-compose
```

Install Openchain Server

Clone the openchain/docker repository from GitHub, and copy the configuration files from the templates provided.

```
git clone https://github.com/openchain/docker.git openchain
cd openchain
cp templates/docker-compose-direct.yml docker-compose.yml
mkdir data
cp templates/config.json data/config.json
```

Now, edit the configuration file (data/config.json):

```
nano data/config.json
```

Set the instance_seed setting to a random (non-empty) string.

```
[...]
// Define transaction validation parameters
"validator_mode": {
  // Required: A random string used to generate the chain namespace
  "instance_seed": "",
  "validator": {
[...]
```

Note: By default, the Openchain server will run on port 8080. You can edit docker-compose.yml if you want to run on a non-default port.

You can now start the server:

```
docker-compose up -d
```

This will start the Openchain server in the background. To check that the server is running properly, check the docker logs:

```
docker logs openchain-server
```

You should not see any error:

```
info: General[0]
      [2016-07-10 18:20:10Z] Starting Openchain v0.7.0
info: General[0]
```

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```
[2016-07-10 18:20:11Z]
info: General[0]
[2016-07-10 18:20:13Z] Stream subscriber disabled
info: General[0]
[2016-07-10 18:20:13Z] Anchoring disabled
Hosting environment: Production
Content root path: /openchain
Now listening on: http://0.0.0.0:8080
Application started. Press Ctrl+C to shut down.
```

Tip: You can also run the Openchain Docker container in the foreground by running `docker-compose up` and omitting the `-d` switch.

Now that you have a server running, you can connect to the server with a *client*.

Configuring admin keys

Use the *client* to generate a seed, and derive it into an address. Once you have an address, you can use it as an admin address on your server instance. To do so, update `data/config.json` and add it to the `admin_addresses` list:

```
// ...
"admin_addresses": [
  "<your_address_here>"
],
// ...
```

Tip: Follow *these steps* to configure the `info` record on your new instance. The `info` record is used by clients connecting to the instance to receive additional information about the instance they are connecting to.

Controlling the server

To restart the server, use:

```
docker-compose restart
```

To stop it, use:

```
docker-compose stop
```

CHAPTER 3

General

Running Openchain

Deploying Openchain server can be done *through Docker*.

This document explains how to deploy Openchain directly on a machine without using docker.

Prerequisites

Install the [.NET Command Line Interface](#) . This is cross-platform and runs on Windows, Linux and OS X.

Download the project files

Download the `project.json`, `Program.cs` and `config.json` files from GitHub, then restore the NuGet dependencies. On Linux:

```
$ wget https://raw.githubusercontent.com/openchain/openchain/v0.6.2/src/Openchain/  
↪project.json  
$ wget https://raw.githubusercontent.com/openchain/openchain/v0.6.2/src/Openchain/  
↪Program.cs  
$ wget https://raw.githubusercontent.com/openchain/openchain/v0.6.2/src/Openchain/  
↪data/config.json -P data  
$ dotnet restore
```

Note: On Windows, simply download the files manually using your browser, then run `dotnet restore`.

Run Openchain Server

Run openchain server using the following command:

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```
$ dotnet run
```

Configuration

The dependencies section of the `project.json` file references the external providers pulled from NuGet:

```
"dependencies": {
  "Microsoft.NETCore.App": {
    "version": "1.0.0",
    "type": "platform"
  },
  "Microsoft.AspNetCore.Server.IISIntegration": "1.0.0",
  "Openchain.Server": "0.6.2",

  "Openchain.Anchoring.Blockchain": "0.6.2",
  "Openchain.Sqlite": "0.6.2",
  "Openchain.SqlServer": "0.6.2",
  "Openchain.Validation.PermissionBased": "0.6.2"
},
```

By default, this imports the Sqlite storage engine (`Openchain.Sqlite`), the SQL Server storage engine (`Openchain.SqlServer`), the permission-based validation module (`Openchain.Validation.PermissionBased`), and the Blockchain anchoring module (`Openchain.Anchoring.Blockchain`). Update this list with the modules (and versions) you want to import.

You can then edit the `data/config.json` file to reference the *providers you want to use*.

Tip: For example, if you want to use the SQLite provider as a storage engine, you will need to make sure the `Openchain.Sqlite` module is listed in the dependencies.

Make sure you run `dotnet restore` again after modifying `project.json`.

Note: The `Openchain.Server` dependency is the only one that is always required. The version of the `Openchain.Server` package is the version of Openchain you will be running.

Updating the target platform

The frameworks section of the `project.json` file lists the available target frameworks:

```
"frameworks": {
  "netcoreapp1.0": {},
  "net451": {}
}
```

By default .NET Core (cross-platform) and the .NET Framework (Windows only) are both targeted. Some providers run only on a subset of frameworks. In that case, remove the unsupported frameworks from the list to ensure the project runs.

The transaction stream

Openchain server exposes a websocket endpoint (`/stream`) called the transaction stream. The transaction stream provides a live stream of transactions as they get committed into the ledger.

Note: See the [documentation](#) about the `/stream` endpoint for more details.

Validator nodes

The Openchain Server node can function in two different modes: **validator mode** and **observer mode**.

In validator mode, the node accepts transactions and validates them. Rules that make a transaction valid or invalid are customizable. They can be defined by the administrator of the validator node, and are a combination of *implicit rules*, and explicit permissions.

When a transaction is deemed valid, it gets committed into the ledger.

Observer nodes

Observer nodes are nodes connecting to an upstream node, and downloading all transactions in real time using the transaction stream. The validator node is always the most upstream node. When it verifies a transaction, the transaction trickles down to its observers. All the observers should have an exact copy of the state held by the verifying node.

It is not possible to submit a transaction for validation to an observer node, as it only has a read-only view of the ledger.

Observer nodes have the ability to verify the integrity of their copy of the ledger through *anchors*.

Configuration

To configure a node to be in observer mode, the `observer_mode` section needs to exist in the [configuration file](#), and the `upstream_url` must be set to the root URL of the upstream node.

Anchoring and ledger integrity

Openchain is capable of immutability by committing a hash of the entire ledger (the **cumulative hash**) onto a non-reversible Blockchain such as Bitcoin.

Note: In the current version, the only anchoring mode available is the `blockchain` mode, based on the Bitcoin blockchain. Different anchoring modes will be available in the future, such as anchoring in a central repository.

With the Bitcoin anchoring mode, one transaction is committed in every Bitcoin block, and contains the cumulative hash at the current time.

By doing this, even if Openchain is processing thousands of transactions per second, only one transaction gets sent to the Bitcoin blockchain every 10 minutes. There are multiple benefits to this approach:

- The irreversibility of the Openchain ledger is ensured by the Bitcoin miners, therefore Openchain enjoys the same level of irreversibility as Bitcoin itself.

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- At the maximum resolution (one anchor per block), no more than 4,320 transactions per month (in average) will be committed into the blockchain, which will cost about \$10 per month (as of October 2015), regardless of the number of transactions processed.
- The resolution can be tuned to further reduce that cost.
- Openchain can process thousands of transactions per second while remaining very cost-efficient.

“*Observer nodes*” replicating all the verified transactions locally have the ability to compute their own version of the cumulative hash and compare it to the anchor in the Bitcoin blockchain.

Calculating the cumulative hash

The cumulative hash is updated every time a new transaction is added to the ledger.

The cumulative hash at a given height is calculated using the previous cumulative hash and the hash of the new transaction being added to the ledger:

```
cumulative_hash = SHA256( SHA256( previous_cumulative_hash + new_transaction_hash ) )
```

- `previous_cumulative_hash` (32 bytes) is the cumulative hash at the previous height. At height 0 (when the ledger has no transaction), a 32 bytes buffer filled with zeroes is used.
- `new_transaction_hash` (32 bytes) is the double SHA-256 hash of the *raw transaction* being added to the ledger.

Both values are concatenated to form a 64 bytes array, then hashed using double SHA-256.

Blockchain anchor format

The Blockchain anchor is stored in the blockchain using an OP_RETURN operator, followed by a pushdata containing the anchor.

```
OP_RETURN <anchor (42 bytes)>
```

The anchor is constructed in the following way:

```
0x4f 0x43 <transaction count (8 bytes)> <cumulative hash (32 bytes)>
```

- The first two bytes indicates that the output represents an Openchain anchor.
- The transaction count is the number of transactions being represented by the cumulative hash (the height). It's an unsigned 64 bits integer, encoded in big endian.
- The cumulative hash is full cumulative hash (256 bits) as calculated in the previous section.

Openchain Server Configuration

The configuration of Openchain server is handled through a JSON file named *config.json*. The file is stored under the *data* folder.

It is possible to override a configuration value through environment variables. The name of the variable should be the concatenation of all the components of the path, separated by the character `..`. For example: `validator_mode:validator:allow_third_party_assets`.

config.json

Here is the default file:

```
{
  "enable_transaction_stream": true,

  "storage": {
    "provider": "SQLite",
    "path": "ledger.db"
  },

  // Define transaction validation parameters
  "validator_mode": {
    // Required: A random string used to generate the chain namespace
    "instance_seed": "",
    "validator": {
      "provider": "PermissionBased",
      // Enable /p2pkh/<address>/ accounts
      "allow_p2pkh_accounts": true,
      // Enable /asset/p2pkh/<address>/ accounts
      "allow_third_party_assets": true,
      // Base-58 addresses that must have admin rights
      "admin_addresses": [
      ],
      "version_byte": 76
    }
  },

  // Uncomment this and comment the "validator_mode" section to enable observer mode
  // "observer_mode": {
  //   "upstream_url": ""
  // },

  "anchoring": {
    "provider": "Blockchain",
    // The key used to publish anchors in the Blockchain
    "key": "",
    "bitcoin_api_url": "https://testnet.api.coinprism.com/v1/",
    "network_byte": 111,
    "fees": 5000,
    "storage": {
      "provider": "SQLite",
      "path": "anchors.db"
    }
  }
}
```

Root section

- `enable_transaction_stream`: Boolean indicating whether the transaction stream websocket should be enabled on this instance.

storage section

`provider` defines which storage engine to use. The two built-in values are `SQLite` and `MSSQL`.

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SQLite storage engine

If the storage provider is set to `SQLite`, the chain is stored locally using `SQLite`. In that case, the following setting is used:

- `path`: The path of the `Sqlite` database, relative to the `wwwroot/App_Data` folder. Absolute paths are also allowed, however, make sure the user under which the `DNX` process is running has write access to the file.

MSSQL storage engine

If the storage provider is set to `MSSQL`, the chain is stored using Microsoft SQL Server. In that case, the following setting is used:

- `connection_string`: The connection string to the SQL Server database.

Note: Third party storage engines can be build and used by Openchain. The `provider` setting is used to identify at runtime which storage engine should be instantiated.

validator_mode and observer_mode sections

These two sections are mutually exclusive. Depending whether the instance is setup in validator mode or observer mode, either the `validator_mode` section or `observer_mode` section should be present.

In the case of validator mode:

- `validator_mode:instance_seed`: A random string that should be unique to that instance. It is hashed to obtain a namespace specific to that instance.
- `validator_mode:validator:provider`: The type of validation performed by the Openchain instance when transactions are submitted. The only supported values currently are `PermissionBased`, `PermitAll` and `DenyAll`.
 - `PermitAll` indicates that all transactions are valid, regardless of who signed them. Use this mostly for testing.
 - `DenyAll` indicates that all transactions are invalid, regardless of who signed them. Use this to set the chain in read-only mode.
 - See [this section](#) for more details about the implicit rules of the `PermissionBased` mode. The relevant configuration settings with the `PermissionBased` mode are the following:
 - * `validator_mode:validator:allow_p2pkh_accounts`: Boolean indicating whether *P2PKH accounts* (`/p2pkh/<address>/`) are enabled.
 - * `validator_mode:validator:allow_third_party_assets`: Boolean indicating whether *third party issuance accounts* (`/asset/p2pkh/<address>/`) are enabled.
 - * `validator_mode:validator:admin_addresses`: List of strings representing all addresses with admin rights.
 - * `validator_mode:validator:version_byte`: The version byte to use when representing a public key using its Bitcoin address representation.

In the case of observer mode:

- `observer_mode:upstream_url`: The endpoint URL of the upstream instance to connect to. Transactions will be replicated using this endpoint.

anchoring section

This section contains configuration settings relative to publishing an anchor to preserve data integrity.

- `provider`: Value defining which anchoring mode to use. Currently, the only supported value is `Blockchain`, and publishes a cumulative hash of the database onto a Bitcoin-compatible blockchain.
- `key`: The private key to use (in WIF format) as the signing address for the proof of publication transactions.
- `bitcoin_api_url`: The Coinprism API endpoint to use to list unspent outputs and broadcast the signed transaction. Valid values include:
 - <https://api.coinprism.com/v1/> (Bitcoin mainnet)
 - <https://testnet.api.coinprism.com/v1/> (Bitcoin testnet)
- `network_byte`: The network byte corresponding to the network on which the anchor transaction is published.
- `storage:provider`: Value defining how to cache anchors locally. Currently, the only supported value is `SQLite` and caches data locally in a SQLite database.
- `storage:path`: The path of the local anchor cache database, relative to the `wwwroot/App_Data` folder.

Openchain modules

Openchain uses an extensible architecture where modules can be swapped in and out depending on the functionality needed. Modules are selected by:

- Referencing the appropriate package in the `project.json` file. Packages are then pull automatically from NuGet.
- Referencing the module in `config.json`.

This document lists the available modules, and relevant packages.

Storage engines

Storage engines are core components responsible for storing the transaction chain and records.

Provider	Module	Description	Maintainer
SQLite	<code>Openchain.Sqlite</code>	Stores the chain in a local Sqlite database.	Coinprism
MSSQL	<code>Openchain.SqlServer</code>	Stores the chain in a SQL Server database.	Coinprism
MongoDB	<code>Openchain.MongoDb</code>	Stores the chain in a MongoDB database.	@fluce

Validation engines

Anchoring media

Setting the instance info on a new instance

The *ledger info record* exposes meta-information about the ledger itself. It is used by clients that connect to the instance to retrieve informations such as the name of the instance, and the associated terms of service.

After you have deployed a new instance, it is a good idea to create the info record. This can be done from the web interface.

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1. First, follow [these steps](#) to connect to the instance and log in. Make sure you log in with a seed that has admin access on this instance as the `info` record can only be modified by an administrator.
2. Go to the **Advanced** tab and click **Edit Ledger Info** on the left. The screen will show you a form that will let you edit the ledger name and other fields stored in the `info` record.

Important: Make sure that the **Validator Root URL** is set to the same value as the `root_url` setting in the configuration file.

Upgrading Openchain server

To upgrade an Openchain deployment done [through Docker](#), run the following commands:

```
git reset --hard
git pull
cp templates/docker-compose-direct.yml docker-compose.yml
docker-compose build
docker-compose restart
```

Note: If the new version you are upgrading to includes a configuration file schema change, don't forget to update the configuration file before restarting Openchain.

Deploying Openchain in a production environment

In production, it is recommended to proxy the Openchain server behind a reverse proxy server such as Nginx. This architecture enables a number of possibilities:

- Expose Openchain through SSL/TLS
- Host multiple Openchain server instances on the same port
- Change the URL path under which the Openchain server is being exposed
- Route requests to different Openchain instances depending on the host name used

This document explain the few steps necessary to expose Openchain through Nginx.

Install Docker

Refer to the [base Docker deployment documentation](#) to find out how to install Docker and Docker Compose.

Pull the Docker images through Docker Compose

Clone the openchain/docker repository from GitHub, and copy the configuration files from the templates provided.

```
git clone https://github.com/openchain/docker.git openchain
cd openchain
cp templates/docker-compose-proxy.yml docker-compose.yml
cp templates/nginx.conf nginx/nginx.conf
```

```
mkdir data
cp templates/config.json data/config.json
```

Edit the configuration file (`data/config.json`) as described in the [base Docker deployment documentation](#).

You can now start the server:

```
docker-compose up -d
```

Note: By default, Nginx will run on port 80.

Troubleshooting

Error “The namespace used in the transaction is invalid”

You might receive this error message when submitting a transaction. You will get this error if the `root_url` set in the configuration doesn't match the namespace set by the client in the transaction. Clients will always use the URL they are connected to as the namespace.

This ensures that a transaction is only valid for one specific instance of Openchain, and that it is not possible to reuse a signed transaction on multiple ledgers.

Solution

To solve this, make sure the URL *set in your configuration file* (`validator_mode:root_url`) matches the URL that clients use to connect to your Openchain instance. All the components of the URL must match:

- The scheme, e.g.: `http://endpoint.com/` vs `https://endpoint.com/`
- The hostname, e.g.: `http://127.0.0.1/` vs `http://localhost/`
- The port, e.g.: `http://endpoint.com:80/` vs `http://endpoint.com/`
- The path, e.g.: `http://endpoint.com/path/` vs `http://endpoint.com/`

Important: Make sure you don't forget the trailing slash, as clients will always include it in the namespace. E.g.: `https://endpoint.com/` instead of `https://endpoint.com`.

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CHAPTER 4

Public API

Openchain data structures

Openchain relies on several data structures for communication between clients and servers. These data structures are a key part of the Openchain API.

These data structures are serialized and deserialized using [Protocol Buffers](#).

Schema

The full schema is the following:

```
syntax = "proto3";

package Openchain;

message RecordValue {
    bytes data = 1;
}

message Record {
    bytes key = 1;
    RecordValue value = 2;
    bytes version = 3;
}

message Mutation {
    bytes namespace = 1;
    repeated Record records = 2;
    bytes metadata = 3;
}

message Transaction {
    bytes mutation = 1;
```

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```
int64 timestamp = 2;
bytes transaction_metadata = 3;
}
```

Note: The schema uses the version 3 of Protocol Buffers.

Record

A record object represents the intent to modify the value of a record in the data store. The key, value and version of a record can be any arbitrary byte string.

```
message Record {
  bytes key = 1;
  RecordValue value = 2;
  bytes version = 3;
}
```

- **key:** A value that uniquely identifies the record to modify.
- **value:** The new value that the record should have after update. If it is unspecified, the record version is checked, but no update is made to the value.
- **version:** The last version of the record being updated. Every modification of the record will cause the version to change. If the version specified doesn't match the actual version in the data store, then the update fails.

A record that has never been set has a `value` and `version` both equal to an empty byte string.

Check-only records

If a record object has a null `value` field, the record object is called a **check-only record**, and does not cause a mutation to the record. It however expresses the requirement that the record (as represented by the `key` field) must have the version specified in the `version` field of the record object. If the versions don't match, the whole mutation fails to apply.

This provides a way to ensure that a given record has not been modified between the moment the transaction was created and the moment it gets validated, even if the record doesn't have to be modified.

Mutation

A mutation is a set of records atomically modifying the state of the data. They are typically generated by a client, signed, then sent to the validator along with the signatures.

```
message Mutation {
  bytes namespace = 1;
  repeated Record records = 2;
  bytes metadata = 3;
}
```

- **namespace:** The namespace under which the records live. Generally, each instance of Openchain has its own namespace.

- **records:** A set of records to be modified atomically by this mutation. Each record is identified by its key. The version of each record in the mutation has to match the versions at the current time. If any version mismatches, then the entire mutation fails to apply. Records with an unspecified value don't cause updates, but their versions still have to match for the mutation to succeed.
- **metadata:** Arbitrary metadata to be stored in the mutation.

The version of all updated records after a mutation becomes the hash of that mutation.

Transaction

A transaction is a wrapper around a mutation.

```
message Transaction {
  bytes mutation = 1;
  int64 timestamp = 2;
  bytes transaction_metadata = 3;
}
```

- **mutation:** The mutation applied by the transaction. It is represented as a byte string but deserialized according to the *Mutation schema*.
- **timestamp:** A timestamp for the transaction.
- **transaction_metadata:** Arbitrary metadata to be stored in the mutation. This will typically contain a digital signature of the mutation by the required parties.

Ledger structure

At the core, an Openchain ledger is a key-value store, represented by *records*. At the data store level, record keys can be any arbitrary byte string, however Openchain Ledger expects a well defined structure for the record keys.

Record keys

Record keys are UTF8-encoded strings. They are structured in three parts, separated by colons (:).

1. **The record path:** A path in the *account hierarchy* indicating where the record is situated.
2. **The record type:** A value indicating the *type* of the record.
3. **The record name:** The name of the record.

The combination of these three values uniquely identify a record.

Example 1

```
/p2pkh/mfiCwNxuFYMtB5ytCacgzDAineD2GNCnYo/:ACC:/asset/p2pkh/
↪n15g8F3sVLufwvPmmX7tYPWrGGbGSbcaEB/
```

The path is `/p2pkh/mfiCwNxuFYMtB5ytCacgzDAineD2GNCnYo/`, the record type is `ACC` and the record name is `/asset/p2pkh/n15g8F3sVLufwvPmmX7tYPWrGGbGSbcaEB/`.

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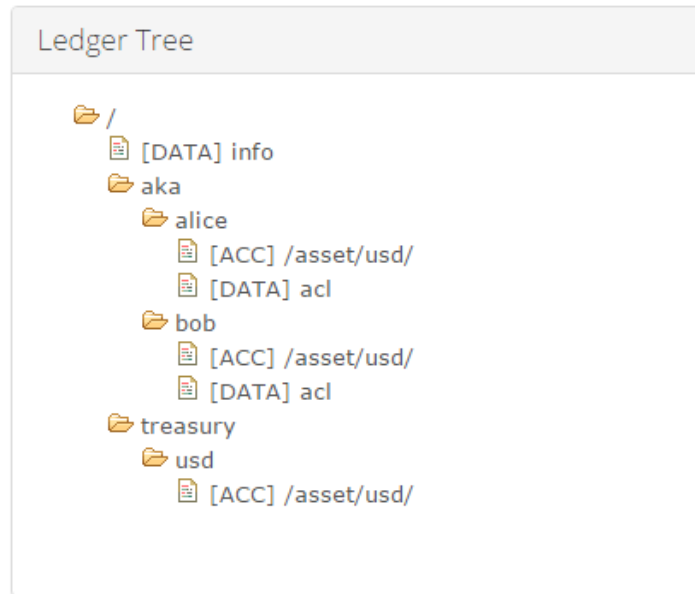
Example 2

```
/:DATA:info
```

The path is / (root path), the record type is DATA and the record name is info.

Account hierarchy

Openchain uses a hierarchy of accounts, similar to a file system. This adds a lot of interesting management options that systems like Bitcoin don't have.



Accounts are identified by a path.

Account paths

The syntax for an account path follows a number of rules:

- Account paths start with the character /.
- Account paths end with the character /.
- Sections of an account path are separated by the character /.
- Sections of an account path may only contain alphanumeric characters and characters from the following set: `$-_.+!*'() , .`

Record types

There are two valid record types as of this version of Openchain.

ACC record

The ACC record is used for representing a balance for a given asset type. The name of the record must be a path that represents the asset type. The value must be a 64-bits signed integer encoded in big endian. The value represents the current balance for the given account and the given asset type.

DATA record

The DATA record is used to store arbitrary text data. The record name can be any valid UTF-8 string. It can be used to store things such as *asset metadata*, *symbolic links* within the accounting system, *permissions*, or any other important piece of arbitrary data that needs to be cryptographically secure.

Method calls

The Openchain server exposes an HTTP API that can be used to interact with the data. The URL of an operation is constructed from the base URL of the endpoint, and concatenating it with the relative path of the operation being called.

For example, if the base URL is `https://www.openchain.org/endpoint/`, for calling the `/record` operation (query a record), the full URL should be `https://www.openchain.org/endpoint/record`.

Submit a transaction (`/submit`)

Submits a transaction for validation.

Method: POST

Inputs

The input is a JSON document passed as part of the body of the request.

The format of the JSON document is the following:

```
{
  "mutation": "<string>",
  "signatures": [
    {
      "pub_key": "<string>",
      "signature": "<string>"
    }
  ]
}
```

Description of the payload:

- **mutation:** The hex-encoded mutation. The mutation is serialized using the *Mutation Protocol Buffers schema*.
- **signatures:** An array of documents with two properties, `pub_key` and `signature`.
 - **pub_key:** The hex-encoded public key used to sign.
 - **signature:** The hex-encoded signature of the hash of the mutation.

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Signing Process

For producing the signatures:

1. Serialize the mutation using the *Mutation Protocol Buffers schema*.
2. Hash the mutation byte string using double SHA256.
3. Sign it with the relevant private key using Secp256k1. The matching public key must be submitted along with the signature.

Important: You must submit the exact byte string as obtained after step 1. If it modified, the hash won't match and the signature will then be invalid.

Outputs

The output is a JSON document passed as part of the body of the response.

```
{
  "transaction_hash": "<string>"
}
```

The `transaction_hash` field contains the hex-encoded hash of the full transaction.

Query a record (/record)

Query the value and version of a record given its key.

Method: GET

Inputs

Inputs are passed through the query string as URL encoded parameters.

key	The hex-encoded key of the record being queried.
-----	--

Output

The output is a JSON document passed as part of the body of the response.

The format of the JSON document is the following:

```
{
  "key": "<string>",
  "value": "<string>",
  "version": "<string>"
}
```

The fields are the following:

- `key`: The hex-encoded key of the record.
- `value`: The hex-encoded value of the record.
- `version`: The hex-encoded version of the record.

Transaction stream (/stream)

Method: GET

This endpoint is a WebSocket endpoint. It can be used to receive all the newly confirmed transaction in real-time.

Inputs

Inputs are passed through the query string as URL encoded parameters.

from	(optional) The hex-encoded hash of the last transaction to resume from. If omitted, it will start from the first transaction.
------	---

Output

The output is a WebSocket binary stream.

Each message in the stream is the *serialized transaction*.

Retrieve the chain info (/info)

Get information about the Openchain instance.

Method: GET

Inputs

This method has no input parameters.

Output

The output is a JSON array passed as part of the body of the response.

The format of the JSON array is the following:

```
{
  "namespace": "<string>"
}
```

namespace is the hex representation of the namespace expected in transactions submitted to the Openchain instance.

Query an account (/query/account)

Query all the ACC records at a given path (non-recursively).

Method: GET

Inputs

Inputs are passed through the query string as URL encoded parameters.

account	The path to query for.
---------	------------------------

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Output

The output is a JSON array passed as part of the body of the response.

The format of the JSON array is the following:

```
[
  {
    "account": "<string>",
    "asset": "<string>",
    "balance": "<string>",
    "version": "<string>"
  }
]
```

The fields of each item of the array are the following:

- **account**: The path of the record.
- **value**: The asset ID of the record (the record name).
- **balance**: The balance for that asset ID at that path.
- **version**: The hex-encoded version of the record.

Query a transaction (/query/transaction)

Retrieve a transaction given the hash of the mutation.

Method: GET

Inputs

Inputs are passed through the query string as URL encoded parameters.

mutation_hash	The hex-encoded hash of the mutation represented by the transaction.
format	The output format (raw or json).

Output

The output is a JSON document passed as part of the body of the response.

The format of the JSON document depends on the `format` argument:

1. **raw** output format (default):

```
{
  "raw": "<string>"
}
```

The `raw` property contains the serialized transaction.

2. **json** output format

```
{
  "transaction_hash": "<string>",
  "mutation_hash": "<string>",
  "mutation": {
```

```

    "namespace": "<string>",
    "records": [
      {
        "key": "<string>",
        "value": "<string>",
        "version": "<string>"
      }
    ],
    "timestamp": "<string>",
    "transaction_metadata": "<string>"
  }
}

```

Query a specific version of a record (/query/recordversion)

Retrieve a specific version of a record.

Method: GET

Inputs

Inputs are passed through the query string as URL encoded parameters.

key	The hex-encoded record key.
-----	-----------------------------

Output

The output is a JSON document passed as part of the body of the response.

The format of the JSON document is the following:

```

{
  "key": "<string>",
  "value": "<string>",
  "version": "<string>"
}

```

The fields are the following:

- **key:** The hex-encoded key of the record.
- **value:** The hex-encoded value of the record.
- **version:** The hex-encoded version of the record.

If the record version doesn't exist, HTTP code 404 will be returned by the server.

Query all mutations that have affected a record (/query/recordmutations)

Retrieve all the mutations that have affected a given record.

Method: GET

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Inputs

Inputs are passed through the query string as URL encoded parameters.

key	The key of the record of which mutations are being retrieved.
-----	---

Output

The output is a JSON document passed as part of the body of the response.

The format of the JSON document is the following:

```
[
  {
    "mutation_hash": "<string>"
  }
]
```

The output is a list representing all the mutation hashes of the mutations that have affected the key represented by the `key` argument.

Query records in an account and its subaccounts (/query/subaccounts)

Retrieve all the record under a given path (includes sub-paths).

Method: GET

Inputs

Inputs are passed through the query string as URL encoded parameters.

account	The path being queried.
---------	-------------------------

Output

The output is a JSON document passed as part of the body of the response.

The format of the JSON document is the following:

```
[
  {
    "key": "<string>",
    "value": "<string>",
    "version": "<string>"
  }
]
```

The fields are the following:

- `key`: The hex-encoded key of the record.
- `value`: The hex-encoded value of the record.
- `version`: The hex-encoded version of the record.

Query all records with a given type and name (/query/recordsbyname)

Retrieve all records with a given type and name

Method: GET

Inputs

Inputs are passed through the query string as URL encoded parameters.

name	The name of the records being queried.
type	The type of the records being queried.

Output

The output is a JSON document passed as part of the body of the response.

The format of the JSON document is the following:

```
[
  {
    "key": "<string>",
    "value": "<string>",
    "version": "<string>"
  }
]
```

The fields are the following:

- `key`: The hex-encoded key of the record.
- `value`: The hex-encoded value of the record.
- `version`: The hex-encoded version of the record.

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CHAPTER 5

Ledger rules

Default ledger rules

Global rules

A transaction is made of multiple *record mutations*. ACC record mutations are subject to a balancing rule. The balancing rule works as follow:

1. For every ACC record, the delta between the previous balance and the new proposed balance is calculated.
2. The sum of all deltas **per asset type** is calculated.
3. For every asset type, the sum must be equal to zero.

This ensures every asset creation and destruction is recorded through an account in the system. This means however that at least one account must be able to have a negative balance. Usually, a special account is used to do so, and the ability to create a negative balance on an account requires special permissions.

Tip: *Third-party asset issuance accounts* are allowed to have negative balances.

Aliases (/aka/<name>/)

Openchain has the ability to define aliases for accounts, this simplify the user experience as users no longer have to remember a base-58 random string of characters.

To do so, clients should understand the following syntax as a valid account path: @<name>, and turn it internally into /aka/<name>/.

Example

If a user wants to send funds to the following account:

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```
@bank
```

The client application should convert it internally into:

```
/aka/bank/
```

Goto records (goto)

Goto records are special *DATA records* instructing the client application to use a different account.

Goto records must have the special name `goto`.

When a client application sends funds to a path, it must first look for a `DATA` record named `goto`. If it exists, the client application must use the path defined as the value of the record instead.

Example

If a user wants to send funds to the following account:

```
/account/alpha/
```

The client must first check the existence of a record with the following key:

```
/account/alpha/:DATA:goto
```

If the record doesn't exist, nothing happens and funds are sent to `/account/alpha/`. If the record exists, assuming its value is:

```
/account/beta/
```

Then funds are sent instead to `/account/beta/`.

Note: It is possible and recommended for security reasons that the client application uses a *check-only record* with the `goto` record to make sure the value of the `goto` record is still valid and hasn't changed when the transaction is validated.

Asset definition record (asdef)

It is important to be able to associate information with an asset type so that users have the right expectations about it.

The asset definition record can be used to record this information. The asset definition record is a `DATA` record with the special name `asdef`. In addition, it must be placed under the same path as the asset it is attached to.

Example

In order to associate information with the asset represented by path `/asset/gold/`, the following record must be set:

```
/asset/gold/:DATA:asdef
```

The value of the record is a UTF-8 string representing a JSON document with the following schema:

```
{
  name: '<string>',
  name_short: '<string>',
  icon_url: '<string>'
}
```

The definition of these fields are the following:

- `name`: The full name of the asset (e.g.: U.S. Dollar, Gold Ounce).
- `name_short`: The short name of the asset. This is used to denominate amounts (e.g.: USD, XAU)
- `icon_url`: The URL to an icon representing the asset.

Ledger info record (info)

Each Openchain instance can store a *DATA record* named `info` at the root path (`/`). In other words, the record key should be `/:DATA:info`.

The info record exposes meta-information about the ledger itself. The value must be a JSON document with the following schema:

```
{
  name: '<string>',
  validator_url: '<string>',
  tos: '<string>',
  webpage_url: '<string>'
}
```

The definition of these fields are the following:

- `name`: The name of the Openchain instance.
- `validator_url`: The URL of the main validator for this Openchain instance.
- `tos`: The terms of service of the Openchain instance.
- `webpage_url`: A link to user-readable content where users can get more information about this Openchain instance.

Pay-To-Pubkey-Hash accounts (`/p2pkh/<address>/`)

Pay-To-Pubkey-Hash accounts are special accounts with implicit permissions. Signing a transaction spending funds from this account or any sub-account requires the private key corresponding to `<address>`.

This automatically works with any account of that format, where `<address>` is a valid base-58 address.

Note: `<address>` is a base-58 address constructed in the same way a Bitcoin address for the same private and public key would be.

Third-party asset issuance accounts (`/asset/p2pkh/<address>/`)

Third-party asset issuance accounts are special accounts with implicit permissions. The owner of the private key corresponding to `<address>` can sign transactions spending funds from this account. Funds have to be of the asset type

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/asset/p2pkh/<address>. Also, this address is authorized to have a negative balance. This means it is possible to use this address as the issuance source of asset type /asset/p2pkh/<address>.

This automatically works with any account of that format, where <address> is a valid base-58 address.

Note: <address> is a base-58 address constructed in the same way a Bitcoin address for the same private and public key would be.

Dynamic permissions

Openchain supports an implicit permission layout through *P2PKH accounts* (/p2pkh/<address>/) and *third party issuance accounts* (/asset/p2pkh/<address>/). It is also possible to dynamically define permissions by submitting transactions modifying a special record: the `acl` record.

Access Control Lists

Permissions are applied to a specific path. To apply an access control list to a path, set the `acl` record under that path. It must be a DATA record. The value is a JSON file.

For example, when trying to set the permissions to the path /users/alice/, the following record must be set: /users/alice/:DATA:acl.

Schema

The schema of the JSON file that the record contains is the following:

```
[
  {
    "subjects": [
      {
        "addresses": [ "<string>" ],
        "required": <integer>
      }
    ],
    "recursive": <boolean>,
    "record_name": "<string>",
    "record_name_matching": "<record-matching-type>",
    "permissions": {
      "account_negative": "<permission>",
      "account_spend": "<permission>",
      "account_modify": "<permission>",
      "account_create": "<permission>",
      "data_modify": "<permission>"
    }
  }
]
```

The contents is an array containing all the applicable permissions. When the `acl` record does not exist, this is equivalent to having an empty array.

The meaning of the fields within a permission object are the following:

- `subjects`: An array of subjects for which this permission object applies.

- `addresses`: An array of strings representing the addresses for which signatures are expected.
- `required`: The number of required signatures from the `addresses` array. If the `addresses` array contains 3 addresses, and `required` is set to 2, that means that for the permission to apply, at least 2 signatures from the 3 addresses specified must be present. This is known as a n-of-m multi-signature scheme.
- `recursive`: (Default: `true`) A boolean indicating whether the permission applies recursively to the sub accounts.

Note: With recursion, lower level permissions overrule higher level permissions.

- `record_name`: (Default: empty string) The pattern to use for record name matching.
- `record_name_matching`: (Default: `Prefix`) The type of record name matching to use. There are two possible values:
 - `Exact` means that the record name must be exactly equal to the value of the `record_name` field for the permission to apply.
 - `Prefix` means that the record name must start with the value of the `record_name` field for the permission to apply. Using `Prefix` with an empty `record_name` means that the permission applies to all records.

Hint: The record name of an ACC record is the asset path.

- `permissions`: Contains the permissions being applied if this permission object is a match. The meaning of the various permissions is explained in the next section. The value must be set to `Permit` for the permission to be granted, or `Deny` for the permission to be denied. If it is unset, the inherited value is used.

Permissions

`account_negative`

This permission indicates the right to affect the balance of ACC records, both to increase it (receive funds) and decrease it (send funds) with no restriction on the final balance. If this permission is granted, the ACC record balance can be made negative.

This permission is typically granted to the users allowed to issue an asset.

`account_spend`

This permission indicates the right to affect the balance of ACC records, both to increase it (receive funds) and decrease it (send funds) with the restriction that the final balance must remain positive or zero.

`account_modify`

This permission is required to affect the balance of ACC records that have already been modified before (the record version is non-empty).

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`account_create`

This permission is required to affect the balance of ACC records that have never been modified before (the record version is empty).

Note: A user can only send funds from an account if she has the `account_negative` or `account_spend` rights plus the `account_modify` or `account_create` rights. Sending to an account requires `account_modify` or `account_create` on the destination account.

A closed loop ledger can be created by denying `account_modify` and `account_create` by default, and selectively granting these for some accounts. By doing this, only approved accounts can receive funds.

`data_modify`

This permission is required to modify a DATA record.

How to: Configure a ledger to be closed-loop

Financial institutions and companies letting their users transfer value often have to comply with regulations that require them to “know their customers” (KYC).

It is possible to use Openchain in this configuration with little effort. This section describes the necessary steps.

The goal of this walkthrough is to configure Openchain so that:

1. Users go through an external registration process where they have their identity verified by the company administering the ledger, and associate their identity with a public key.
2. Only public keys matching a registered user can be used to send funds.
3. Funds can only be sent to registered users.

This way, funds can only circulate amongst “known” users.

Initial configuration

The Openchain instance must be configured with both *P2PKH accounts* and *third party issuance accounts* disabled. The settings `validator_mode:validator:allow_p2pkh_accounts` and `validator_mode:validator:allow_third_party_assets` must both be set to `false` to achieve this. See [this section](#) for more details.

With this configuration, by default, users have no rights, while administrators have all rights. It is not possible for any normal user to either send or receive tokens.

Onboarding process

The second step is to build an onboarding workflow for the users. For example, this could be a mobile application where the user creates a username and password, enters her email address and submits a proof of identity (photo of her passport).

As part of the process, a **private key** is generated and stored on the user’s device. The matching **public key** is sent along with the other pieces of information. This part can be entirely invisible to the user.

Creating the access rights

Once the company has validated the identity of the user, it can create an account on Openchain for that user, and associate her username with her public key.

Aliases are based on a special path (`/aka/<alias>/`). Assuming that the username of the user is *alice*, we need to:

1. Allow other users to send funds to `/aka/alice/` (and subaccounts).
2. Allow Alice's public key to be used to spend funds on `/aka/alice/` (and subaccounts).

This can be achieved by creating an `acl` record under `/aka/alice/`.

Tip: See the documentation about *dynamic permissions* for more details.

The record `/aka/alice/:DATA:acl` must be created and set to:

```
[
  {
    "subjects": [ { "addresses": [ ], "required": 0 } ],
    "permissions": { "account_modify": "Permit", "account_create": "Permit" }
  },
  {
    "subjects": [ { "addresses": [ "<alices-address>" ], "required": 1 } ],
    "permissions": { "account_spend": "Permit" }
  }
]
```

Important: Since only an administrator will have the right to modify this record, the mutation creating this record must be signed using an administrator key.

Alice's address is the base-58 representation of the hash of her public key. It is constructed the same way it would be for a Bitcoin address.

By tweaking the access control list, it is possible to:

1. Handle multiple devices (with different keys) per user.
2. Implement multisignature schemes, for joint accounts for example.

Credit the user's account

Now that the user has an account she can use, she will want to fund it. There are many possible configurations for this:

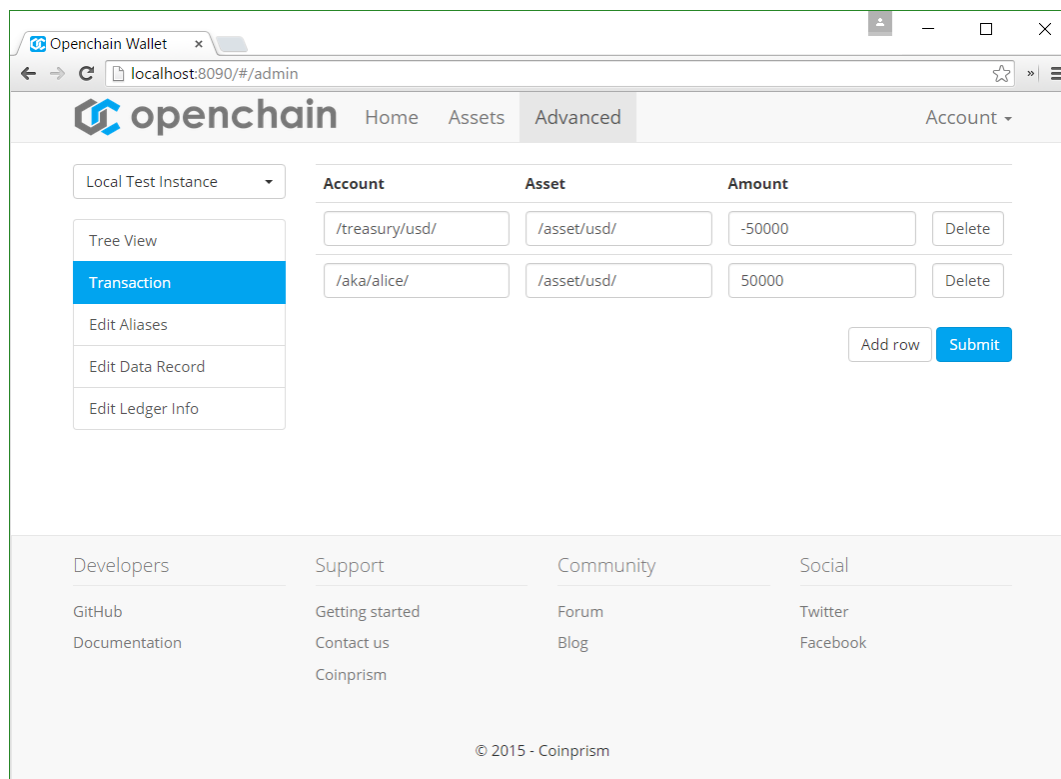
- A treasury is initially created by the company and credits are sent from that treasury.
- Tokens are issued dynamically whenever the user purchases them through an external payment method.

Assuming the following:

- The asset path for the tokens is `/asset/usd/` (this can be arbitrarily chosen).
- The tokens are dynamically issued from the account `/treasury/usd/`.

A funding transaction will simply take the form of a transaction sending *X* units of the asset `/asset/usd/` from the account `/treasury/usd/` to the account `/aka/alice/`.

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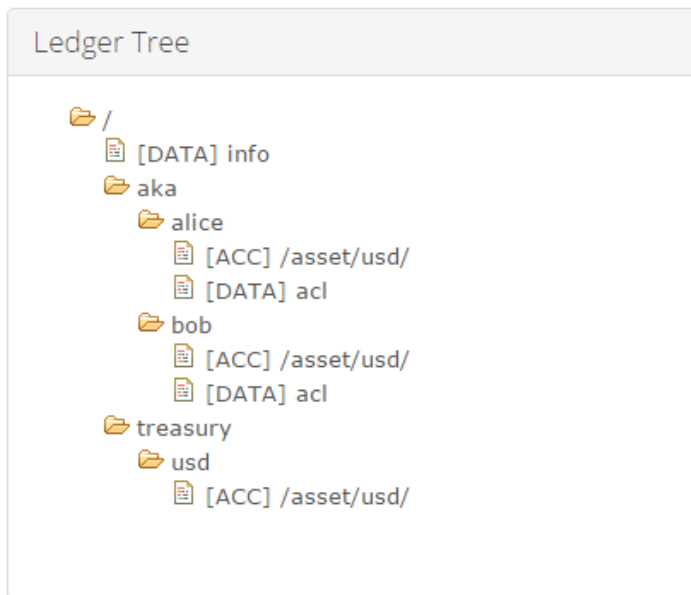
The screenshot shows the Openchain Wallet interface in a web browser. The browser tab is 'Openchain Wallet' and the address bar shows 'localhost:8090/#/admin'. The page has a navigation bar with 'Home', 'Assets', 'Advanced' (selected), and 'Account'. On the left, there is a sidebar with 'Local Test Instance' and a menu with 'Tree View', 'Transaction' (highlighted), 'Edit Aliases', 'Edit Data Record', and 'Edit Ledger Info'. The main content area displays a table with columns 'Account', 'Asset', and 'Amount'. The table contains two rows: one with '/treasury/usd/' and '-50000', and another with '/aka/alice/' and '50000'. Each row has a 'Delete' button. At the bottom right of the table are 'Add row' and 'Submit' buttons. The footer contains links for Developers, Support, Community, and Social, along with a copyright notice '© 2015 - Coinprism'.

Account	Asset	Amount	
/treasury/usd/	/asset/usd/	-50000	Delete
/aka/alice/	/asset/usd/	50000	Delete

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The transaction should be signed by an administrator only an administrator has access to `/treasury/usd/`. The balance on `/treasury/usd/` will be negative, and reflect the total amount of tokens that have been issued on the ledger. Again, the administrator is allowed to make the balance negative.

The final ledger tree should look as follow:



Addressing loss and theft of the private keys

Inevitably, some users will lose the device on which their private key is stored.

When this happens, they should report it to the company administering the Openchain instance. The company will first perform identity checks, then ask the user to generate a new key on a new device.

The administrator can then simply update the relevant `acl` record to change the previous address into the new address, corresponding to the new key.

Handling fraudulent transactions

If fraudulent transactions have happened in the meantime, the administrator can commit a new transaction representing the opposite transfer.

For example, if 10 units have been sent fraudulently from `/aka/alice/` to `/aka/oscar/`, then the administrator can simply submit a new transaction sending 10 units from `/aka/oscar/` to `/aka/alice/`, thus reverting the effects of the fraudulent transaction. The ledger being immutable, both transactions will remain visible in the ledger, with the fact that the second transaction transferring funds back from `/aka/oscar/` is not signed by Oscar's key, but instead signed by the administrator's key.

Note: It bears mentioning that in a setup where all the users have to go through an identity verification process, it is unlikely that Oscar steals funds from Alice in the first place, since the company running the ledger has all the information about Oscar, and could press charges against him.

Conclusion

With this setup, users are able to send tokens to each other, however, they are not able to send funds to addresses that are not associated to a registered user.

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This represents just one way to implement a closed-loop ledger, and there are many other possible configurations depending on the requirements.

Chapter 7

Linux Kernel Enforcement Statement

Linux Kernel Enforcement Statement

As developers of the Linux kernel, we have a keen interest in how our software is used and how the license for our software is enforced. Compliance with the reciprocal sharing obligations of GPL-2.0 is critical to the long-term sustainability of our software and community.

Although there is a right to enforce the separate copyright interests in the contributions made to our community, we share an interest in ensuring that individual enforcement actions are conducted in a manner that benefits our community and do not have an unintended negative impact on the health and growth of our software ecosystem. In order to deter unhelpful enforcement actions, we agree that it is in the best interests of our development community to undertake the following commitment to users of the Linux kernel on behalf of ourselves and any successors to our copyright interests:

Notwithstanding the termination provisions of the GPL-2.0, we agree that it is in the best interests of our development community to adopt the following provisions of GPL-3.0 as additional permissions under our license with respect to any non-defensive assertion of rights under the license.

However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Our intent in providing these assurances is to encourage more use of the software. We want companies and individuals to use, modify and distribute this software. We want to work with users in an open and transparent way to eliminate any uncertainty about our expectations regarding compliance or enforcement that might limit adoption of our software. We view legal action as a last resort, to be initiated only when other community efforts have failed to resolve the problem.

Finally, once a non-compliance issue is resolved, we hope the user will feel welcome to join us in our efforts on this project. Working together, we will be stronger.

Except where noted below, we speak only for ourselves, and not for any company we might work for today, have in the past, or will in the future.

- Bjorn Andersson (Linaro)
- Andrea Arcangeli (Red Hat)
- Neil Armstrong
- Jens Axboe
- Pablo Neira Ayuso
- Khalid Aziz
- Ralf Baechle
- Felipe Balbi
- Arnd Bergmann
- Ard Biesheuvel
- Paolo Bonzini (Red Hat)
- Christian Borntraeger

- Mark Brown (Linaro)
- Paul Burton
- Javier Martinez Canillas
- Rob Clark
- Jonathan Corbet
- Vivien Didelot (Savoir-faire Linux)
- Hans de Goede (Red Hat)
- Mel Gorman (SUSE)
- Sven Eckelmann
- Alex Elder (Linaro)
- Fabio Estevam
- Larry Finger
- Bhumi Goyal
- Andy Gross
- Juergen Gross
- Shawn Guo
- Ulf Hansson
- Tejun Heo
- Rob Herring
- Masami Hiramatsu
- Michal Hocko
- Simon Horman
- Johan Hovold (Hovold Consulting AB)
- Christophe JAILLET
- Olof Johansson
- Lee Jones (Linaro)
- Heiner Kallweit
- Srinivas Kandagatla
- Jan Kara
- Shuah Khan (Samsung)
- David Kershner
- Jaegeuk Kim
- Namhyung Kim
- Colin Ian King
- Jeff Kirsher
- Greg Kroah-Hartman (Linux Foundation)
- Christian König
- Vinod Koul
- Krzysztof Kozłowski
- Viresh Kumar
- Aneesh Kumar K.V
- Julia Lawall
- Doug Ledford (Red Hat)
- Chuck Lever (Oracle)
- Daniel Lezcano
- Shaohua Li
- Xin Long (Red Hat)
- Tony Luck
- Mike Marshall
- Chris Mason
- Paul E. McKenney
- David S. Miller
- Ingo Molnar
- Kuninori Morimoto
- Borislav Petkov
- Jiri Pirko
- Josh Poimboeuf
- Sebastian Reichel (Collabora)
- Guenter Roeck
- Joerg Roedel
- Leon Romanovsky
- Steven Rostedt (VMware)
- Ivan Safonov
- Ivan Safonov
- Anna Schumaker

- Jes Sorensen
- K.Y. Srinivasan
- Heiko Stuebner
- Jiri Kosina (SUSE)
- Dmitry Torokhov
- Linus Torvalds
- Thierry Reding
- Rik van Riel
- Geert Uytterhoeven (Glider bvba)
- Daniel Vetter
- Linus Walleij
- Richard Weinberger
- Dan Williams
- Rafael J. Wysocki
- Arvind Yadav
- Masahiro Yamada
- Wei Yongjun
- Lv Zheng

Chapter 8

Introducing the Linux Kernel Enforcement Statement

[Linux Kernel Monkey Log](#)

Random bits from Greg Kroah-Hartman

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Linux Kernel Community Enforcement Statement

Oct 16th, 2017

By Greg Kroah-Hartman, Chris Mason, Rik van Riel, Shuah Khan, and Grant Likely

The Linux kernel ecosystem of developers, companies and users has been wildly successful by any measure over the last couple decades. Even today, 26 years after the initial creation of the Linux kernel, the kernel developer community continues to grow, with more than 500 different companies and over 4,000 different developers getting changes merged into the tree during the past year. As Greg always says every year, the kernel continues to change faster this year than the last, this year we were running around 8.5 changes an hour, with 10,000 lines of code added, 2,000 modified, and 2,500 lines removed every hour of every day.

The stunning growth and widespread adoption of Linux, however, also requires ever evolving methods of achieving compliance with the terms of our community's chosen license, the GPL-2.0. At this point, there is no lack of clarity on the base compliance expectations of our community. Our goals as an ecosystem are to make sure new participants are made aware of those expectations and the materials available to assist them, and to help them grow into our community. Some of us spend a lot of time traveling to different companies all around the world doing this, and lots of other people and groups have been working tirelessly to create practical guides for everyone to learn how to use Linux in a way that is compliant with the license. Some of these activities include:

- Community Conferences: [FSFE Free Software Legal and Licensing Workshop](#), [FOSDEM](#), [Open Compliance Summit](#), and others
- Compliance Guides: [Guide to GPL Compliance, Second Edition](#), [Practical GPL Compliance](#), [Open Source Compliance in the Enterprise](#)
- Compliance Communities: [OpenChain](#), [SPDX](#)

Unfortunately the same processes that we use to assure fulfillment of license obligations and availability of source code can also be used unjustly in trolling activities to extract personal monetary rewards. In particular, issues have arisen as a developer from the Netfilter community, Patrick McHardy, has sought to enforce his copyright claims in secret and for large sums of money by threatening or engaging in litigation. Some of his compliance claims are issues that should and

could easily be resolved. However, he has also made claims based on ambiguities in the GPL-2.0 that no one in our community has ever considered part of compliance.

Examples of these claims have been distributing over-the-air firmware, requiring a cell phone maker to deliver a paper copy of source code offer letter; claiming the source code server must be setup with a download speed as fast as the binary server based on the “equivalent access” language of Section 3; requiring the GPL-2.0 to be delivered in a local language; and many others.

How he goes about this activity [was recently documented very well by Heather Meeker](#).

Numerous active contributors to the kernel community have tried to reach out to Patrick to have a discussion about his activities, to no response. Further, the Netfilter community [suspended Patrick](#) from contributing for [violations of their principles of enforcement](#). The Netfilter community also [published their own FAQ on this matter](#).

While the kernel community has always supported enforcement efforts to bring companies into compliance, we have never even considered enforcement for the purpose of extracting monetary gain. It is not possible to know an exact figure due to the secrecy of Patrick’s actions, but we are aware of activity that has resulted in payments of at least a few million Euros. We are also aware that these actions, which have continued for at least four years, have threatened the confidence in our ecosystem.

Because of this, and to help clarify what the majority of Linux kernel community members feel is the correct way to enforce our license, the [Technical Advisory Board of the Linux Foundation](#) has worked together with lawyers in our community, individual developers, and many companies that participate in the development of, and rely on Linux, to draft a Kernel Enforcement Statement to help address both this specific issue we are facing today, and to help prevent any future issues like this from happening again.

A key goal of all enforcement of the GPL-2.0 license has and continues to be bringing companies into compliance with the terms of the license. [The Kernel Enforcement Statement](#) is designed to do just that. It adopts the same termination provisions we are all familiar with from GPL-3.0 as an Additional Permission giving companies confidence that they will have time to come into compliance if a failure is identified. Their ability to rely on this Additional Permission will hopefully re-establish user confidence and help direct enforcement activity back to the original purpose we have all sought over the years – actual compliance.

Kernel developers in our ecosystem may put their own acknowledgement to the Statement by sending a patch to Greg adding their name to the Statement, like any other kernel patch submission, and it will be gladly merged. Those authorized to ‘ack’ on behalf of their company may add their company name in (parenthesis) after their name as well.

Note, a number of questions did come up when this was discussed with the kernel developer community. Please see [Greg’s FAQ post](#) answering the most common ones if you have further questions about this topic.

Posted by Greg Kroah-Hartman Oct 16th, 2017 [enforcement](#), [kernel](#), [linux](#), [statement](#)

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- [4.9 == Next LTS Kernel](#)

- [Kdbus Details](#)

About Greg

Greg is a Fellow at the [Linux Foundation](#) and is responsible for the Linux kernel stable releases. He is also the maintainer of a variety of different kernel subsystems (USB, char/misc, staging, etc.) and has written a few books about Linux kernel development.

[More specifics about Greg](#)

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Chapter 9

Linux Kernel Community Enforcement Statement FAQ

[Linux Kernel Monkey Log](#)

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Linux Kernel Community Enforcement Statement FAQ

Oct 16th, 2017

Based on the recent Linux Kernel Community Enforcement Statement and [the article describing the background and what it means](#), here are some Questions/Answers to help clear things up. These are based on questions that came up when the statement was discussed among the initial round of over 200 different kernel developers.

Q: Is this changing the license of the kernel?

A: No.

Q: Seriously? It really looks like a change to the license.

A: No, the license of the kernel is still GPLv2, as before. The kernel developers are providing certain additional promises that they encourage users and adopters to rely on. And by having a specific acking process it is clear that those who ack are making commitments personally (and perhaps, if authorized, on behalf of the companies that employ them). There is nothing that says those commitments are somehow binding on anyone else. This is exactly what we have done in the past when some but not all kernel developers signed off on the [driver statement](#).

Q: Ok, but why have this “additional permissions” document?

A: In order to help address problems caused by current and potential future copyright “trolls” aka monetizers.

Q: Ok, but how will this help address the “troll” problem?

A: “Copyright trolls” use the GPL-2.0’s immediate termination and the threat of an immediate injunction to turn an alleged compliance concern into a contract claim that gives the troll an automatic claim for money damages. The [article by Heather Meeker](#) describes this quite well, please refer to that for more details. If even a short delay is inserted for coming into compliance, that delay disrupts this expedited legal process.

By simply saying, “We think you should have 30 days to come into compliance”, we undermine that “immediacy” which supports the request to the court for an immediate injunction. The threat of an immediate junction was used to get the companies to sign contracts. Then the troll goes back after the same company for another known violation shortly after

and claims they're owed the financial penalty for breaking the contract. Signing contracts to pay damages to financially enrich one individual is completely at odds with our community's enforcement goals.

We are showing that the community is not out for financial gain when it comes to license issues – though we do care about the company coming into compliance. All we want is the modifications to our code to be released back to the public, and for the developers who created that code to become part of our community so that we can continue to create the best software that works well for everyone.

This is all still entirely focused on bringing the users into compliance. The 30 days can be used productively to determine exactly what is wrong, and how to resolve it.

Q: Ok, but why are we referencing GPL-3.0?

A: By using the terms from the GPLv3 for this, we use a very well-vetted and understood procedure for granting the opportunity to come fix the failure and come into compliance. We benefit from many months of work to reach agreement on a termination provision that worked in legal systems all around the world and was entirely consistent with Free Software principles.

Q: But what is the point of the “non-defensive assertion of rights” disclaimer?

A: If a copyright holder is attacked, we don't want or need to require that copyright holder to give the party suing them an opportunity to cure. The “non-defensive assertion of rights” is just a way to leave everything unchanged for a copyright holder that gets sued. This is no different a position than what they had before this statement.

Q: So you are ok with using Linux as a defensive copyright method?

A: There is a current copyright troll problem that is undermining confidence in our community – where a “bad actor” is attacking companies in a way to achieve personal gain. We are addressing that issue. No one has asked us to make changes to address other litigation.

Q: Ok, this document sounds like it was written by a bunch of big companies, who is behind the drafting of it and how did it all happen?

A: Grant Likely, the chairman at the time of the Linux Foundation's Technical Advisory Board (TAB), wrote the first draft of this document when the first copyright troll issue happened a few years ago. He did this as numerous companies and developers approached the TAB asking that the Linux kernel community do something about this new attack on our community. He showed the document to a lot of kernel developers and a few company representatives in order to get feedback on how it should be worded. After the troll seemed to go away, this work got put on the back-burner. When the copyright troll showed back up, along with a few other “copycat” like individuals, the work on the document was started back up by Chris Mason, the current chairman of the TAB. He worked with the TAB members, other kernel developers, lawyers who have been trying to defend these claims in Germany, and the TAB members' Linux Foundation's lawyers, in order to rework the document so that it would actually achieve the intended benefits and be useful in stopping these new attacks. The document was then reviewed and revised with input from Linus Torvalds and finally a document that the TAB agreed would be sufficient was finished. That document was then sent to over 200 of the most active kernel developers for the past year by Greg Kroah-Hartman to see if they, or their company, wished to support the document. That produced the initial “signatures” on the document, and the acks of the patch that added it to the Linux kernel source tree.

Q: How do I add my name to the document?

A: If you are a developer of the Linux kernel, simply send Greg a patch adding your name to the proper location in the document (sorting the names by last name), and he will be glad to accept it.

Q: How can my company show its support of this document?

A: If you are a developer working for a company that wishes to show that they also agree with this document, have the developer put the company name in ‘(’ ‘)’ after the developer’s name. This shows that both the developer, and the company behind the developer are in agreement with this statement.

Q: How can a company or individual that is not part of the Linux kernel community show its support of the document?

A: Become part of our community! Send us patches, surely there is something that you want to see changed in the kernel. If not, wonderful, post something on your company web site, or personal blog in support of this statement, we don’t mind that at all.

Q: I’ve been approached by a copyright troll for Netfilter. What should I do?

A: Please see the [Netfilter FAQ here](#) for how to handle this

Q: I have another question, how do I ask it?

A: Email Greg or the TAB, and they will be glad to help answer them.

Posted by Greg Kroah-Hartman Oct 16th, 2017 [enforcement](#), [kernel](#), [linux](#), [statement](#)

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About Greg

Greg is a Fellow at the [Linux Foundation](#) and is responsible for the Linux kernel stable releases. He is also the maintainer of a variety of different kernel subsystems (USB, char/misc, staging, etc.) and has written a few books about Linux kernel development.

[More specifics about Greg](#)

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Part II

Fintech and FOSS

Chapter 10

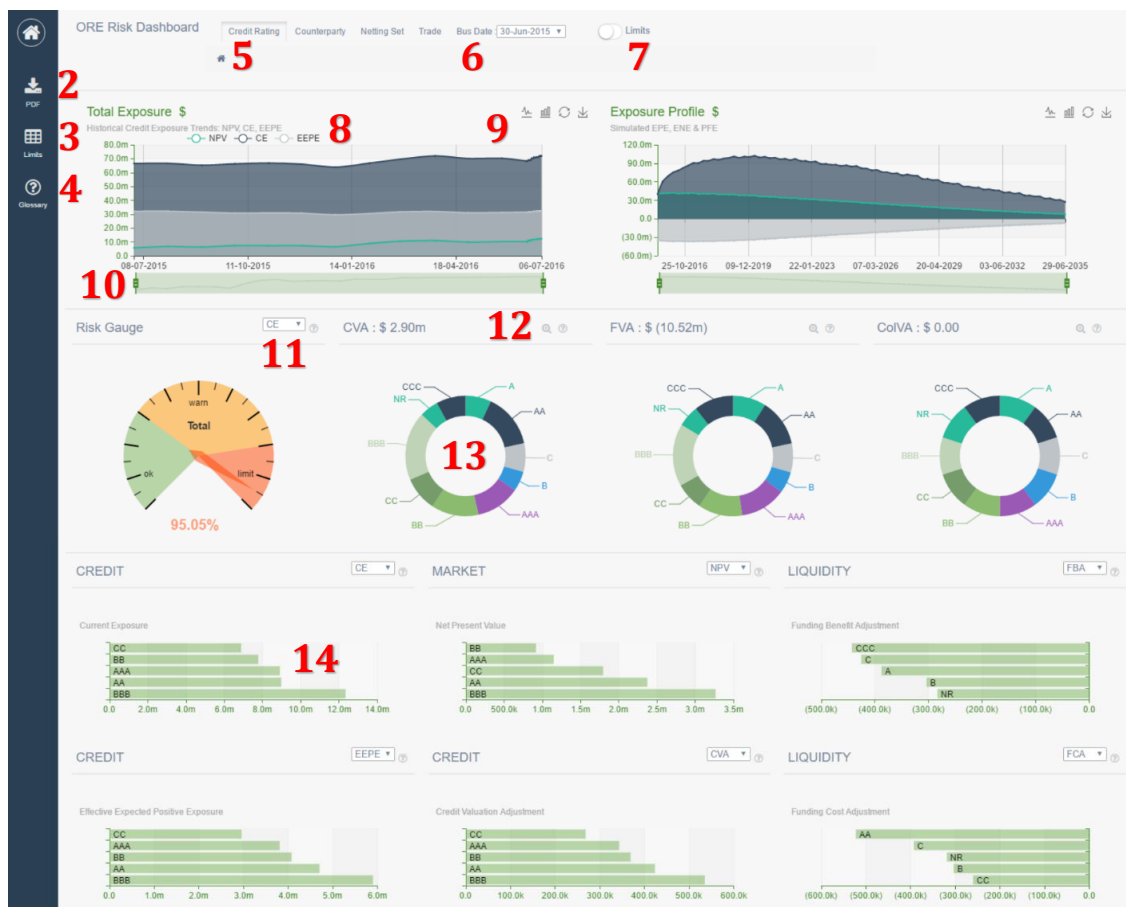
Columbia University Open-Source Risk Engine User Guide

Columbia University Open-Source Risk Engine

RISK DASHBOARD USER GUIDE

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Functionality

1. Home

Button will bring you back to the original home screen. Note that browser navigation buttons, such as the “Back” or “Home” buttons within your browser window will not change the navigation within the Risk Dashboard itself.

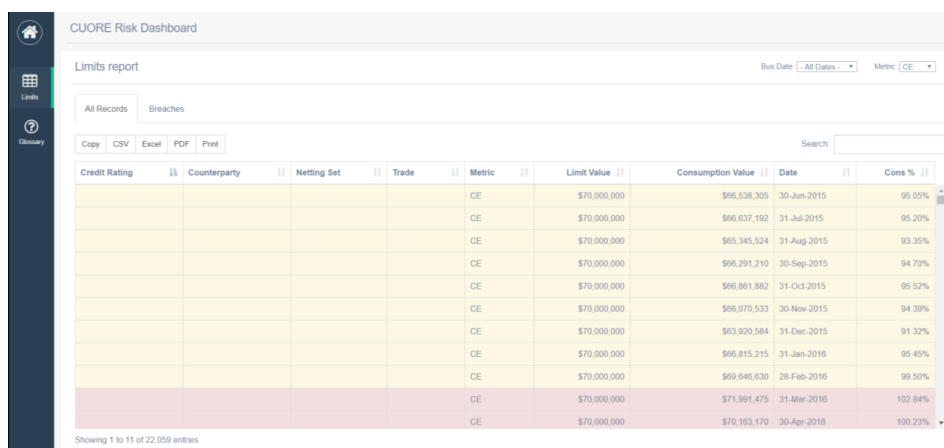
2. PDF Download

Save a PDF version of the current Risk Dashboard display.

3. Limits Table

Button will bring up a new window that displays individual hierarchy records color-coded to identify whether each is close to breaching a limit (yellow) or has already breached a limit (red). Left-most columns for Credit Rating, Counterparty, Netting Set, and Trade identify at which hierarchy each record is displayed. If a cell is blank, that indicates that the record is at a level just above that specific hierarchy (as in the case below, when all four columns are blank, the record is for the aggregate “total” portfolio).

Change the business date and risk metric via the drop-down menus at the upper right, or use the search bar to scan for specific records (if attempting to identify multiple records across hierarchies and risk metrics, separate the search terms with a space). Clicking the “Breaches” tab at the top left of the table filters down to display only those records that have breached a specific limit (red). Copy and save the table using the buttons at left in user-specified formats. To exit the Limits Table, click the Home button at the upper left.



CUORE Risk Dashboard

Limits report

Bus Date: All Dates Metric: CE

All Records Breaches

Copy CSV Excel PDF Print Search

Credit Rating	Counterparty	Netting Set	Trade	Metric	Limit Value	Consumption Value	Date	Cons %
				CE	\$70,000,000	\$66,538,305	30-Jun-2015	95.05%
				CE	\$70,000,000	\$66,637,192	31-Jul-2015	95.20%
				CE	\$70,000,000	\$65,345,524	31-Aug-2015	93.35%
				CE	\$70,000,000	\$66,291,210	30-Sep-2015	94.70%
				CE	\$70,000,000	\$66,861,862	31-Oct-2015	95.52%
				CE	\$70,000,000	\$66,070,533	30-Nov-2015	94.39%
				CE	\$70,000,000	\$63,920,584	31-Dec-2015	91.32%
				CE	\$70,000,000	\$66,815,215	31-Jan-2016	95.45%
				CE	\$70,000,000	\$69,646,630	28-Feb-2016	99.50%
				CE	\$70,000,000	\$71,991,475	31-Mar-2016	102.84%
				CE	\$70,000,000	\$70,163,170	30-Apr-2016	100.23%

Showing 1 to 11 of 22,059 entries

4. Glossary

Definitions for all acronyms and risk metrics displayed within the Risk Dashboard.

5. Changing the Granularity

Change the level of granularity at which the donut charts and bar charts are displayed. Just beneath the Credit Rating / Counterparty / Netting Set / Trade buttons, keep track of which portfolio you're analyzing with the "breadcrumb" tracker tool.

6. Changing the Business Date

Drop-down menu that changes the "as-of" date for all charts except the Total Exposure line chart, which shows a historical trend across all business dates.

7. Global Limit Toggle

Turn on/off the limit displays for all line charts and bar charts. Note that individual bar charts have their own limit toggle, in addition to the global limit toggle at top.

8. Line Chart Toggle

Turn on/off various risk metrics displayed on the Total Exposure chart. Note that the chart will re-size automatically.

9. Line Chart Tools

Change the shape of each risk metric on the bar chart, as well as save the individual chart in image format (.png).

10. Line Chart Date Slider

Change the date range displayed with the line chart.

11. Select Risk Metrics

Drop-down menu to display various risk metrics within each chart.

12. Donut Chart Zoom

For charts with enhanced levels of granularity, the Zoom function allows the user to enlarge each individual donut chart.

13. Donut Chart Drill Down

Click individual hierarchies to “drill-down” into that specific portion of the portfolio. Note that all other charts will automatically refresh to display only the selected portfolio. Keep track of which portfolio you’re analyzing with the “breadcrumb” tracker tool at the top of the Risk Dashboard.

14. Bar Chart Drill Down

Click individual hierarchies to “drill-down” into that specific portion of the portfolio. Note that all other charts will automatically refresh to display only the selected portfolio. Keep track of which portfolio you’re analyzing with the “breadcrumb” tracker tool at the top of the Risk Dashboard.

Troubleshooting

1. Lack of browser support for HTML5 (Canvas)

The Risk Dashboard requires [browser support for HTML5 \(Canvas\)](#).

This issue occurs most often with older versions of Internet Explorer, although the Risk Dashboard has been tested and supported for Internet Explorer 10 and above. Please upgrade your browser to its most recent version to enjoy full functionality of the Risk Dashboard.

2. Stylesheet and/or JavaScript resources not downloading properly to the browser

This can be diagnosed as a mostly blank screen without the presence of any charts. Generally, a forced cache clear and refresh will solve this issue unless the resources are being blocked (e.g. by firewall or other corporate reasons).


In Chrome,

- I. On your browser toolbar, tap More .
- II. Click History, and then click Clear browsing data.
- III. Under "Clear browsing data," select the checkboxes for Cookies and site data and Cached images and files.
- IV. Click Clear browsing data.

In Internet Explorer,

- I. From the Tools menu choose Internet Options. ...
- II. On the General tab, under Browsing history, click Delete.
- III. Un-check the Preserve Favorites website data box.
- IV. Check the Temporary Internet files, Cookies, and History boxes.

In FireFox,

- I. Click the menu button  and choose Options.
- II. Select the Advanced panel.
- III. Click on the Network tab.
- IV. In the Cached Web Content section, click Clear Now.

3. Problems with Stylesheet and/or JavaScript

This can be diagnosed as non-functioning but otherwise correctly rendered charts. Launch the Developer Console (F12) to identify the specific errors that may have arisen during the page load.

Chapter 11

The Bank Secrecy Act, Cryptocurrencies, and New Tokens: What is Known and What Remains Ambiguous (Peter Van Valkenburgh)

The Bank Secrecy Act, Cryptocurrencies, and New Tokens: What is Known and What Remains Ambiguous

Peter Van Valkenburgh
May 2017



Coin Center Report



COIN CENTER

coincenter.org

Peter Van Valkenburgh, *The Bank Secrecy Act, Cryptocurrencies, and New Tokens: What is Known and What Remains Ambiguous*, Coin Center Report, May 2017, available at <https://coincenter.org/entries/aml-kyc-tokens>.

Abstract

This report summarizes how various activities performed with cryptocurrencies and similar tokens have thus far been characterized by FinCEN and other authorities for the purposes of determining the compliance obligations of persons performing those activities under the Bank Secrecy Act. This report will also describe an area where there is great uncertainty in current law and interpretation: are BSA compliance obligations triggered when the developers of a new decentralized token protocol sell that token to U.S. persons (sometimes called a “token sale” or, more unfortunately, an “ICO”)? The report concludes by recommending that FinCEN should clarify that certain token sales are not currently subject to regulation under the BSA. Should there be a desire to regulate these activities, FinCEN must engage in a formal rulemaking.

Author

Peter Van Valkenburgh
Director of Research
Coin Center
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About Coin Center

Coin Center is a non-profit research and advocacy center focused on the public policy issues facing cryptocurrency technologies such as Bitcoin. Our mission is to build a better understanding of these technologies and to promote a regulatory climate that preserves the freedom to innovate using blockchain technologies. We do this by producing and publishing policy research from respected academics and experts, educating policymakers and the media about blockchain technology, and by engaging in advocacy for sound public policy.

I. Introduction

A federal law, the Bank Secrecy Act (BSA),¹ mandates that “financial institutions” (a broad category of businesses offering financial services²) must collect and retain information about their customers and share that information with the Financial Crimes Enforcement Network (FinCEN), a bureau within the Department of the Treasury.³ The emergence of Bitcoin and follow-on decentralized crypto-tokens has raised an important question. When do businesses dealing with these new technologies fit the definition of “financial institution” and become obligated to surveil and report on their customers?

This report will summarize and analyze how various activities performed with cryptocurrencies and similar tokens have thus far been characterized by FinCEN and other authorities for the purposes of determining the compliance obligations of persons performing those activities under the Bank Secrecy Act. This report will also describe an area where there is great uncertainty in current law and interpretation: are BSA compliance obligations triggered when the developers of a new decentralized token protocol⁴ sell that token to U.S. persons (sometimes called a “token sale” or, more unfortunately, an “ICO”⁵)?

II. The 2013 Guidance

In 2013, FinCEN published guidance on the “Application of FinCEN’s Regulations to Persons Administering, Exchanging, or Using Virtual Currencies” (“the Guidance”).⁶ The Guidance interprets rules previously promulgated by the Treasury (“the implementing regulations”) that implement the BSA.⁷

¹ 31 USC §§ 5311-5332.

² *Id.* at §5321(a)(2)

³ FinCEN is a Bureau within the Treasury established by order of the Secretary of the Treasury (Treasury Order Numbered 105-08).

⁴ There are multiple different projects that use open source software to create a public network on the internet capable of recording and verifying important data shared between the network’s participants. If that shared data is related to a ledger of transactions made in a native token we often call these systems cryptocurrency networks. Bitcoin was the world’s first cryptocurrency, and several similar projects have followed. However, the tokens described on that ledger need not be used as currency. Just as tokens and other bearer instruments in real life can represent various entitlements (e.g. theater tickets, vouchers, stock and bond certificates, etc.) so too can tokens described by a decentralized ledger maintained by an open network of participants. A list of many active token projects can be found at <http://coincap.io>. For more on building a token project on top of Ethereum’s existing decentralized computing infrastructure, see Peter Van Valkenburgh, “What does it mean to issue a token ‘on top of’ Ethereum?” *Coin Center* (May 2017) <https://coincenter.org/entry/what-does-it-mean-to-issue-a-token-on-top-of-ethereum>.

⁵ See Smith + Crown, *What is a token sale (ICO)?* (last accessed May 2017) <https://www.smithandcrown.com/what-is-an-ico/>.

⁶ Department of the Treasury Financial Crimes Enforcement Network, *FIN-2013-G001 Application of FinCEN’s Regulations to Persons Administering, Exchanging, or Using Virtual Currencies* (March 18, 2013) available at <https://www.fincen.gov/sites/default/files/shared/FIN-2013-G001.pdf>.

⁷ 31 CFR §§ 1010-1060

A. Currency, Virtual Currency, and Convertible Virtual Currency

The Guidance invents a new term, “Virtual Currency,” that is not found elsewhere in the BSA or the implementing regulations. Virtual Currency is defined broadly in the Guidance to include all manner of items used as a “medium of exchange.”⁸ A narrower term, “Convertible Virtual Currency,” is defined as any virtual currency that “either has an equivalent value in real currency, or acts as a substitute for real currency.”⁹ Before we can determine the implications of this new term, we need to understand the reasoning behind its invention.

The BSA regulates “financial institutions.” The statute offers loose definitions of various sub-categories of financial institution,¹⁰ and grants power to the Treasury to craft new or more specific definitions through notice and comment rulemaking.¹¹ In general, an inquiry into whether a person (individual or business) fits into one of several sub-categories of “financial institution” is focused on what activities that person performs (e.g. money transmission, foreign exchange, banking, etc.), and is not focused on *which technologies* are used to perform those activities.

However, the majority of these activities are defined in regards to exchanging, storing, or otherwise dealing with “currency,” or instruments denominated in “currency.”¹² Currency is defined in the BSA implementing regulations as “the coin and paper money of the United States or of any other country[.]”¹³ Therefore, no activity performed using a private currency or cryptocurrency, like Bitcoin, would fit within the defined activities specifying “currency” as the medium for the activity.¹⁴

The “money transmitter” sub-category of “financial institution,” however, has a broader definition. It extends to money transmission involving “currency ... or other value that

⁸ Guidance *supra* note 6 at 1 (“In contrast to real currency, “virtual” currency is a medium of exchange that operates like a currency in some environments, but does not have all the attributes of real currency. In particular, virtual currency does not have legal tender status in any jurisdiction.”).

⁹ *Id.* (“This guidance addresses “convertible” virtual currency. This type of virtual currency either has an equivalent value in real currency, or acts as a substitute for real currency.”).

¹⁰ 31 USC § 5312(a)(2).

¹¹ 31 USC § 5312(a)(2)(Y).

¹² See e.g. 31 CFR § 1010.100(ff)(1) where FinCEN defines a “dealer in foreign exchange” as a “person that accepts the currency, or other monetary instruments, funds, or other instruments denominated in the currency, of one or more countries in exchange for the currency, or other monetary instruments, funds, or other instruments denominated in the currency, of one or more other countries in an amount greater than \$1,000 for any other person on any day in one or more transactions, whether or not for same-day delivery.”

¹³ *Id.* at § 1010.100(m)

¹⁴ Additionally, according to the FinCEN guidance, virtual currency activities do not fall within the definition of prepaid access providers. See Guidance *supra* note 6 at note 18 (explaining that “‘prepaid access’ under FinCEN’s regulations is limited to ‘access to funds or the value of funds.’ If FinCEN had intended prepaid access to cover funds denominated in a virtual currency or something else that substitutes for real currency, it would have used language in the definition of prepaid access like that in the definition of money transmission, which expressly includes the acceptance and transmission of “other value that substitutes for currency.”).

substitutes for currency.”¹⁵ Therefore, when the Guidance defines “convertible virtual currency,” it is not creating a newly regulated activity or technology-based regulation out of whole cloth, but rather clarifying why activities performed using Bitcoin or any other currency substitute may fit within the existing definition of “money transmission” in the implementing regulations. As an important aside, money transmitters, along with a few other types of person (e.g. prepaid providers) fall into a broader category of “money services business” (“MSB”), which in turn is one of several categories of “financial institution.”¹⁶ Because of this nesting, FinCEN, in guidance or administrative ruling, may refer to a virtual currency business as a “money transmitter” or as a “money services business” alternatively. For our purposes, the terms are interchangeable.

The definition of convertible virtual currency is deliberately broad and can easily be applied to describe cryptocurrencies (e.g. Bitcoin), as well as Bitcoin-like tokens as found in other open blockchain protocols (e.g. Ether,¹⁷ XRP,¹⁸ and others¹⁹). A token need not be *designed* to play a currency-like role in order to qualify; it need only (as per the definition of money transmission) be used as “value” that “substitutes for currency.” The fact that a token was invented to accomplish a highly technical non-currency result (e.g. tallying votes amongst computers in a decentralized consensus protocol) will not undo that token’s eligibility for classification as a convertible virtual currency, if it is *also* used as a medium of exchange and can be a substitute for real currency.

With this perfunctory matter of terminology out of the way, the Guidance then turns to the question of which persons dealing with convertible virtual currencies fit within the money transmitter sub-category of BSA-regulated financial institutions.

B. Exchangers, Users, and Administrators.

The Guidance creates and defines three categories of persons: *administrators*, *exchangers*, and *users*.²⁰ It explains why only *administrators* and *exchangers* qualify as money transmitters and are therefore subject to BSA obligations.²¹

Exchangers. With respect to *exchangers*, the Guidance reads:

An exchanger is a person engaged as a business in the exchange of virtual currency for real currency, funds, or other virtual currency.

[and]

¹⁵ Implementing Regulations *supra* note 7 at § 1010.100(ff)(5).

¹⁶ *Id.* at § 1010.100(ff).

¹⁷ <https://www.ethereum.org/>

¹⁸ <https://ripple.com/>

¹⁹ For an up to date list of tokens and their current prices on open markets, see <http://coincap.io/>.

²⁰ Guidance *supra* note 6 at 2.

²¹ *Id.* at 3-5.

An ... exchanger that (1) accepts and transmits a convertible virtual currency or (2) buys or sells convertible virtual currency for any reason is a money transmitter under FinCEN's regulations.²²

It's critical to read these two sections together to avoid confusion, but the result of that careful reading is clear enough. Here are the essential points:

1. **You are an "exchanger" only if you run a business.** The definition of "exchanger" requires that one be "engaged as a business in the exchange of virtual currency" so it does not include individuals buying or selling bitcoin as a personal investment or for other personal purposes.
2. **You are only a "money transmitter" if you are an "exchanger" that "accepts and transmits" or "buys and sells" bitcoins or another virtual currency.** "Accepts and transmits" means you take bitcoin from one customer and send it (presumably on their behalf) to another person or persons. Note that you have to do *both*, accept *and* transmit. So if you only accept bitcoin from someone (possibly in return for a good or service) then you are not a money transmitter. Similarly, if all you do is give bitcoin to someone else (again in return for a good or service, or perhaps as a gift) then you are also not a money transmitter. That said, you *are* a money transmitter if you are an *exchanger* who "buys and sells . . . for any reason." So, providing a brokerage or exchange service for customers qualifies as money transmission.
3. **If you are a money transmitter, then you must comply with the obligations that the BSA and FinCEN place on those types of businesses.** Those obligations are the same as those with which companies like PayPal and Western Union have had to comply for decades. They are, generally, three-fold: (1) register with FinCEN;²³ (2) have a risk-based know-your-customer (KYC) and anti-money-laundering (AML) program;²⁴ and (3) file suspicious activity (SARs).²⁵

Users. Our interpretation of *exchanger* is reinforced by the definition of a *user* in the Guidance:

A user is a person that obtains virtual currency to purchase goods or services.²⁶

And there is a clear statement that *users* are not money transmitters under the relevant regulations and have no FinCEN compliance obligations:

A user of virtual currency is not an MSB under FinCEN's regulations and therefore is not subject to MSB registration, reporting, and recordkeeping regulations.²⁷

²² *Id.* at 3.

²³ See FinCEN, *BSA Requirements for MSBs* (last accessed May 2017) <https://www.fincen.gov/bsa-requirements-msbs>.

²⁴ *Id.*

²⁵ *Id.*

²⁶ Guidance *supra* note 6 at 2.

²⁷ *Id.*

Nonetheless, this definition of *user* can be a bit confusing because it seems to imply that for someone to be a *user* (and thus not a money transmitter), she must obtain bitcoin for the sole and express purpose of purchasing goods or services and not anything else, like investing, making a gift or political contribution, or any other non-exchange-business reason. The problem is that if you are buying or selling your own bitcoins for your own personal uses but not, specifically, to “purchase goods or services,” then under a strict interpretation of the definition you are neither an *exchanger* (because you are not engaged as a business in exchange) nor a *user* (because you are not using the bitcoins to buy or sell goods or services). You are an undefined actor according to a strict reading of the Guidance, and your compliance obligations are unclear.

Administrators. This final category of actors is actually less important to users and developers of technologies like Bitcoin because a plain interpretation suggests it only relates to centralized virtual currencies that predated Bitcoin, such as E-gold²⁸ or Liberty Reserve.²⁹

The Guidance defines *administrator* as follows:

An administrator is a person engaged as a business in issuing (putting into circulation) a virtual currency, and who has the authority to redeem (to withdraw from circulation) such virtual currency.³⁰

To fit into that definition you must be able to both issue *and* redeem the currency. Let’s say that I create a new virtual currency modeled on Bitcoin and that I premine a certain number of coins for myself and then release the software and sell some of my coins to interested buyers. At this point, perhaps I have “issued” new virtual currency. But, can I also “redeem” that currency? If, like Bitcoin, the network is *decentralized*, then I have no ability (much less “authority” as the definitions states) on that network to seize (withdraw from circulation) and redeem coins that are now held by users of the network. Contrast that with a *centralized* virtual currency like E-gold or Liberty Reserve where, because I am the party keeping the authoritative record of transactions on the network, I can always redeem the currency as well as issue it.

Our use of the terms *centralized* and *decentralized* and their use in making these distinctions is also in keeping with the spirit of the Guidance. Both centralized and decentralized virtual currency are described in the Guidance,³¹ and—with respect to centralized virtual currencies—their *administrators* are classified as money transmitters:

The second type of activity involves a convertible virtual currency that has a centralized repository. The administrator of that repository will be a money transmitter to the

²⁸ *E-gold* (last accessed May 2017) <https://en.wikipedia.org/wiki/E-gold>.

²⁹ *Liberty Reserve* (last accessed May 2017) https://en.wikipedia.org/wiki/Liberty_Reserve.

³⁰ Guidance *supra* note 6 at 2.

³¹ *Id.* at 4-5.

extent that it allows transfers of value between persons or from one location to another.

³²

Given all this, we can see that *administrators* only exist in the centralized virtual currency context, so we don't need to discuss them with respect to decentralized virtual currencies like Bitcoin, Ethereum, or Zcash where, once released, the units of cryptocurrency are out of the control of the developers and maintainers of the network.

In total, we can summarize the 2013 Guidance with respect to four key points:

1. There are no *administrators* in the decentralized cryptocurrency/token space. So the key question for our purposes will always be: *who qualifies as an exchanger and who qualifies as a user?*
2. *Exchangers* are persons in the business of running an exchange service who either "accept and transmit" bitcoins or similar tokens or "buy or sell" bitcoins or similar tokens. These persons will be treated as *money transmitters* and must register, collect information about their users, and do other BSA-related compliance.
3. *Users* are persons who obtain bitcoins or tokens solely to purchase goods or services. These persons do not qualify as *money transmitters*, but it is unclear if the category is intended to cover all persons using bitcoins or tokens who are not *exchangers*, or if the category is strictly limited to individuals purchasing goods or services with bitcoins or other tokens.
4. If *users* is narrowly interpreted, then there are a host of other persons, including software developers and investors, who are not *exchangers* as defined and also not *users* as defined, and the guidance is silent regarding their status as *money transmitters*.

III. Later Administrative Rulings and Settlements

Since 2013, FinCEN has issued several administrative rulings clarifying how the original Guidance applies to specific fact patterns described by companies who have sought clarification.³³ Additionally, in 2015 FinCEN reached a settlement with Ripple Labs that also includes an interpretation of the Guidance that may be relevant to other companies in the space.³⁴

³² *Id.* at 4.

³³ FinCEN's administrative rulings are available at <https://www.fincen.gov/resources/statutes-regulations/administrative-rulings>.

³⁴ FinCEN, *FinCEN Fines Ripple Labs Inc. in First Civil Enforcement Action Against a Virtual Currency Exchanger* (May 5, 2015) available at <https://www.fincen.gov/news/news-releases/fincen-fines-ripple-labs-inc-first-civil-enforcement-action-against-virtual>.

A. 2014 Software and Investment Administrative Ruling

In 2014, FinCEN, in an administrative ruling (the Software and Investment Ruling),³⁵ clarified how software development relates to the Guidance:

The production and distribution of software, in and of itself, does not constitute acceptance and transmission of value, even if the purpose of the software is to facilitate the sale of virtual currency.³⁶

This interpretation makes it clear that software development alone cannot rise to the level of *money transmission*. It's unclear whether we would call developers *users* but the result is the same; they are not subject to BSA regulation.

The Software and Investment Ruling also seemingly expanded the category of *user* with respect to investment activities:

[W]hen the Company invests in a convertible virtual currency for its own account, and when it realizes the value of its investment, it is acting as a user of that convertible virtual currency within the meaning of the guidance. As a result, to the extent that the Company limits its activities strictly to investing in virtual currency for its own account, it is not acting as a money transmitter and is not an MSB under FinCEN's regulations.³⁷

So, buying and selling as an investment for yourself does not qualify as being an *exchanger*. As long as you are dealing only with your own virtual currency, and not acting as a third-party intermediary for others (*e.g.* running an exchange as a business), you are not a money transmitter and are not subject to FinCEN rules.

Note that this administrative ruling was offered to a "company," not an individual, so this exemption does not depend on the entity in question being an individual rather than a business operating for profit. If you run a business that has invested in bitcoin and you sell those investments for profit, then you are an unregulated *user* not a regulated *exchanger*. If you run a business, however, that is explicitly engaged in helping *others* buy, sell, or send bitcoin or another decentralized token, then you are a regulated *exchanger* and do need to register with FinCEN and comply with its rules.

B. Ripple Labs Settlement

In May of 2015, FinCEN reached a settlement agreement with Ripple Labs,³⁸ a company that builds products utilizing the decentralized cryptocurrency known as XRP. In the settlement

³⁵ FinCEN, *FIN-2014-R002 Application of FinCEN's Regulations to Virtual Currency Software Development and Certain Investment Activity* (January 30, 2014) <https://www.fincen.gov/sites/default/files/shared/FIN-2014-R002.pdf>, [hereinafter Software and Investment Ruling].

³⁶ *Id.* at 2.

³⁷ *Id.* at 4.

³⁸ FinCEN, *FinCEN Fines Ripple Labs supra* note 34.

agreement's "Statement of Facts and Violations,"³⁹ the following activity is described as a violation of the Bank Secrecy Act as interpreted by the Guidance:

Notwithstanding the Guidance, and after that Guidance was issued, Ripple Labs continued to engage in transactions whereby it sold Ripple currency (XRP) for fiat currency (*i.e.*, currency declared by a government to be legal tender) even though it was not registered with FinCEN as an MSB. Throughout the month of April 2013, Ripple Labs effectuated multiple sales of XRP currency totaling over approximately \$1.3 million U.S. dollars.⁴⁰

So the violation addressed by the settlement was apparently a *sale* of XRP by Ripple Labs. To be clear, Ripple Labs was selling tokens (XRP) that it, the company, owned. Ripple Labs was not an intermediary selling on behalf of someone else. This could indicate that merely selling tokens on your own account qualifies you as an exchange, seemingly contradicting the interpretation in the Software and Investment Ruling.

The Ripple settlement Statement of Facts and Violations also lists other things that Ripple did under the subheading "violations":

Ripple Labs has previously described itself in federal court filings and in a sworn affidavit as "a currency exchange service providing on-line, real-time currency trading and cash management Ripple facilitates the transfers of electronic cash equivalents and provides virtual currency exchange transaction services for transferrable electronic cash equivalent units having a specified cash value."⁴¹

But note that this paragraph sets forth how Ripple Labs described itself; it does not state anything Ripple Labs actually did. At no point does the Settlement Agreement or its Statement of Facts and Violations explain how these self-descriptions amounted to a violation.

It is true that Ripple (the network) is more complicated than Bitcoin as far as marketing and technical capacities are concerned because the Ripple network uses "gateways" to move not just XRP but also a range of foreign currencies on behalf of the network's users.⁴² It is also true that these gateways are exchanging electronic cash equivalents and foreign currencies as a business for their customers (which fits our understanding of the definition of *exchanger* quite well). But Ripple Labs doesn't (and never did) run or endorse those gateways, and none of these additional facts and details about the Ripple protocol are listed as violations in the settlement. So, the only putative violation of the Guidance and the Bank Secrecy Act set forth in the settlement agreement is the sale of XRP described above.

³⁹ FinCEN, *ATTACHMENT A: STATEMENT OF FACTS AND VIOLATIONS* (May 5, 2015) available at https://www.fincen.gov/sites/default/files/shared/Ripple_Facts.pdf [hereinafter Statement of Facts].

⁴⁰ *Id.* at ¶ 20.

⁴¹ *Id.* at ¶ 16.

⁴² See Ripple Labs, *Becoming a Ripple Gateway* (last accessed May, 2017) <https://ripple.com/build/gateway-guide/#ripple-gateways-explained>.

Does the Ripple Settlement contradict the Software and Investment Ruling? At what point is selling from your own account something that you can do as an unregulated *user*, and when does it rise to the level of you becoming an *exchanger*? What made Ripple Labs different than the company in the Software and Investment Ruling that sold Bitcoin from its own account?

At this point it is important to note that what we are discussing is a settlement agreement, not a court judgement. FinCEN is agreeing with Ripple Labs in this document not to prosecute Ripple Labs for “any of the conduct described in the statement of facts.” This means that the interpretation of the Guidance as found in the settlement is not precedential; it binds only Ripple Labs and FinCEN with respect to prosecuting Ripple Labs. If a different company engages in similar behavior in the future but chooses not to settle, then FinCEN would have to elaborate on its claims and clarify which specific acts were actually money transmission and which were not. That hasn’t happened, however, and the 2015 settlement order, as it stands, seems to contradict the Software and Investment Ruling at least as far as *selling from one’s own account* is concerned. Two years on, this ambiguity has not been clarified.

IV. Applying the Guidance to various persons in the cryptocurrency space.

There are a wide variety of businesses in the cryptocurrency space. Some will fit into the definition of *exchanger* and they will need to register with FinCEN and comply with KYC/AML requirements. Some will fit into the definition of *user* and they will not need to register or comply with KYC/AML requirements. None of the companies or individuals in the decentralized cryptocurrency space will fit the definition of *administrator*.⁴³

To make this discussion clear we need categories of our own to describe the various business models that might or might not fit into the definition of *exchanger* or *user*. We can use the following categories:

- **Custodial Exchange** — A company that connects token/bitcoin buyers and sellers, holds their tokens/bitcoin as a custodial intermediary during the exchange, and/or acts as a broker.
- **Non-custodial Exchange** — A company that allows buyers and sellers to post and accept offer messages, communicate, and find each other for direct peer-to-peer transactions used to settle a trade.⁴⁴
- **Non-custodial Wallet Developer** — A company that makes, updates, and services software that allows individuals to hold their own tokens/bitcoins locally on their personal devices.

⁴³ See *infra* pp. 7-8.

⁴⁴ This category could describe Craigslist or any other generalized online classified advertising service. Similarly, it could describe a classified advertising service specializing in placing advertisements for offers to sell or buy bitcoins.

- **Full Node or Miner** — A company or individual that runs bitcoin or other decentralized token network software that relays signed transaction messages and/or writes new blocks to the network’s blockchain.
- **New Token Developer** — A company or individual that creates software that, when run by a network of peers, creates a new decentralized token like bitcoin.
- **New Token Developer and Seller** — A token developer, as described above, who also sells some initial distribution of the token to interested buyers.

Now we’ll take each of these categories and see if they fit the definition of *exchanger* and therefore will be a *money transmitter* that needs to register and comply, or if they fit the definition of *user* and therefore clearly do not need to comply.

A **custodial exchange** will definitely be an *exchanger* and a *money transmitter* according to the guidance. Such a company runs an exchange service as a business and both “buys and sells” bitcoin and “accepts and transmits” bitcoin *for their users* (rather than merely for their own account). This is not a debated or contested interpretation and, indeed, major custodial exchanges in the U.S. are registered with FinCEN.⁴⁵

An analysis of the implementing regulations leads us to a similar conclusion, albeit via a more complicated path. The foundational question remains, does the custodial exchange “accept and transmit” bitcoin for their users? “Accept” is not defined in the BSA, but it is a defined term in the implementing regulations:

A receiving financial institution, other than the recipient’s financial institution, accepts a transmittal order by executing the transmittal order. A recipient’s financial institution accepts a transmittal order by paying the recipient, by notifying the recipient of the receipt of the order or by otherwise becoming obligated to carry out the order.⁴⁶

This definition is heavily reliant on the term “transmittal order” so we should also take a look at the implementing regulations’ definition of that term:

The term transmittal order . . . is an instruction of a sender to a receiving financial institution, transmitted orally, electronically, or in writing, to pay, or cause another financial institution . . . to pay, a fixed or determinable amount of money to a recipient if:

- (1) The instruction does not state a condition to payment to the recipient other than time of payment;
- (2) The receiving financial institution is to be reimbursed by debiting an account of, or otherwise receiving payment from, the sender; and

⁴⁵ See, e.g., https://www.fincen.gov/fcn/financial_institutions/msb/msbstateselector.html#

⁴⁶ Implementing Regulations *supra* note 7 at § 1010.100(a).

(3) The instruction is transmitted by the sender directly to the receiving financial institution or to an agent or communication system for transmittal to the receiving financial institution.⁴⁷

A bitcoin transaction, if it is sent from one custodial exchange to another *may* fit this definition of transmittal order, and the sender's exchange *may* then be said to "accept and transmit" the bitcoins. For example, let's say Alice wants to use bitcoin to pay for shoes sold by a merchant. Let's assume that Alice uses Coinland (a fictional custodial exchange) to safekeep her bitcoins. To pay for the shoes, Alice will use an application on her phone to ask Coinland to send some amount of those bitcoins to a bitcoin address that was provided to her by the shoe merchant. Let's say the shoe merchant uses a different custodial exchange, Bitprocess (another fictional company) to accept bitcoin payments. In this case, there is a colorable argument that Coinland has been instructed by Alice to cause another financial institution, Bitprocess, to pay or become obligated to pay a designated amount of Bitcoin to the merchant. Coinland executes that order. Coinland's activity in the transaction may fit the definition of "accept" in the implementing regulations.⁴⁸

A **non-custodial exchange** is probably not an *exchanger* or a *money transmitter*. If, like Craigslist or any other online classified advertising service,⁴⁹ the business merely helps

⁴⁷ Implementing Regulations *supra* note 7 at § 1010.100(eee).

⁴⁸ This is, admittedly, an awkward fit. In reality, Alice did not instruct Coinland to do anything other than send some bitcoins to a bitcoin address. Bitcoin addresses will generally look something like this:

17kdugRB1fdvqFC1BHkBWjZWm2wbt982AH

And Alice's instruction to pay this address would generally not be accompanied by any other information about the recipient, our merchant. In this sense it is strange to suggest that Coinland has been instructed to cause Bitprocess to do anything. Coinland doesn't know anything about Bitprocess or the merchant, or even that either of those parties are at the other end of the bitcoin address. Alice has simply asked Coinland to send bitcoins to a bitcoin address. It is difficult to find an accurate metaphor, however, it would not be dissimilar than imagining that (in a future that involves physical teleportation) a bank customer ordered their bank to teleport cash to a particular set of geographic coordinates that just so happens to be the vault of another person's bank. The bank initiating the teleportation of the cash knows nothing about the recipient or the recipient's bank, it only knows that it has been ordered by its customer to teleport her cash to a set of coordinates.

As described earlier, the classification of custodial exchanges as money transmitters has been widely accepted by regulators and companies, and several major custodial exchanges based in the U.S. are registered with FinCEN. However, it is very possible that the Bitcoin transactions initiated by custodial exchanges on behalf of their customers do not fit the definition of "transmittal orders." In that case, custodial exchanges who do not also deal in real currencies, would not qualify as money transmitters because they do not "accept" anything that fits the definition of a "transmittal order." They do not execute an order that is intended to cause, and causes, another institution to pay a recipient; they simply execute an order to broadcast a Bitcoin transaction message to the peer-to-peer network. That message is not an unconditional order demanding that anyone pay anyone else; indeed there is a substantial condition placed on the message. If the message is not incorporated into a block by a miner, no payment will be made. While the existing interpretation with respect to custodial exchanges will likely remain unchallenged, we would be remiss to not bring this analyses to its full conclusion.

⁴⁹ See, e.g., *craigslist*, <https://www.craigslist.org/about/sites> (last accessed May 2017).

individual buyers and sellers find and communicate with each other, then it is never “accepting and transmitting” tokens or bitcoins for its users, nor is it “buying or selling” tokens or bitcoins. It may be commonly understood as an exchange because it deals in exchange-related information (e.g. order-books, offers, acceptances, communications between buyers and sellers) but it, as a company, is never doing the actual currency conversion or handling the actual tokens or money; that all happens peer-to-peer.

Another way to characterize what these companies do is: *development of a web-based software tool (e.g. a website) that facilitates peer-to-peer exchange*. As we discussed earlier, FinCEN’s Software and Investment Ruling describes mere software development and distribution as outside the scope of BSA regulation.

Additionally, the individual buyers and sellers, assuming they are merely opening or closing their own personal investment positions, will likely be found to be *users* as per the Software and Investment Ruling. This will almost certainly be the case if both the buyer and seller are merely exchanging bitcoin to and from their personal software wallets (i.e. a truly peer-to-peer transaction without a custodial intermediary involved). If, however, while negotiating a sale of Bitcoin either the buyer or seller knows that they are helping their counterparty move money into or out of a custodial exchange for particular purposes (especially illicit purposes) then they may be treated as an exchanger. There will be more on this question later, in a section on applicable case law.⁵⁰

A **non-custodial wallet developer** is likely not an *exchanger* or a *money transmitter*. This company does not buy and sell tokens or bitcoins, but they do help individuals hold and transmit their own tokens or bitcoin by building and supporting software tools (e.g. wallet apps).⁵¹ The operative question here is, again, whether the developer of the software ever “accepts and transmits” the bitcoin or tokens. The Software and Investment Ruling indicates that FinCEN would not treat this activity as money transmission because the wallet developer is engaging only in the “production and distribution of software.”⁵²

Recall our previous discussion of custodial exchanges and the hypothetical where Alice is paying a merchant for shoes using bitcoin. Imagine that Alice was not using a custodial wallet provider to hold her bitcoins and initiate transactions. Imagine, instead, that she was initiating the transaction herself by running non-custodial wallet software on a smartphone she carries with her. In this case, Alice, herself, is sending bitcoins to an address controlled by Bitprocess, and Bitprocess is obligated to pay those bitcoins to the merchant. The developer who wrote the software that Alice runs on her phone has not been ordered to do anything with respect to this payment, and—indeed—they are likely unaware of the payment and have no power or

⁵⁰ See *infra* pp. 20-21.

⁵¹ The foregoing analysis should also apply to so-called multi-sig wallet developers when they do not retain access to sufficient private keys to execute unilaterally transactions out of the user’s wallet.

⁵² Software and Investment Ruling *supra* note 35 at 2.

obligation to execute a transmittal order or otherwise cause Bitprocess to pay the Merchant; Alice has that power.

Bitprocesss, as the merchant's custodial exchange, is a money transmitter, but the company that developed the software Alice uses is not. The developers simply built the tools that allowed Alice to compose and broadcast bitcoin transaction messages on the peer-to-peer network. She does this using her phone all by herself and without an intermediary acting on her behalf.

This interpretation of "accept" can be buttressed with a look at how acceptance is understood in other legal realms. For example, acceptance is a well understood concept in the law of contracts and delivery of physical goods.⁵³ A token or bitcoin is not a perfect analog for a physical good, and contract law is not a perfect analog for administrative law dealing with money transmission regulation.⁵⁴ However, in these legal traditions "acceptance" is something that happens after delivery and only once there has been reasonable opportunity to inspect and reject the item.⁵⁵ At the very least we would expect that for there to be an acceptance of bitcoin or tokens, the recipient should be given actual control or possession of the tokens (something akin to "tender of delivery"⁵⁶) and they should have and retain the ability to determine the future of token's disposition—e.g. they can unilaterally send them to someone else or withhold them from others indefinitely.⁵⁷ A person who merely designs and distributes wallet software will not have access to the data essential to controlling the bitcoins or tokens kept in that wallet—i.e. the private keys—therefore they never will have accepted anything from the users of their software products and should not fit the definition of an *exchanger* or *money transmitter*.

A person running a **full node** or a **miner** is not an *exchanger* or a *money transmitter*. These persons run computers that relay signed transaction messages throughout the network and, in the case of miners, they may bundle signed transactions into a block for addition to the blockchain.⁵⁸ While this activity bears a superficial resemblance to financial intermediaries relaying bank wires, the nature of cryptocurrency networks means that none of these

⁵³ See, e.g., U.C.C. § 2-606. *What Constitutes Acceptance of Goods*.

⁵⁴ Nonetheless, Bitcoin is widely understood as a commodity good. See, e.g., U.S. Commodity Futures Trading Commission, *RELEASE: pr7231-15*, <http://www.cftc.gov/PressRoom/PressReleases/pr7231-15>. Therefore laws regulating a bitcoin's acceptance are in *pari materia* with laws dealing with typical goods acceptance, and their interpretations should be shared.

⁵⁵ U.C.C. § 2-606. *What Constitutes Acceptance of Goods*.

⁵⁶ U.C.C. § 2-503. *Manner of Seller's Tender of Delivery*.

⁵⁷ This understanding of when a person has actual control over a bitcoin or other virtual currency is derived from the excellent work of the Uniform Law Commission's drafting committee for a model Regulation of Virtual Currency Businesses Act. The current draft (likely to be finalized Summer of 2017) defines control as follows: "'Control' means: (A) When used in reference to transactions or relationships involving virtual currency, the term means power to execute unilaterally or prevent indefinitely virtual currency transactions." National Conference of Commissioners On Uniform State Laws, *Draft Regulation Of Virtual Currency Businesses Act, May 4-7, 2017 Style Committee Meeting*. (May 2017)

http://www.uniformlaws.org/shared/docs/regulation%20of%20virtual%20currencies/2017may_RVCBA_Style%20Mtg.pdf. Coin Center strongly supports this definition and the approach taken by the ULC.

⁵⁸ See Peter Van Valkenburgh, "What is Bitcoin Mining, and Why is it Necessary?" *Coin Center* (Dec. 2014) <https://coincenter.org/entry/what-is-bitcoin-mining-and-why-is-it-necessary>.

participants ever actually accepts the tokens.⁵⁹ Only the person designated by the sender as the recipient in a cryptocurrency transaction message can ever spend the funds.⁶⁰ Merely relaying or intercepting the transaction message does not grant the full node or miner any actual control over the cryptocurrency being sent.

“Acceptance” also has a legal definition in the payments context, and it is generally understood as: “the receipt of a check or other negotiable instrument by a bank or another drawee.”⁶¹ A bitcoin transaction message received or broadcast by a full node is not a “negotiable instrument” because it is not an “unconditional promise or order to pay a fixed amount of money.”⁶² If I try to send you a bitcoin, but my transaction message doesn’t get relayed or included in a block, I am not in breach of any promise to pay you (assuming we don’t have any other agreements outside of my broadcasting the message on the bitcoin network).

Finally, there’s the question of a miner who is rewarded with new bitcoins for maintaining the network (as per the cryptocurrency’s new-money-creation schedule⁶³). If the miner uses these bitcoins to buy new mining hardware for its business, are they an *exchanger* or a *user*? Clearly they are a *user* because they fit the basic definition: “A user is a person that obtains virtual currency to purchase goods or services”⁶⁴ and FinCEN, in another administrative ruling (Mining Ruling), also made it clear that “obtains” can be by any means, including mining:

How a user obtains a virtual currency may be described using any number of other terms, such as “earning,” “harvesting,” “mining,” “creating,” “auto-generating,” “manufacturing,” or “purchasing,” depending on the details of the specific virtual currency model involved. The label applied to a particular process of obtaining a virtual currency is not material to the legal characterization under the BSA of the process or of the person engaging in the process to send that virtual currency or its equivalent value to any other person or place. What is material to the conclusion that a person is not an

⁵⁹ As such these participants are better compared with the financial telecommunication provider SWIFT. SWIFT relays messages between financial institutions but never, itself, takes custody of any valuables or funds.

⁶⁰ Specifically, the sender of a bitcoin transaction will generally specify a recipient bitcoin address and an amount of bitcoins to be sent. She will broadcast that transaction message to the network. Miners, by incorporating the message into the blockchain, effectively reassign bitcoins from the sender address to the recipient address. Each address is mathematically related to a cryptographic key retained only by the person who generated that address. All bitcoin transactions must be validly signed using the cryptographic key that corresponds to the address that is currently assigned the bitcoins according to the blockchain. So once Bitcoins are assigned to the recipient address, only the person(s) with knowledge of the cryptographic key related to that address can now spend those bitcoins in the future.

⁶¹ Jonathan Wallace, *Webster’s New World Law Dictionary* (2010) at 7.

⁶² U.C.C. § 3-104. *Negotiable Instrument*.

⁶³ See Peter Van Valkenburgh, “What is Bitcoin Mining, and Why is it Necessary?” Coin Center (Dec. 2014) <https://coincenter.org/entry/what-is-bitcoin-mining-and-why-is-it-necessary>.

⁶⁴ Guidance *supra* note 6 at 2.

MSB is not the mechanism by which a person obtains the convertible virtual currency, but what the person uses the convertible virtual currency for, and for whose benefit.⁶⁵

But what if this miner goes and sells the tokens they mined for dollars; are they now an *exchanger*? The Software and Investment Ruling suggests that the miner is merely selling from her own account and is, therefore, excluded. And the Mining Ruling was specifically directed at a company with this exact fact pattern:

From time to time, as your letter has indicated, it may be necessary for a user to convert Bitcoin that it has mined into a real currency or another convertible virtual currency, either because the seller of the goods or services the user wishes to purchase will not accept Bitcoin, or because the user wishes to diversify currency holdings in anticipation of future needs or for the user's own investment purposes. In undertaking such a conversion transaction, the user is not acting as an exchanger, notwithstanding the fact that the user is accepting a real currency or another convertible virtual currency and transmitting Bitcoin, so long as the user is undertaking the transaction solely for the user's own purposes and not as a business service performed for the benefit of another. A user's conversion of Bitcoin into a real currency or another convertible virtual currency, therefore, does not in and of itself make the user a money transmitter.⁶⁶

FinCEN has been very clear about miners; they are *users*, not *exchangers*, and they are not subject to BSA financial surveillance requirements. It is reasonable that the same analysis would apply to stakers in a proof-of-stake decentralized token scheme,⁶⁷ or other participants on a decentralized computing system who are automatically rewarded with tokens for their honest maintenance of the network infrastructure.

A **new protocol developer who does not sell** tokens to others but, instead, gives them away or distributes them through mining (e.g. Bitcoin's release schedule) is likely not an exchanger or a money transmitter for the same reasons as the non-custodial wallets and exchanges described above. As per the Software and Investment Ruling, this person or company is only engaged in the "production and distribution of software" and they do not "accept and transmit" tokens or bitcoins for others.⁶⁸

A **new protocol developer who also sells** their protocol's tokens may or may not be an *exchanger* under the Guidance. This area is extremely uncertain and warrants further analysis. As we previously discussed, according to the Software and Investment Ruling, a company that sells virtual currency from its own account is treated by FinCEN as a *user*. In the context of

⁶⁵ FinCEN, *FIN-2014-R001 Application of FinCEN's Regulations to Virtual Currency Mining Operations* (January 30, 2014) at 2. available at <https://www.fincen.gov/sites/default/files/shared/FIN-2014-R001.pdf> [hereinafter Mining Ruling].

⁶⁶ *Id.* at 3.

⁶⁷ See generally, Ethereum, *Proof of Stake FAQ* (last access May 2017) <https://github.com/ethereum/wiki/wiki/Proof-of-Stake-FAQ>.

⁶⁸ See also Peter Van Valkenburgh, No, FinCEN Policy is not Relevant to the Bitcoin Forking Debate (Feb. 2016) <https://coincenter.org/entry/no-fincen-policy-is-not-relevant-to-the-bitcoin-forking-debate>.

creating a new virtual currency or token, the creator is selling from their own account when they sell something they created. It would therefore seem clear that a person developing and selling new bitcoin-like tokens is not a money transmitter because they fit into the expanded understanding of *user* according to FinCEN's administrative rulings, which would save them from being classified as regulated *exchangers*.

Unfortunately, given the Ripple Settlement, it's not that simple. In that settlement, FinCEN alleged that Ripple Labs, merely by selling XRP that it owned as a business, qualified as an *exchanger* and therefore a *money transmitter*.

One might try and square this circle by suggesting that the Software and Investment Ruling only applies to companies that are making and then selling investments in bitcoin or tokens, and doesn't apply to persons that have bitcoins or tokens for reasons other than investment (e.g. development, experimentation, etc). However, recall that in the Mining Ruling FinCEN explained how selling from one's own account does not qualify as being an *exchanger* and suggested that how one obtains the tokens before selling them is immaterial to the question:

The label applied to a particular process of obtaining a virtual currency is not material to the legal characterization under the BSA of the process or of the person engaging in the process to send that virtual currency or its equivalent value to any other person or place. What is material to the conclusion that a person is not an MSB is not the mechanism by which a person obtains the convertible virtual currency, but what the person uses the convertible virtual currency for, and for whose benefit.⁶⁹

And that ruling suggested that "creating" is one of the descriptive labels that fall within the term "obtaining" tokens. A developer that pre-mines tokens running on a decentralized network of its own design is, almost certainly, "creating" those tokens. If they then sell them, how is that distinguishable from a mining company that sells bitcoin on its own account? This is unclear.

V. New Token Sales: An answer in the regulations?

At this point we've reached the end of the guidance material that's probably helpful to discuss. Guidance is merely the agency's interpretation of the actual laws that control—laws that were passed by Congress and that FinCEN is tasked with enforcing (not creating or reinventing).⁷⁰ In the case of the 2013 Virtual Currency Guidance, we are actually two steps removed from the statute. The Guidance interprets FinCEN's previously promulgated rules found in the Code of

⁶⁹ Mining Ruling *supra* note 65 at 2.

⁷⁰ See *Chevron U.S.A. v. NRDC*, 467 U.S. 837, 842-43 (1984) ("If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress. If, however, the court determines Congress has not directly addressed the precise question at issue, the court does not simply impose its own construction on the statute . . . Rather, if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency's answer is based on a permissible construction of the statute.").

Federal Regulations (31 CFR Part 1010), which, in turn, interpret and implement the actual law passed by Congress, the Bank Secrecy Act.⁷¹

The implementing regulations have this definition of money transmission:

The term “money transmission services” means the acceptance of currency, funds, or other value that substitutes for currency from one person and the transmission of currency, funds, or other value that substitutes for currency to another location or person by any means.⁷²

Let’s analyze this by looking at a hypothetical: Let’s say Alice develops a brand new decentralized virtual currency, pre-mines some units of virtual currency for herself (let’s call them AliceCoins), and then sells some AliceCoins to her friend Bob, who’d like to invest in AliceCoin, for dollars in a face-to-face cash transaction. Is Alice a money transmitter? Let’s walk through the questions in the analysis:

Has she “accepted” currency from one person? Yes, Bob gave her dollars.

Has she transmitted a currency substitute to *another* person? No, she gave some AliceCoin (which might be a currency substitute) to the same person, Bob, who gave her the dollars.

Has she transmitted AliceCoin to another location? To answer that question we must understand what the regulation is trying to achieve by specifying “from one location to another.”

Generally, this language is used to describe a company that helps a person move money from a bank account they have in one country, say the United States, to a bank account they have in another country, say Switzerland. The money is transmitted from one location to another even if it is not transmitted to another person but to an account the same person controls.

Asking whether someone has moved virtual currency between two locations, however, is a very, very strange question in the context of decentralized virtual currency networks. There really is no location within which the virtual currency can ever be said to exist. Is it in the blockchain? In a way, yes, but not really. The blockchain is just a list of past transactions that involve the currency; it doesn’t have any currency inside of it; it is a data structure.⁷³ Where is the blockchain? It is simultaneously replicated across every computer on the decentralized network, which could easily be most countries in the world simultaneously.⁷⁴ In our Alice and Bob example, is that blockchain *another* location? If so, what was the *first* location for the transaction? Is it wherever Alice and Bob were standing in our face-to-face AliceCoin sale?

⁷¹ 31 USC §§ 5311-5332.

⁷² 31 CFR § 1010.100(ff)(5).

⁷³ See Peter Van Valkenburgh, “What is ‘Blockchain’ anyway?” *Coin Center* (Apr. 2017) <https://coincenter.org/entry/what-is-blockchain-anyway>.

⁷⁴ *Id.*

What if the sale isn't in person? What if Alice is negotiating with Bob over the Internet and one of them is in New York while the other is in California. Which is the first location?

It could also be said that an amount of virtual currency exists in the form of knowledge kept secret by a person. When Alice sends Bob some AliceCoins she's sending them to an AliceCoin address that was generated by Bob's smartphone or laptop along with the private key that is required to move those AliceCoins in the future. So is the first location the place they are meeting (where Bob's cash changed hands) and the second location Bob's phone, which generated and holds the private keys?

And yes, you can definitely use decentralized virtual currency networks to transmit value across an ocean, but it's the decentralized network that is performing that function for you, or it might be said that *you* are performing that function for yourself when you cross national borders with a bitcoin software wallet on your phone, but it's certainly not the creator of the virtual currency who performs that function.

This all reads more like a bad metaphysics treatise than a legal analysis with serious criminal consequences.

Even if we accept that the location has changed between the dollars in hand to the private keys in phone, and even if we accept that this is a "transmission" that must only be performed by entities that are collecting information about their counterparties, how do we square this with the previous administrative rulings and the Ripple Settlement? How is anyone selling any virtual currency for any reason not always doing money transmission? Maybe they always are unless FinCEN decides they are not, but that would be an alarmingly arbitrary way to do regulation.

VI. New Token Sales: An answer in the case law?

There is only one judicial opinion, *U.S. v. Faiella*,⁷⁵ that explicitly offers an interpretation of what "accept and transmit" means in the context of people selling tokens on their own account. The defendant, Faiella, was selling his own bitcoin's peer-to-peer in exchange for dollars.⁷⁶ Faiella argued that he was merely selling on his own account. The court, however, found that he was engaged in money transmission because he was, in fact, acting as an exchange intermediary between his customers (the individual buyers) and the Silk Road (an online drug marketplace that held individual bitcoin accounts for its users).⁷⁷ Here's the court's reasoning (emphases added):

Defendant argues that while Section 1960 requires that the defendant sell money transmitting services to others for a profit, *see* 31 C.F.R. § 1010.100(ff)(5)(1)(2013) (defining "money transmission services" to require transmission of funds to "another location or person"), Faiella merely sold Bitcoin as a product in and of itself. But, as set

⁷⁵ *US v. Faiella*, 39 F. Supp. 3d 544 Dist. Court, SDNY (2014).

⁷⁶ *Id.* at 545.

⁷⁷ *Id.* at 546.

forth in the Criminal Complaint that initiated this case, the Government alleges that Faiella received cash deposits from his customers and then, after exchanging them for Bitcoins, transferred those funds to the customers' accounts on Silk Road. Ind. ¶ 5; Complaint ¶¶ 14, 17-18. **These were, in essence, transfers to a third-party agent, Silk Road, for Silk Road users did not have full control over the Bitcoins transferred into their accounts. Rather, Silk Road administrators could block or seize user funds.** I, Complaint ¶¶ 29, 41. Thus, the Court finds that in sending his customers' funds to Silk Road, Faiella "transferred" them to others for a profit.⁷⁸

Reasoning in the negative, this would indicate that selling directly to a buyer, rather than serving as an intermediary between a buyer and another custodial institution, would not be transmission of funds to "another location or person." However, that interpretation likely stretches the court's reasoning to cover facts and situations that it did not contemplate.

Now, you might say, we need to look to the statute if the Guidance, the rulings, the regulations, and the case law are all unclear. Unfortunately, that's not how the Bank Secrecy Act works. That law merely tells the Department of Treasury and FinCEN to define a set of actors that are "Financial Institutions" and then to make them comply with anti-money-laundering recordkeeping and reporting requirements.⁷⁹ It is silent on more specific questions such as these. As a result, we are left having surveyed all the relevant legal sources and we still do not have a clear understanding of when selling a decentralized currency you own and helped develop constitutes money transmission.

VII. Conclusions and Recommendations

FinCEN's Virtual Currency Guidance brought much needed certainty to cryptocurrency innovators in 2013. It clearly settled what was at the time the most fundamental question facing persons using or interested in using these networks: will I need to register with FinCEN and comply with the BSA if I'm helping others exchange their Bitcoin for dollars or other cryptocurrencies? The answer was yes, exchangers are money transmitters. Subsequent administrative rulings clarified several remaining ambiguities: miners are not money transmitters, neither are investors or software developers.

⁷⁸ *Id.*

⁷⁹ In 1974, the Bank Secrecy Act's constitutionality was challenged in *California Bankers Association v. Shultz*. Plaintiffs argued that the statute violated the Fourth, Fifth and First Amendment rights of banks and bank customers. The Supreme Court, in a 6-3 decision, upheld the statute as applied, but Justice Brennan's dissenting opinion offered a spirited lamentation of the statute's vague and expansive delegation of authority, "That vice. . . is the delegation of power to the Secretary in broad and indefinite terms under a statute that lays down criminal sanctions and potentially affects fundamental rights." *California Bankers Assn. v. Shultz*, 416 U.S. 21 (1974) <https://supreme.justia.com/cases/federal/us/416/21/case.html>

In 2017, however, with token sales and new decentralized token development accelerating,⁸⁰ a remaining grey area threatens to dampen innovation in the US by casting a shadow of legal risk and uncertainty across some of the most exciting new projects in the ecosystem. Are the developers of a new decentralized token protocol also money transmitters if they sell their tokens to U.S. citizens? Applicable administrative rulings, the Guidance, the case law, and the Ripple Settlement Agreement point to different possible answers and none offer any certainty.

Common understanding suggests that money transmission is an act performed by an intermediary, a person who stands between two parties accepting money from one and transmitting it to another. When a person transacts directly with another person, giving them money for any reason—as a gift, a payment, a donation, a grant, a tip—she does not play this intermediary role. She does not hold herself out as a trusted third party. She is engaged in private, personal transactions rather than being engaged as a third party to the transactions of others.

Deputizing *third-party intermediaries* to surveil their users on behalf of the government is a policy choice Congress made long ago; one that carries risks to individual privacy but also potential benefits to national security and peace. It's a tradeoff Congress made back in the 1970s and it isn't going away anytime soon. However, mandating the same kind of surveillance from individuals who are not intermediaries—who are merely transacting on their own account with another citizen—is a considerable recalibration of the balance between privacy and security. It tips the scales against personal privacy and may even be unconstitutional.⁸¹

⁸⁰ See Peter Van Valkenburgh, "What are Appcoins?" *Coin Center* (Oct. 2016) <https://coincenter.org/entry/what-are-appcoins>. ("Developers of these services and their potential investors are already moving to take advantage of these new opportunities. Services for cloud storage are being developed by IPFS, Storj, Swarm, and may be supported by tokens (Filecoin, Storjcoin, or Ether respectively). Services for cloud computing power are being developed by Ethereum, Counterparty, and others, while utilizing tokens (Ether and XCP respectively). Services for content-curation and attribution are being developed by Steemit, Mediachain, and others (some, like Steemit, are already supported by a token, others are not but may wish to include tokens in the future). This list is incomplete and new projects and new developers emerge weekly. Simultaneously, investors interested in helping finance applications built on open networks, have begun looking at whether they can buy and hold tokens rather than take ownership interests in the firms developing these networks.").

⁸¹ *California Bankers Association v. Shultz*, the decision that upheld the constitutionality of the BSA, was a 6-3 decision. Justice Powell wrote a concurring opinion that Justice Blackmun joined. That concurrence upholds the BSA's constitutionality only as it was enforced by the Treasury at the time of the case. In 1974, the only domestic reporting requirements demanded by the Treasury were currency transaction reports; since then the reporting requirements have significantly expanded, most notably with the inclusion of a suspicious activity reporting requirement, similarly the list of "financial institutions" has significantly expanded. The constitutionality of these expansions has yet to be challenged and upheld. As Justice Powell wrote in his concurrence:

"A significant extension of the regulations' reporting requirements, however, would pose substantial and difficult constitutional questions for me. In their full reach, the reports apparently authorized by the open-ended language of the Act touch upon intimate areas of an individual's personal affairs. Financial transactions can reveal much about a person's activities, associations, and beliefs. At some point, governmental intrusion upon these areas would

This is not a recalibration that should be made merely by issuing administrative rulings or guidance, the approach thus far taken by FinCEN when dealing with these questions. Instead, FinCEN should clarify that selling decentralized virtual currency on one's own account does not constitute money transmission, regardless of whether the purpose of that sale is to pay a merchant, to sell tokens received through mining, or—indeed—to sell one's own newly invented decentralized token.

Should FinCEN or Congress wish to regulate this activity for financial surveillance purposes, that change must be the subject of a larger, more public debate within a notice and comment rulemaking⁸² or an amendment to the statutory law itself. Only those formal processes can enable necessary debate over financial surveillance and the constitutionality of warrantless search.

implicate legitimate expectations of privacy. Moreover, the potential for abuse is particularly acute where, as here, the legislative scheme permits access to this information without invocation of the judicial process. In such instances, the important responsibility for balancing societal and individual interests is left to unreviewed executive discretion, rather than the scrutiny of a neutral magistrate. *United States v. U.S. District Court*, 407 U. S. 297, 407 U. S. 316-317 (1972). As the issues are presently framed, however, I am in accord with the Court's disposition of the matter." *California Bankers Assn. v. Shultz*, 416 U.S. 21 (1974) at 78-79.

⁸² The BSA requires a formal rulemaking for an expansion to the definition of "financial institution." 31 USC § 5312(a)(2)(Y).

Chapter 12

The Bank Secrecy Act

tions and shall replace the coins and currencies when they are needed for the program or activity for which they were reserved originally.

(Pub. L. 97–258, Sept. 13, 1982, 96 Stat. 994.)

HISTORICAL AND REVISION NOTES

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
5303	31:938.	Oct. 15, 1966, Pub. L. 89–677, 80 Stat. 955.

The word “Federal” is omitted as unnecessary because of the definition of “agency” in section 101 of the revised title. The words “coins and” and “Government” are added for consistency. The words “or set aside” and “of the Government” are omitted as surplus. The words “The agency shall reimburse . . . shall replace” are substituted for “except (1) that reimbursement shall be made . . . (2) . . . shall be replaced” for clarity. The words “applicable . . . of the agency concerned” are omitted as surplus. The words “program or activity” are substituted for “purpose” for clarity and consistency.

§ 5304. Regulations

With the approval of the President, the Secretary of the Treasury may prescribe regulations—

- (1) to carry out section 5301 of this title; and
- (2) the Secretary considers necessary to carry out section 5302 of this title.

(Pub. L. 97–258, Sept. 13, 1982, 96 Stat. 994.)

HISTORICAL AND REVISION NOTES

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
5304	31:822. 31:822b.	May 12, 1933, ch. 25, § 44, 48 Stat. 53. Jan. 30, 1934, ch. 6, § 11, 48 Stat. 342.

Before clause (1), the words “prescribe regulations” are substituted for “make and promulgate rules and regulations” in 31:822 and “issue . . . such rules and regulations” in 31:822b for consistency. In clause (1), the words “to carry out” are substituted for “covering any action taken or to be taken by the President under” in 31:822 to eliminate unnecessary words. In clause (2), the words “or proper” in 31:822b and “the purposes of” are omitted as surplus. Reference to 31:821 is omitted as obsolete because silver is no longer coined. Reference to 31:824 is omitted as obsolete because 31:824 is executed and is not part of the revised title.

SUBCHAPTER II—RECORDS AND REPORTS ON MONETARY INSTRUMENTS TRANSACTIONS

§ 5311. Declaration of purpose

It is the purpose of this subchapter (except section 5315) to require certain reports or records where they have a high degree of usefulness in criminal, tax, or regulatory investigations or proceedings, or in the conduct of intelligence or counterintelligence activities, including analysis, to protect against international terrorism.

(Pub. L. 97–258, Sept. 13, 1982, 96 Stat. 995; Pub. L. 107–56, title III, § 358(a), Oct. 26, 2001, 115 Stat. 326.)

HISTORICAL AND REVISION NOTES

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
5311	31:1051.	Oct. 26, 1970, Pub. L. 91–508, § 202, 84 Stat. 1118.

AMENDMENTS

2001—Pub. L. 107–56 inserted “, or in the conduct of intelligence or counterintelligence activities, including analysis, to protect against international terrorism” before period at end.

EFFECTIVE DATE OF 2001 AMENDMENT

Amendment by Pub. L. 107–56 applicable with respect to reports filed or records maintained on, before, or after Oct. 26, 2001, see section 358(h) of Pub. L. 107–56, set out as a note under section 1829b of Title 12, Banks and Banking.

SHORT TITLE

This subchapter and chapter 21 (§ 1951 et seq.) of Title 12, Banks and Banking, are each popularly known as the “Bank Secrecy Act”. See Short Title note set out under section 1951 of Title 12.

STORED VALUE

Pub. L. 111–24, title V, § 503, May 22, 2009, 123 Stat. 1756, provided that:

“(a) IN GENERAL.—Not later than 270 days after the date of enactment of this Act [May 22, 2009], the Secretary of the Treasury, in consultation with the Secretary of Homeland Security, shall issue regulations in final form implementing the Bank Secrecy Act [see Short Title note under section 1951 of Title 12, Banks and Banking], regarding the sale, issuance, redemption, or international transport of stored value, including stored value cards.

“(b) CONSIDERATION OF INTERNATIONAL TRANSPORT.—Regulations under this section regarding international transport of stored value may include reporting requirements pursuant to section 5316 of title 31, United States Code.

“(c) EMERGING METHODS FOR TRANSMITTAL AND STORAGE IN ELECTRONIC FORM.—Regulations under this section shall take into consideration current and future needs and methodologies for transmitting and storing value in electronic form.”

IMPROVEMENT OF INTERNATIONAL STANDARDS AND COOPERATION TO FIGHT TERRORIST FINANCING

Pub. L. 108–458, title VII, §§ 7701, 7702, 7704, Dec. 17, 2004, 118 Stat. 3858–3860, provided that:

“SEC. 7701. IMPROVING INTERNATIONAL STANDARDS AND COOPERATION TO FIGHT TERRORIST FINANCING.

“(a) FINDINGS.—Congress makes the following findings:

“(1) The global war on terrorism and cutting off terrorist financing is a policy priority for the United States and its partners, working bilaterally and multilaterally through the United Nations, the United Nations Security Council and its committees, such as the 1267 and 1373 Committees, the Financial Action Task Force (FATF), and various international financial institutions, including the International Monetary Fund (IMF), the International Bank for Reconstruction and Development (IBRD), and the regional multilateral development banks, and other multilateral fora.

“(2) The international financial community has become engaged in the global fight against terrorist financing. The Financial Action Task Force has focused on the new threat posed by terrorist financing to the international financial system, resulting in the establishment of the FATF’s Eight Special Recommendations on Terrorist Financing as the international standard on combating terrorist financing.

The Group of Seven and the Group of Twenty Finance Ministers are developing action plans to curb the financing of terror. In addition, other economic and regional fora, such as the Asia-Pacific Economic Cooperation (APEC) Forum, and the Western Hemisphere Financial Ministers, have been used to marshal political will and actions in support of combating the financing of terrorism (CFT) standards.

“(3) FATF’s Forty Recommendations on Money Laundering and the Eight Special Recommendations on Terrorist Financing are the recognized global standards for fighting money laundering and terrorist financing. The FATF has engaged in an assessment process for jurisdictions based on their compliance with these standards.

“(4) In March 2004, the IMF and IBRD Boards agreed to make permanent a pilot program of collaboration with the FATF to assess global compliance with the FATF Forty Recommendations on Money Laundering and the Eight Special Recommendations on Terrorist Financing. As a result, anti-money laundering (AML) and combating the financing of terrorism (CFT) assessments are now a regular part of their Financial Sector Assessment Program (FSAP) and Offshore Financial Center assessments, which provide for a comprehensive analysis of the strength of a jurisdiction’s financial system. These reviews assess potential systemic vulnerabilities, consider sectoral development needs and priorities, and review the state of implementation of and compliance with key financial codes and regulatory standards, among them the AML and CFT standards.

“(5) To date, 70 FSAPs have been conducted, with over 24 of those incorporating AML and CFT assessments. The international financial institutions (IFIs), the FATF, and the FATF-style regional bodies together are expected to assess AML and CFT regimes in up to 40 countries or jurisdictions per year. This will help countries and jurisdictions identify deficiencies in their AML and CFT regimes and help focus technical assistance efforts.

“(6) Technical assistance programs from the United States and other nations, coordinated with the Department of State and other departments and agencies, are playing an important role in helping countries and jurisdictions address shortcomings in their AML and CFT regimes and bringing their regimes into conformity with international standards. Training is coordinated within the United States Government, which leverages multilateral organizations and bodies and international financial institutions to internationalize the conveyance of technical assistance.

“(7) In fulfilling its duties in advancing incorporation of AML and CFT standards into the IFIs as part of the IFIs’ work on protecting the integrity of the international monetary system, the Department of the Treasury, under the guidance of the Secretary of the Treasury, has effectively brought together all of the key United States Government agencies. In particular, United States Government agencies continue to work together to foster broad support for this important undertaking in various multilateral fora, and United States Government agencies recognize the need for close coordination and communication within our own Government.

“(b) SENSE OF CONGRESS REGARDING SUCCESS IN MULTILATERAL ORGANIZATIONS.—It is the sense of Congress that the Secretary of the Treasury should continue to promote the dissemination of international AML and CFT standards, and to press for full implementation of the FATF 40 + 8 Recommendations by all countries in order to curb financial risks and hinder terrorist financing around the globe. The efforts of the Secretary in this regard should include, where necessary or appropriate, multilateral action against countries whose counter-money laundering regimes and efforts against the financing of terrorism fall below recognized international standards.

“SEC. 7702. DEFINITIONS.

“In this subtitle [subtitle G (§§ 7701–7704) of title VII of Pub. L. 108–458, amending sections 2620–2 and 262r–4 of Title 22, Foreign Relations and Intercourse]—

“(1) the term ‘international financial institutions’ has the same meaning as in section 1701(c)(2) of the International Financial Institutions Act [22 U.S.C. 262r(c)(2)];

“(2) the term ‘Financial Action Task Force’ means the international policy-making and standard-setting body dedicated to combating money laundering and terrorist financing that was created by the Group of Seven in 1989; and

“(3) the terms ‘Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System’ and ‘Interagency Paper’ mean the interagency paper prepared by the Board of Governors of the Federal Reserve System, the Comptroller of the Currency, and the Securities and Exchange Commission that was announced in the Federal Register on April 8, 2003.

“SEC. 7704. COORDINATION OF UNITED STATES GOVERNMENT EFFORTS.

“The Secretary of the Treasury, or the designee of the Secretary, as the lead United States Government official to the Financial Action Task Force (FATF), shall continue to convene the interagency United States Government FATF working group. This group, which includes representatives from all relevant Federal agencies, shall meet at least once a year to advise the Secretary on policies to be pursued by the United States regarding the development of common international AML and CFT standards, to assess the adequacy and implementation of such standards, and to recommend to the Secretary improved or new standards, as necessary.”

INTERNATIONAL MONEY LAUNDERING ABATEMENT AND FINANCIAL ANTI-TERRORISM ACT OF 2001; FINDINGS AND PURPOSES

Pub. L. 107–56, title III, §302, Oct. 26, 2001, 115 Stat. 296, as amended by Pub. L. 108–458, title VI, §6202(c), Dec. 17, 2004, 118 Stat. 3745, provided that:

“(a) FINDINGS.—The Congress finds that—

“(1) money laundering, estimated by the International Monetary Fund to amount to between 2 and 5 percent of global gross domestic product, which is at least \$600,000,000,000 annually, provides the financial fuel that permits transnational criminal enterprises to conduct and expand their operations to the detriment of the safety and security of American citizens;

“(2) money laundering, and the defects in financial transparency on which money launderers rely, are critical to the financing of global terrorism and the provision of funds for terrorist attacks;

“(3) money launderers subvert legitimate financial mechanisms and banking relationships by using them as protective covering for the movement of criminal proceeds and the financing of crime and terrorism, and, by so doing, can threaten the safety of United States citizens and undermine the integrity of United States financial institutions and of the global financial and trading systems upon which prosperity and growth depend;

“(4) certain jurisdictions outside of the United States that offer ‘offshore’ banking and related facilities designed to provide anonymity, coupled with weak financial supervisory and enforcement regimes, provide essential tools to disguise ownership and movement of criminal funds derived from, or used to commit, offenses ranging from narcotics trafficking, terrorism, arms smuggling, and trafficking in human beings, to financial frauds that prey on law-abiding citizens;

“(5) transactions involving such offshore jurisdictions make it difficult for law enforcement officials and regulators to follow the trail of money earned by criminals, organized international criminal enterprises, and global terrorist organizations;

“(6) correspondent banking facilities are one of the banking mechanisms susceptible in some circumstances to manipulation by foreign banks to permit the laundering of funds by hiding the identity of real parties in interest to financial transactions;

“(7) private banking services can be susceptible to manipulation by money launderers, for example corrupt foreign government officials, particularly if those services include the creation of offshore accounts and facilities for large personal funds transfers to channel funds into accounts around the globe;

“(8) United States anti-money laundering efforts are impeded by outmoded and inadequate statutory provisions that make investigations, prosecutions, and forfeitures more difficult, particularly in cases in which money laundering involves foreign persons, foreign banks, or foreign countries;

“(9) the ability to mount effective counter-measures to international money launderers requires national, as well as bilateral and multilateral action, using tools specially designed for that effort; and

“(10) the Basle Committee on Banking Regulation and Supervisory Practices and the Financial Action Task Force on Money Laundering, of both of which the United States is a member, have each adopted international anti-money laundering principles and recommendations.

“(b) PURPOSES.—The purposes of this title [see Short Title of 2001 Amendment note set out under section 5301 of this title] are—

“(1) to increase the strength of United States measures to prevent, detect, and prosecute international money laundering and the financing of terrorism;

“(2) to ensure that—

“(A) banking transactions and financial relationships and the conduct of such transactions and relationships, do not contravene the purposes of subchapter II of chapter 53 of title 31, United States Code, section 21 of the Federal Deposit Insurance Act [12 U.S.C. 1829b], or chapter 2 of title I of Public Law 91-508 (84 Stat. 1116) [12 U.S.C. 1951 et seq.], or facilitate the evasion of any such provision; and

“(B) the purposes of such provisions of law continue to be fulfilled, and such provisions of law are effectively and efficiently administered;

“(3) to strengthen the provisions put into place by the Money Laundering Control Act of 1986 (18 U.S.C. 981 note) [see Short Title of 1986 Amendment note set out under section 981 of Title 18, Crimes and Criminal Procedure], especially with respect to crimes by non-United States nationals and foreign financial institutions;

“(4) to provide a clear national mandate for subjecting to special scrutiny those foreign jurisdictions, financial institutions operating outside of the United States, and classes of international transactions or types of accounts that pose particular, identifiable opportunities for criminal abuse;

“(5) to provide the Secretary of the Treasury (in this title referred to as the ‘Secretary’) with broad discretion, subject to the safeguards provided by the Administrative Procedure Act under title 5, United States Code [5 U.S.C. 551 et seq., 701 et seq.], to take measures tailored to the particular money laundering problems presented by specific foreign jurisdictions, financial institutions operating outside of the United States, and classes of international transactions or types of accounts;

“(6) to ensure that the employment of such measures by the Secretary permits appropriate opportunity for comment by affected financial institutions;

“(7) to provide guidance to domestic financial institutions on particular foreign jurisdictions, financial institutions operating outside of the United States, and classes of international transactions or types of accounts that are of primary money laundering concern to the United States Government;

“(8) to ensure that the forfeiture of any assets in connection with the anti-terrorist efforts of the

United States permits for adequate challenge consistent with providing due process rights;

“(9) to clarify the terms of the safe harbor from civil liability for filing suspicious activity reports;

“(10) to strengthen the authority of the Secretary to issue and administer geographic targeting orders, and to clarify that violations of such orders or any other requirement imposed under the authority contained in chapter 2 of title I of Public Law 91-508 [12 U.S.C. 1951 et seq.] and subchapter II of chapter 53 of title 31, United States Code, may result in criminal and civil penalties;

“(11) to ensure that all appropriate elements of the financial services industry are subject to appropriate requirements to report potential money laundering transactions to proper authorities, and that jurisdictional disputes do not hinder examination of compliance by financial institutions with relevant reporting requirements;

“(12) to strengthen the ability of financial institutions to maintain the integrity of their employee population; and

“(13) to strengthen measures to prevent the use of the United States financial system for personal gain by corrupt foreign officials and to facilitate the repatriation of any stolen assets to the citizens of countries to whom such assets belong.”

FOUR-YEAR CONGRESSIONAL REVIEW; EXPEDITED CONSIDERATION

Pub. L. 107-56, title III, §303, Oct. 26, 2001, 115 Stat. 298, as amended by Pub. L. 108-458, title VI, §6202(d), Dec. 17, 2004, 118 Stat. 3745, which provided that, effective on and after the first day of fiscal year 2005, the provisions of title III of Pub. L. 107-56 and the amendments made by such title would terminate if the Congress enacted a joint resolution, the text after the resolving clause of which was as follows: “That provisions of the International Money Laundering Abatement and Financial Antiterrorism Act of 2001, and the amendments made thereby, shall no longer have the force of law.”, was repealed by Pub. L. 108-458, title VI, §§6204, 6205, Dec. 17, 2004, 118 Stat. 3747, effective as if included in Pub. L. 107-56, as of the date of enactment of such Act.

COOPERATIVE EFFORTS TO DETER MONEY LAUNDERING

Pub. L. 107-56, title III, §314, Oct. 26, 2001, 115 Stat. 307, as amended by Pub. L. 108-458, title VI, §6202(f), Dec. 17, 2004, 118 Stat. 3745, provided that:

“(a) COOPERATION AMONG FINANCIAL INSTITUTIONS, REGULATORY AUTHORITIES, AND LAW ENFORCEMENT AUTHORITIES.—

“(1) REGULATIONS.—The Secretary [of the Treasury] shall, within 120 days after the date of enactment of this Act [Oct. 26, 2001], adopt regulations to encourage further cooperation among financial institutions, their regulatory authorities, and law enforcement authorities, with the specific purpose of encouraging regulatory authorities and law enforcement authorities to share with financial institutions information regarding individuals, entities, and organizations engaged in, or reasonably suspected based on credible evidence of engaging in, terrorist acts or money laundering activities.

“(2) COOPERATION AND INFORMATION SHARING PROCEDURES.—The regulations adopted under paragraph (1) may include or create procedures for cooperation and information sharing focusing on—

“(A) matters specifically related to the finances of terrorist groups, the means by which terrorist groups transfer funds around the world and within the United States, including through the use of charitable organizations, nonprofit organizations, and nongovernmental organizations, the extent to which financial institutions in the United States are unwittingly involved in such finances, and the extent to which such institutions are at risk as a result;

“(B) the relationship, particularly the financial relationship, between international narcotics traffickers and foreign terrorist organizations, the extent to which their memberships overlap and engage in joint activities, and the extent to which they cooperate with each other in raising and transferring funds for their respective purposes; and

“(C) means of facilitating the identification of accounts and transactions involving terrorist groups and facilitating the exchange of information concerning such accounts and transactions between financial institutions and law enforcement organizations.

“(3) CONTENTS.—The regulations adopted pursuant to paragraph (1) may—

“(A) require that each financial institution designate 1 or more persons to receive information concerning, and monitor accounts of, individuals, entities, and organizations identified pursuant to paragraph (1); and

“(B) further establish procedures for the protection of the shared information, consistent with the capacity, size, and nature of the financial institution to which the particular procedures apply.

“(4) RULE OF CONSTRUCTION.—The receipt of information by a financial institution pursuant to this section shall not relieve or otherwise modify the obligations of the financial institution with respect to any other person or account.

“(5) USE OF INFORMATION.—Information received by a financial institution pursuant to this section shall not be used for any purpose other than identifying and reporting on activities that may involve terrorist acts or money laundering activities.

“(b) COOPERATION AMONG FINANCIAL INSTITUTIONS.—Upon notice provided to the Secretary, 2 or more financial institutions and any association of financial institutions may share information with one another regarding individuals, entities, organizations, and countries suspected of possible terrorist or money laundering activities. A financial institution or association that transmits, receives, or shares such information for the purposes of identifying and reporting activities that may involve terrorist acts or money laundering activities shall not be liable to any person under any law or regulation of the United States, any constitution, law, or regulation of any State or political subdivision thereof, or under any contract or other legally enforceable agreement (including any arbitration agreement), for such disclosure or for any failure to provide notice of such disclosure to the person who is the subject of such disclosure, or any other person identified in the disclosure, except where such transmission, receipt, or sharing violates this section or regulations promulgated pursuant to this section.

“(c) RULE OF CONSTRUCTION.—Compliance with the provisions of this title [see Short Title of 2001 Amendment note set out under section 5301 of this title] requiring or allowing financial institutions and any association of financial institutions to disclose or share information regarding individuals, entities, and organizations engaged in or suspected of engaging in terrorist acts or money laundering activities shall not constitute a violation of the provisions of title V of the Gramm-Leach-Bliley Act (Public Law 106-102) [15 U.S.C. 6801 et seq.].

“(d) REPORTS TO THE FINANCIAL SERVICES INDUSTRY ON SUSPICIOUS FINANCIAL ACTIVITIES.—At least semi-annually, the Secretary shall—

“(1) publish a report containing a detailed analysis identifying patterns of suspicious activity and other investigative insights derived from suspicious activity reports and investigations conducted by Federal, State, and local law enforcement agencies to the extent appropriate; and

“(2) distribute such report to financial institutions (as defined in section 5312 of title 31, United States Code).”

REPORT AND RECOMMENDATION ON LEGISLATIVE ACTION ON INTERNATIONAL COUNTER MONEY LAUNDERING PROVISIONS

Pub. L. 107-56, title III, § 324, Oct. 26, 2001, 115 Stat. 316, provided that: “Not later than 30 months after the date of enactment of this Act [Oct. 26, 2001], the Secretary [of the Treasury], in consultation with the Attorney General, the Federal banking agencies (as defined at section 3 of the Federal Deposit Insurance Act [12 U.S.C. 1813]), the National Credit Union Administration Board, the Securities and Exchange Commission, and such other agencies as the Secretary may determine, at the discretion of the Secretary, shall evaluate the operations of the provisions of this subtitle [subtitle A (§§ 311-330) of title III of Pub. L. 107-56, enacting section 5318A of this title, amending sections 5312 and 5318 of this title, sections 1828 and 1842 of Title 12, Banks and Banking, sections 981, 983, and 1956 of Title 18, Crimes and Criminal Procedure, section 853 of Title 21, Food and Drugs, and sections 2466 and 2467 of Title 28, Judiciary and Judicial Procedure, and enacting provisions set out as notes under this section and section 5318 of this title, sections 1828 and 1842 of Title 12, and section 983 of Title 18] and make recommendations to Congress as to any legislative action with respect to this subtitle as the Secretary may determine to be necessary or advisable.”

INTERNATIONAL COOPERATION ON IDENTIFICATION OF ORIGINATORS OF WIRE TRANSFERS

Pub. L. 107-56, title III, § 328, Oct. 26, 2001, 115 Stat. 319, provided that: “The Secretary [of the Treasury] shall—

“(1) in consultation with the Attorney General and the Secretary of State, take all reasonable steps to encourage foreign governments to require the inclusion of the name of the originator in wire transfer instructions sent to the United States and other countries, with the information to remain with the transfer from its origination until the point of disbursement; and

“(2) report annually to the Committee on Financial Services of the House of Representatives and the Committee on Banking, Housing, and Urban Affairs of the Senate on—

“(A) progress toward the goal enumerated in paragraph (1), as well as impediments to implementation and an estimated compliance rate; and

“(B) impediments to instituting a regime in which all appropriate identification, as defined by the Secretary, about wire transfer recipients shall be included with wire transfers from their point of origination until disbursement.”

CRIMINAL PENALTIES

Pub. L. 107-56, title III, § 329, Oct. 26, 2001, 115 Stat. 319, provided that: “Any person who is an official or employee of any department, agency, bureau, office, commission, or other entity of the Federal Government, and any other person who is acting for or on behalf of any such entity, who, directly or indirectly, in connection with the administration of this title [see Short Title of 2001 Amendment note set out under section 5301 of this title], corruptly demands, seeks, receives, accepts, or agrees to receive or accept anything of value personally or for any other person or entity in return for—

“(1) being influenced in the performance of any official act;

“(2) being influenced to commit or aid in the committing, or to collude in, or allow, any fraud, or make opportunity for the commission of any fraud, on the United States; or

“(3) being induced to do or omit to do any act in violation of the official duty of such official or person,

shall be fined in an amount not more than 3 times the monetary equivalent of the thing of value, or imprisoned for not more than 15 years, or both. A violation of this section shall be subject to chapter 227 of title 18, United States Code, and the provisions of the United States Sentencing Guidelines."

REPORT ON INVESTMENT COMPANIES

Pub. L. 107-56, title III, §356(c), Oct. 26, 2001, 115 Stat. 324, as amended by Pub. L. 108-458, title VI, §6202(j), Dec. 17, 2004, 118 Stat. 3746, provided that:

"(1) IN GENERAL.—Not later than 1 year after the date of enactment of this Act [Oct. 26, 2001], the Secretary [of the Treasury], the Board of Governors of the Federal Reserve System, and the Securities and Exchange Commission shall jointly submit a report to the Congress on recommendations for effective regulations to apply the requirements of subchapter II of chapter 53 of title 31, United States Code, to investment companies pursuant to section 5312(a)(2)(I) of title 31, United States Code.

"(2) DEFINITION.—For purposes of this subsection, the term 'investment company'—

"(A) has the same meaning as in section 3 of the Investment Company Act of 1940 (15 U.S.C. 80a-3); and

"(B) includes any person that, but for the exceptions provided for in paragraph (1) or (7) of section 3(c) of the Investment Company Act of 1940 (15 U.S.C. 80a-3(c)), would be an investment company.

"(3) ADDITIONAL RECOMMENDATIONS.—The report required by paragraph (1) may make different recommendations for different types of entities covered by this subsection.

"(4) BENEFICIAL OWNERSHIP OF PERSONAL HOLDING COMPANIES.—The report described in paragraph (1) shall also include recommendations as to whether the Secretary should promulgate regulations to treat any corporation, business trust, or other grantor trust whose assets are predominantly securities, bank certificates of deposit, or other securities or investment instruments (other than such as relate to operating subsidiaries of such corporation or trust) and that has 5 or fewer common shareholders or holders of beneficial or other equity interest, as a financial institution within the meaning of that phrase in section 5312(a)(2)(I) and whether to require such corporations or trusts to disclose their beneficial owners when opening accounts or initiating funds transfers at any domestic financial institution."

REPORT ON NEED FOR ADDITIONAL LEGISLATION RELATING TO INFORMAL MONEY TRANSFER SYSTEMS

Pub. L. 107-56, title III, §359(d), Oct. 26, 2001, 115 Stat. 329, provided that: "Not later than 1 year after the date of enactment of this Act [Oct. 26, 2001], the Secretary of the Treasury shall report to Congress on the need for any additional legislation relating to persons who engage as a business in an informal money transfer system or any network of people who engage as a business in facilitating the transfer of money domestically or internationally outside of the conventional financial institutions system, counter money laundering and regulatory controls relating to underground money movement and banking systems, including whether the threshold for the filing of suspicious activity reports under section 5318(g) of title 31, United States Code should be lowered in the case of such systems."

UNIFORM STATE LICENSING AND REGULATION OF CHECK CASHING, CURRENCY EXCHANGE, AND MONEY TRANSMITTING BUSINESSES

Pub. L. 103-325, title IV, §407, Sept. 23, 1994, 108 Stat. 2247, provided that:

"(a) UNIFORM LAWS AND ENFORCEMENT.—For purposes of preventing money laundering and protecting the payment system from fraud and abuse, it is the sense of the Congress that the several States should—

"(1) establish uniform laws for licensing and regulating businesses which—

"(A) provide check cashing, currency exchange, or money transmitting or remittance services, or issue or redeem money orders, travelers' checks, and other similar instruments; and

"(B) are not depository institutions (as defined in section 5313(g) of title 31, United States Code); and

"(2) provide sufficient resources to the appropriate State agency to enforce such laws and regulations prescribed pursuant to such laws.

"(b) MODEL STATUTE.—It is the sense of the Congress that the several States should develop, through the auspices of the National Conference of Commissioners on Uniform State Laws, the American Law Institute, or such other forum as the States may determine to be appropriate, a model statute to carry out the goals described in subsection (a) which would include the following:

"(1) LICENSING REQUIREMENTS.—A requirement that any business described in subsection (a)(1) be licensed and regulated by an appropriate State agency in order to engage in any such activity within the State.

"(2) LICENSING STANDARDS.—A requirement that—

"(A) in order for any business described in subsection (a)(1) to be licensed in the State, the appropriate State agency shall review and approve—

"(i) the business record and the capital adequacy of the business seeking the license; and

"(ii) the competence, experience, integrity, and financial ability of any individual who—

"(I) is a director, officer, or supervisory employee of such business; or

"(II) owns or controls such business; and

"(B) any record, on the part of any business seeking the license or any person referred to in subparagraph (A)(ii), of—

"(i) any criminal activity;

"(ii) any fraud or other act of personal dishonesty;

"(iii) any act, omission, or practice which constitutes a breach of a fiduciary duty; or

"(iv) any suspension or removal, by any agency or department of the United States or any State, from participation in the conduct of any federally or State licensed or regulated business,

may be grounds for the denial of any such license by the appropriate State agency.

"(3) REPORTING REQUIREMENTS.—A requirement that any business described in subsection (a)(1)—

"(A) disclose to the appropriate State agency the fees charged to consumers for services described in subsection (a)(1)(A); and

"(B) conspicuously disclose to the public, at each location of such business, the fees charged to consumers for such services.

"(4) PROCEDURES TO ENSURE COMPLIANCE WITH FEDERAL CASH TRANSACTION REPORTING REQUIREMENTS.—A civil or criminal penalty for operating any business referred to in paragraph (1) without establishing and complying with appropriate procedures to ensure compliance with subchapter II of chapter 53 of title 31, United States Code (relating to records and reports on monetary instruments transactions).

"(5) CRIMINAL PENALTIES FOR OPERATION OF BUSINESS WITHOUT A LICENSE.—A criminal penalty for operating any business referred to in paragraph (1) without a license within the State after the end of an appropriate transition period beginning on the date of enactment of such model statute by the State.

"(c) STUDY REQUIRED.—The Secretary of the Treasury shall conduct a study of—

"(1) the progress made by the several States in developing and enacting a model statute which—

"(A) meets the requirements of subsection (b); and

"(B) furthers the goals of—

"(i) preventing money laundering by businesses which are required to be licensed under any such statute; and

"(ii) protecting the payment system, including the receipt, payment, collection, and clearing of

checks, from fraud and abuse by such businesses; and

“(2) the adequacy of—

“(A) the activity of the several States in enforcing the requirements of such statute; and

“(B) the resources made available to the appropriate State agencies for such enforcement activity.

“(d) **REPORT REQUIRED.**—Not later than the end of the 3-year period beginning on the date of enactment of this Act [Sept. 23, 1994] and not later than the end of each of the first two 1-year periods beginning after the end of such 3-year period, the Secretary of the Treasury shall submit a report to the Congress containing the findings and recommendations of the Secretary in connection with the study under subsection (c), together with such recommendations for legislative and administrative action as the Secretary may determine to be appropriate.

“(e) **RECOMMENDATIONS IN CASES OF INADEQUATE REGULATION AND ENFORCEMENT BY STATES.**—If the Secretary of the Treasury determines that any State has been unable to—

“(1) enact a statute which meets the requirements described in subsection (b);

“(2) undertake adequate activity to enforce such statute; or

“(3) make adequate resources available to the appropriate State agency for such enforcement activity,

the report submitted pursuant to subsection (d) shall contain recommendations of the Secretary which are designed to facilitate the enactment and enforcement by the State of such a statute.

“(f) **FEDERAL FUNDING STUDY.**—

“(1) **STUDY REQUIRED.**—The Secretary of the Treasury shall conduct a study to identify possible available sources of Federal funding to cover costs which will be incurred by the States in carrying out the purposes of this section.

“(2) **REPORT.**—The Secretary of the Treasury shall submit a report to the Congress on the study conducted pursuant to paragraph (1) not later than the end of the 18-month period beginning on the date of enactment of this Act [Sept. 23, 1994].”

ANTI-MONEY LAUNDERING TRAINING TEAM

Pub. L. 102-550, title XV, § 1518, Oct. 28, 1992, 106 Stat. 4060, provided that: “The Secretary of the Treasury and the Attorney General shall jointly establish a team of experts to assist and provide training to foreign governments and agencies thereof in developing and expanding their capabilities for investigating and prosecuting violations of money laundering and related laws.”

ADVISORY GROUP ON REPORTING REQUIREMENTS

Pub. L. 102-550, title XV, § 1564, Oct. 28, 1992, 106 Stat. 4073, provided that:

“(a) **ESTABLISHMENT.**—Not later than 90 days after the date of the enactment of this Act [Oct. 28, 1992], the Secretary of the Treasury shall establish a Bank Secrecy Act Advisory Group consisting of representatives of the Department of the Treasury, the Department of Justice, and the Office of National Drug Control Policy and of other interested persons and financial institutions subject to the reporting requirements of subchapter II of chapter 53 of title 31, United States Code, or section 6050I of the Internal Revenue Code of 1986 [26 U.S.C. 6050I].

“(b) **PURPOSES.**—The Advisory Group shall provide a means by which the Secretary—

“(1) informs private sector representatives, on a regular basis, of the ways in which the reports submitted pursuant to the requirements referred to in subsection (a) have been used;

“(2) informs private sector representatives, on a regular basis, of how information regarding suspicious financial transactions provided voluntarily by financial institutions has been used; and

“(3) receives advice on the manner in which the reporting requirements referred to in subsection (a) should be modified to enhance the ability of law enforcement agencies to use the information provided for law enforcement purposes.

“(c) **INAPPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT.**—The Federal Advisory Committee Act [5 U.S.C. App.] shall not apply to the Bank Secrecy Act Advisory Group established pursuant to subsection (a).”

GAO FEASIBILITY STUDY OF FINANCIAL CRIMES ENFORCEMENT NETWORK

Pub. L. 102-550, title XV, § 1565, Oct. 28, 1992, 106 Stat. 4074, provided that:

“(a) **STUDY REQUIRED.**—The Comptroller General of the United States shall conduct a feasibility study of the Financial Crimes Enforcement Network (popularly referred to as ‘Fincen’) established by the Secretary of the Treasury in cooperation with other agencies and departments of the United States and appropriate Federal banking agencies.

“(b) **SPECIFIC REQUIREMENTS.**—In conducting the study required under subsection (a), the Comptroller General shall examine and evaluate—

“(1) the extent to which Federal, State, and local governmental and nongovernmental organizations are voluntarily providing information which is necessary for the system to be useful for law enforcement purposes;

“(2) the extent to which the operational guidelines established for the system provide for the coordinated and efficient entry of information into, and withdrawal of information from, the system;

“(3) the extent to which the operating procedures established for the system provide appropriate standards or guidelines for determining—

“(A) who is to be given access to the information in the system;

“(B) what limits are to be imposed on the use of such information; and

“(C) how information about activities or relationships which involve or are closely associated with the exercise of constitutional rights is to be screened out of the system; and

“(4) the extent to which the operating procedures established for the system provide for the prompt verification of the accuracy and completeness of information entered into the system and the prompt deletion or correction of inaccurate or incomplete information.

“(c) **REPORT TO CONGRESS.**—Before the end of the 1-year period, beginning on the date of the enactment of this Act [Oct. 28, 1992], the Comptroller General of the United States shall submit a report to the Congress containing the findings and conclusions of the Comptroller General in connection with the study conducted pursuant to subsection (a), together with such recommendations for legislative or administrative action as the Comptroller General may determine to be appropriate.”

REPORTS ON USES MADE OF CURRENCY TRANSACTION REPORTS

Pub. L. 101-647, title I, § 101, Nov. 29, 1990, 104 Stat. 4789, provided that: “Not later than 180 days after the effective date of this section [Nov. 29, 1990], and every 2 years for 4 years, the Secretary of the Treasury shall report to the Congress the following:

“(1) the number of each type of report filed pursuant to subchapter II of chapter 53 of title 31, United States Code (or regulations promulgated thereunder) in the previous fiscal year;

“(2) the number of reports filed pursuant to section 6050I of the Internal Revenue Code of 1986 [26 U.S.C. 6050I] (regarding transactions involving currency) in the previous fiscal year;

“(3) an estimate of the rate of compliance with the reporting requirements by persons required to file the reports referred to in paragraphs (1) and (2);

“(4) the manner in which the Department of the Treasury and other agencies of the United States collect, organize, analyze and use the reports referred to in paragraphs (1) and (2) to support investigations and prosecutions of (A) violations of the criminal laws of the United States, (B) violations of the laws of foreign countries, and (C) civil enforcement of the laws of the United States including the provisions regarding asset forfeiture;

“(5) a summary of sanctions imposed in the previous fiscal year against persons who failed to comply with the reporting requirements referred to in paragraphs (1) and (2), and other steps taken to ensure maximum compliance;

“(6) a summary of criminal indictments filed in the previous fiscal year which resulted, in large part, from investigations initiated by analysis of the reports referred to in paragraphs (1) and (2); and

“(7) a summary of criminal indictments filed in the previous fiscal year which resulted, in large part, from investigations initiated by information regarding suspicious financial transactions provided voluntarily by financial institutions.”

INTERNATIONAL CURRENCY TRANSACTION REPORTING

Pub. L. 100-690, title IV, § 4701, Nov. 18, 1988, 102 Stat. 4290, stated Congressional findings concerning success of cash transaction and money laundering control statutes in United States and desirability of United States playing a leadership role in development of similar international system, urged United States Government to seek active cooperation of other countries in enforcement of such statutes, urged Secretary of the Treasury to negotiate with finance ministers of foreign countries to establish an international currency control agency to serve as central source of information and database for international drug enforcement agencies to collect and analyze currency transaction reports filed by member countries, and encouraged adoption, by member countries, of uniform cash transaction and money laundering statutes, prior to repeal by Pub. L. 102-583, § 6(e)(1), Nov. 2, 1992, 106 Stat. 4933.

RESTRICTIONS ON LAUNDERING OF UNITED STATES CURRENCY

Pub. L. 100-690, title IV, § 4702, Nov. 18, 1988, 102 Stat. 4291, as amended by Pub. L. 103-447, title I, § 103(b), Nov. 2, 1994, 108 Stat. 4693, provided that:

“(a) FINDINGS.—The Congress finds that international currency transactions, especially in United States currency, that involve the proceeds of narcotics trafficking fuel trade in narcotics in the United States and worldwide and consequently are a threat to the national security of the United States.

“(b) PURPOSE.—The purpose of this section is to provide for international negotiations that would expand access to information on transactions involving large amounts of United States currency wherever those transactions occur worldwide.

“(c) NEGOTIATIONS.—(1) The Secretary of the Treasury (hereinafter in this section referred to as the ‘Secretary’) shall enter into negotiations with the appropriate financial supervisory agencies and other officials of any foreign country the financial institutions of which do business in United States currency. Highest priority shall be attached to countries whose financial institutions the Secretary determines, in consultation with the Attorney General and the Director of National Drug Control Policy, may be engaging in currency transactions involving the proceeds of international narcotics trafficking, particularly United States currency derived from drug sales in the United States.

“(2) The purposes of negotiations under this subsection are—

“(A) to reach one or more international agreements to ensure that foreign banks and other financial institutions maintain adequate records of large United States currency transactions, and

“(B) to establish a mechanism whereby such records may be made available to United States law enforcement officials.

In carrying out such negotiations, the Secretary should seek to enter into and further cooperative efforts, voluntary information exchanges, the use of letters rogatory, and mutual legal assistance treaties.

“(d) REPORTS.—Not later than 1 year after the date of enactment of this Act [Nov. 18, 1988], the Secretary shall submit an interim report to the Committee on Banking, Finance and Urban Affairs of the House of Representatives and the Committee on Banking, Housing, and Urban Affairs of the Senate on progress in the negotiations under subsection (c). Not later than 2 years after such enactment, the Secretary shall submit a final report to such Committees and the President on the outcome of those negotiations and shall identify, in consultation with the Attorney General and the Director of National Drug Control Policy, countries—

“(1) with respect to which the Secretary determines there is evidence that the financial institutions in such countries are engaging in currency transactions involving the proceeds of international narcotics trafficking; and

“(2) which have not reached agreement with United States authorities on a mechanism for exchanging adequate records on international currency transactions in connection with narcotics investigations and proceedings.

“(e) AUTHORITY.—If after receiving the advice of the Secretary and in any case at the time of receipt of the Secretary’s report, the Secretary determines that a foreign country—

“(1) has jurisdiction over financial institutions that are substantially engaging in currency transactions that effect [affect] the United States involving the proceeds of international narcotics trafficking;

“(2) such country has not reached agreement on a mechanism for exchanging adequate records on international currency transactions in connection with narcotics investigations and proceedings; and

“(3) such country is not negotiating in good faith to reach such an agreement, the President shall impose appropriate penalties and sanctions, including temporarily or permanently—

“(1) prohibiting such persons, institutions or other entities in such countries from participating in any United States dollar clearing or wire transfer system; and

“(2) prohibiting such persons, institutions or entities in such countries from maintaining an account with any bank or other financial institution chartered under the laws of the United States or any State.

Any penalties or sanctions so imposed may be delayed or waived upon certification of the President to the Congress that it is in the national interest to do so. Financial institutions in such countries that maintain adequate records shall be exempt from such penalties and sanctions.

“(f) DEFINITIONS.—For the purposes of this section—

“(1) The term ‘United States currency’ means Federal Reserve Notes and United States coins.

“(2) The term ‘adequate records’ means records of United States’ currency transactions in excess of \$10,000 including the identification of the person initiating the transaction, the person’s business or occupation, and the account or accounts affected by the transaction, or other records of comparable effect.”

INTERNATIONAL INFORMATION EXCHANGE SYSTEM; STUDY OF FOREIGN BRANCHES OF DOMESTIC INSTITUTIONS

Pub. L. 99-570, title I, § 1363, Oct. 27, 1986, 100 Stat. 3207-33, required the Secretary of the Treasury to initiate discussions with the central banks or other appropriate governmental authorities of other countries and propose that an information exchange system be established to reduce international flow of money derived from illicit drug operations and other criminal activities and to report to Congress before the end of the 9-month period beginning Oct. 27, 1986. The Secretary of the Treasury was also required to conduct a study of (1)

the extent to which foreign branches of domestic institutions are used to facilitate illicit transfers of or to evade reporting requirements on transfers of coins, currency, and other monetary instruments into and out of the United States; (2) the extent to which the law of the United States is applicable to the activities of such foreign branches; and (3) methods for obtaining the co-operation of the country in which any such foreign branch is located for purposes of enforcing the law of the United States with respect to transfers, and reports on transfers, of such monetary instruments into and out of the United States and to report to Congress before the end of the 9-month period beginning Oct. 27, 1986.

§ 5312. Definitions and application

(a) In this subchapter—

(1) “financial agency” means a person acting for a person (except for a country, a monetary or financial authority acting as a monetary or financial authority, or an international financial institution of which the United States Government is a member) as a financial institution, bailee, depository trustee, or agent, or acting in a similar way related to money, credit, securities, gold, or a transaction in money, credit, securities, or gold.

(2) “financial institution” means—

(A) an insured bank (as defined in section 3(h) of the Federal Deposit Insurance Act (12 U.S.C. 1813(h)));

(B) a commercial bank or trust company;

(C) a private banker;

(D) an agency or branch of a foreign bank in the United States;

(E) any credit union;

(F) a thrift institution;

(G) a broker or dealer registered with the Securities and Exchange Commission under the Securities Exchange Act of 1934 (15 U.S.C. 78a et seq.);

(H) a broker or dealer in securities or commodities;

(I) an investment banker or investment company;

(J) a currency exchange;

(K) an issuer, redeemer, or cashier of travelers’ checks, checks, money orders, or similar instruments;

(L) an operator of a credit card system;

(M) an insurance company;

(N) a dealer in precious metals, stones, or jewels;

(O) a pawnbroker;

(P) a loan or finance company;

(Q) a travel agency;

(R) a licensed sender of money or any other person who engages as a business in the transmission of funds, including any person who engages as a business in an informal money transfer system or any network of people who engage as a business in facilitating the transfer of money domestically or internationally outside of the conventional financial institutions system;

(S) a telegraph company;

(T) a business engaged in vehicle sales, including automobile, airplane, and boat sales;

(U) persons involved in real estate closings and settlements;

(V) the United States Postal Service;

(W) an agency of the United States Government or of a State or local government

carrying out a duty or power of a business described in this paragraph;

(X) a casino, gambling casino, or gaming establishment with an annual gaming revenue of more than \$1,000,000 which—

(i) is licensed as a casino, gambling casino, or gaming establishment under the laws of any State or any political subdivision of any State; or

(ii) is an Indian gaming operation conducted under or pursuant to the Indian Gaming Regulatory Act other than an operation which is limited to class I gaming (as defined in section 4(6) of such Act);

(Y) any business or agency which engages in any activity which the Secretary of the Treasury determines, by regulation, to be an activity which is similar to, related to, or a substitute for any activity in which any business described in this paragraph is authorized to engage; or

(Z) any other business designated by the Secretary whose cash transactions have a high degree of usefulness in criminal, tax, or regulatory matters.

(3) “monetary instruments” means—

(A) United States coins and currency;

(B) as the Secretary may prescribe by regulation, coins and currency of a foreign country, travelers’ checks, bearer negotiable instruments, bearer investment securities, bearer securities, stock on which title is passed on delivery, and similar material; and

(C) as the Secretary of the Treasury shall provide by regulation for purposes of sections 5316 and 5331, checks, drafts, notes, money orders, and other similar instruments which are drawn on or by a foreign financial institution and are not in bearer form.

(4) NONFINANCIAL TRADE OR BUSINESS.—The term “nonfinancial trade or business” means any trade or business other than a financial institution that is subject to the reporting requirements of section 5313 and regulations prescribed under such section.

(5) “person”, in addition to its meaning under section 1 of title 1, includes a trustee, a representative of an estate and, when the Secretary prescribes, a governmental entity.

(6) “United States” means the States of the United States, the District of Columbia, and, when the Secretary prescribes by regulation, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, the Northern Mariana Islands, American Samoa, the Trust Territory of the Pacific Islands, a territory or possession of the United States, or a military or diplomatic establishment.

(b) In this subchapter—

(1) “domestic financial agency” and “domestic financial institution” apply to an action in the United States of a financial agency or institution.

(2) “foreign financial agency” and “foreign financial institution” apply to an action outside the United States of a financial agency or institution.

(c) ADDITIONAL DEFINITIONS.—For purposes of this subchapter, the following definitions shall apply:

Chapter 13

BTC-E (a/k/a Canton Business Corporation) and Alexander Vinnik - ASSESSMENT OF CIVIL MONEY PENALTY

**UNITED STATES OF AMERICA
DEPARTMENT OF THE TREASURY
FINANCIAL CRIMES ENFORCEMENT NETWORK**

IN THE MATTER OF:

BTC-E a/k/a Canton Business Corporation
and Alexander Vinnik

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Number 2017-03

ASSESSMENT OF CIVIL MONEY PENALTY

I. INTRODUCTION

The Financial Crimes Enforcement Network (FinCEN) has determined that grounds exist to assess a civil money penalties against BTC-E a/k/a Canton Business Corporation (BTC-e) and Alexander Vinnik, pursuant to the Bank Secrecy Act (BSA) and regulations issued pursuant to that Act.¹

FinCEN has the authority to impose civil money penalties on money services businesses (MSBs) and individuals involved in the ownership or operation of MSBs.² Rules implementing the BSA state that “[o]verall authority for enforcement and compliance, including coordination and direction of procedures and activities of all other agencies exercising delegated authority under this chapter” has been delegated by the Secretary of the Treasury to FinCEN.³

¹ The Bank Secrecy Act is codified at 12 U.S.C. §§ 1829b, 1951–1959 and 31 U.S.C. §§ 5311–5314, 5316–5332. Regulations implementing the Bank Secrecy Act currently appear at 31 C.F.R. Chapter X.

² 12 U.S.C. §§ 1829b(j) and 1955; 31 U.S.C. §§ 5321(a)(1) and 5330(e); 31 C.F.R. § 1010.820.

³ 31 C.F.R. § 1010.810(a).

BTC-e and Alexander Vinnik have been indicted in the Northern District of California under 18 U.S.C. §§ 1956, 1957, and 1960 for money laundering, conspiracy to commit money laundering, engaging in unlawful monetary transactions, and the operation of an unlicensed money transmitting business.⁴

II. JURISDICTION

BTC-e operates as an “exchanger” of convertible virtual currencies, offering the purchase and sale of U.S. dollars, Russian Rubles, Euros, Bitcoin, Litecoin, Namecoin, Novacoin, Peercoin, Ethereum, and Dash.⁵ BTC-e also offered “BTC-e code,” which enabled users to send and receive fiat currencies, including U.S. dollars, with other BTC-e users. Since 2011, BTC-e has served approximately 700,000 customers worldwide and is associated with bitcoin wallet addresses that have received over 9.4 million bitcoin. Alexander Vinnik participated in the direction and supervision of BTC-e’s operations and finances and controlled multiple BTC-e administrative accounts used in processing transactions.

Exchangers of convertible virtual currency are “money transmitters” as defined at 31 C.F.R. § 1010.100(ff)(5) and “financial institutions” as defined at 31 C.F.R. § 1010.100(t). A foreign-located business qualifies as an MSB if it does business as an MSB “wholly or in substantial part within the United States.”⁶ Customers located within the United States used BTC-e to conduct at least 21,000 bitcoin transactions worth over \$296,000,000 and tens of thousands of transactions in other convertible virtual currencies. The transactions included funds sent from customers located within the United States to recipients who were also located within the United States. In addition,

⁴ *United States v. BTC-e a/k/a Canton Business Corporation and Alexander Vinnik*, CR 16-00227 SI (N.D. CA. Jan. 17, 2017).

⁵ FIN-2013-G001, “Application of FinCEN’s Regulations to Persons Administering, Exchanging, or Using Virtual Currencies,” March 18, 2013.

⁶ 31 U.S.C. §§ 5312(a)(6), 5312(b), and 5330(d); 31 C.F.R. § 1010.100(ff).

these transactions were processed through servers located in the United States. BTC-e attempted to conceal the fact that it provided services to customers located within the United States. BTC-e instructed customers to make use of correspondent accounts held by foreign financial institutions or services provided by affiliates of BTC-e located abroad.

III. DETERMINATIONS

FinCEN has determined that, from November 5, 2011 through the present: (a) BTC-e and Alexander Vinnik⁷ willfully violated MSB registration requirements; (b) BTC-e willfully violated⁸ the requirement to implement an effective anti-money laundering (AML) program, the requirement to detect suspicious transactions and file suspicious activity reports (SARs), and the requirement to obtain and retain records relating to transmittals of funds in amounts of \$3,000 or more; and (c) Alexander Vinnik willfully participated⁹ in violations of AML program and SAR requirements.¹⁰

A. Registration as a Money Services Business

The BSA and its implementing regulations require the registration of an MSB within 180 days of beginning operations and the renewal of such registration every two years.¹¹ A foreign-

⁷ 31 U.S.C. § 5330(a)(1) (“Any person who owns or controls a money transmitting business shall register the business...”); 31 U.S.C. 5330(e)(1) (“Any person who fails to comply with any requirement of [31 U.S.C. § 5330] or any regulation prescribed under [31 U.S.C. § 5330] shall be liable...for a civil penalty...”); 31 C.F.R. § 1022.380(c) (“[A]ny person who owns or controls a money services business is responsible for registering the business...”); 31 C.F.R. § 1022.380(e) (“Any person who fails to comply with any requirement of [31 U.S.C. § 5330 or 31 C.F.R. § 1022.380] shall be liable for a civil penalty...”).

⁸ 12 U.S.C. § 1829b(j); 31 U.S.C. § 5321(a)(1); 31 C.F.R. § 1010.820(f).

⁹ 31 U.S.C. § 5321(a)(1); 31 C.F.R. § 1010.820(f) (For any willful violation...of any reporting requirement for financial institutions..., the Secretary may assess upon any domestic financial institution, and upon any partner, director, officer, or employee thereof who willfully participates in the violation, a civil penalty...).

¹⁰ In civil enforcement of the Bank Secrecy Act under 31 U.S.C. § 5321(a)(1), to establish that a financial institution or individual acted willfully, the government need only show that the financial institution or individual acted with either reckless disregard or willful blindness. The government need not show that the entity or individual had knowledge that the conduct violated the Bank Secrecy Act, or that the entity or individual otherwise acted with an improper motive or bad purpose.

¹¹ 31 U.S.C. § 5330 and 31 C.F.R. § 1022.380(b)(2).

located MSB must appoint an agent who will accept legal process in matters related to compliance with the BSA.¹² The agent must reside within the United States.

At no point in its operations was BTC-e registered with FinCEN. Notably, BTC-e went unregistered even after FinCEN issued guidance pertaining to exchangers and administrators of virtual currency in March 2013. BTC-e never appointed an agent for service of process.

B. Violations of AML Program Requirements

The BSA and its implementing regulations require an MSB to develop, implement, and maintain an effective written AML program that is reasonably designed to prevent the MSB from being used to facilitate money laundering and the financing of terrorist activities.¹³ BTC-e was required to implement a written AML program that, at a minimum: (a) incorporates policies, procedures and internal controls reasonably designed to assure ongoing compliance; (b) designates an individual responsible to assure day to day compliance with the program and BSA requirements; (c) provides training for appropriate personnel, including training in the detection of suspicious transactions; and (d) provides for independent review to monitor and maintain an adequate program.¹⁴

BTC-e lacked basic controls to prevent the use of its services for illicit purposes. Through their operation of BTC-e, Alexander Vinnik and other individuals occupying senior leadership positions within the virtual currency exchange attracted and maintained a customer base that consisted largely of criminals who desired to conceal proceeds from crimes such as ransomware, fraud, identity theft, tax refund fraud schemes, public corruption, and drug trafficking. BSA

¹² 31 U.S.C. § 5330 and 31 C.F.R. § 1022.380(a)(2). *See generally* FIN-2012-A001, “Foreign-Located Money Services Businesses,” February 15, 2012.

¹³ 31 U.S.C. §§ 5318(a)(2) and (h); 31 C.F.R. § 1022.210(a).

¹⁴ 31 U.S.C. §§ 5318(a)(2) and (h)(1); 31 C.F.R. §§ 1022.210(c) and (d).

compliance was compromised by revenue interests. BTC-e quickly became the virtual currency exchange of choice for criminals looking to conduct illicit transactions or launder illicit proceeds, all of which BTC-e failed to report both to FinCEN and law enforcement.

1. Internal Controls

BTC-e failed to implement policies, procedures, and internal controls reasonably designed to prevent the MSB from facilitating money laundering. The BSA requires MSBs to implement policies and procedures to verify customer identification, file BSA reports, create and maintain BSA records, and respond to law enforcement requests. BTC-e lacked adequate controls to verify customer identification, to identify and report suspicious activity, and to prevent money laundering and the financing of terrorist activities. BTC-e offered a variety of convertible virtual currencies internationally and operated as one of the largest volume virtual currency exchanges. The BSA and its implementing regulations require an MSB to implement internal controls that are commensurate with the risks posed by its clientele, the nature and volume of the financial services it provides, and the jurisdictions in which the MSB provides its services.

BTC-e failed to collect and verify even the most basic customer information needed to comply with the BSA. BTC-e allowed its customers to open accounts and conduct transactions with only a username, password, and an email address. The minimal information collected was the same regardless of how many transactions were processed for a customer or the amount involved. BTC-e implemented policies to verify customer identification in May 2017 but stated that compliance with those policies was “optional.”

BTC-e processed transactions with digital currency features that restricted its ability to verify customer identification or monitor for suspicious activity. BTC-e allowed over \$40 million in transfers on its platform from bitcoin mixers. Mixers anonymize bitcoin addresses and obscure

bitcoin transactions by weaving together inflows and outflows from many different users. Instead of directly transmitting bitcoin between two bitcoin addresses, the mixer disassociates connections. Mixers create layers of temporary bitcoin addresses operated by the mixer itself to further complicate any attempt to analyze the flow of bitcoin. BTC-e lacked adequate internal controls to mitigate the risks presented by bitcoin mixers.

BTC-e also lacked adequate internal controls to mitigate the risks presented by virtual currencies with anonymizing features. BTC-e facilitated transfers of the convertible virtual currency Dash, which has a feature called “PrivateSend.” PrivateSend provides a decentralized mixing service within the currency itself in an effort to enhance user anonymity. BTC-e and Alexander Vinnik failed to conduct appropriate risk-based due diligence to address the challenges anonymizing features would have on compliance with BSA reporting and recordkeeping requirements.

BTC-e lacked adequate procedures for conducting due diligence, monitoring transactions, and refusing to consummate transactions that facilitated money laundering or other illicit activity. Users of BTC-e openly and explicitly discussed conducting criminal activity through the website’s internal messaging system and on BTC-e’s public “Troll Box,” or user chat. This resulted in no additional scrutiny from Alexander Vinnik or BTC-e’s other operators and senior leadership. BTC-e received inquiries from customers on how to process and access proceeds obtained from the sale of illegal drugs on darknet markets, including Silk Road, Hansa Market, and Alphabay.

BTC-e processed transactions involving funds stolen from the Mt.Gox exchange between 2011 and 2014. BTC-e processed over 300,000 bitcoin of these proceeds, which were sent and held at three separate but linked BTC-e accounts. BTC-e failed to conduct any due diligence on the

transactions or on the accounts in which the stolen bitcoin were held. Moreover, BTC-e failed to file any SARs on these transactions even after the thefts were publicly reported in the media.

C. Failure to File Suspicious Activity Reports

The BSA and its implementing regulations require an MSB to report transactions that the MSB “knows, suspects, or has reason to suspect” are suspicious, if the transactions are conducted or attempted by, at, or through the MSB, and the transactions involve or aggregate to at least \$2,000 in funds or other assets.¹⁵ A transaction is “suspicious” if the transaction: (a) involves funds derived from illegal activity; (b) is designed to evade reporting requirements; (c) has no business or apparent lawful purpose, and the MSB knows of no reasonable explanation for the transaction after examining the available facts, including background and possible purpose; or (d) involves use of the money services business to facilitate criminal activity.¹⁶

BTC-e processed thousands of suspicious transactions without ever filing a single SAR. Unreported transactions included those conducted by customers who were widely reported as associated with criminal or civil violations of U.S. law. For example, from November 14, 2013 through July 21, 2015, BTC-e processed over 1,000 transactions for the unregistered U.S.-based virtual currency exchange Coin.MX. Coin.MX’s operator, Anthony R. Murgio, pled guilty to charges that included conspiracy to operate an unlicensed money transmitting business.¹⁷ Coin.MX processed over \$10 million in bitcoin transactions derived from illegal activity throughout its operations, including a substantial number that involved funds from ransomware extortion

¹⁵ 31 U.S.C. § 5318(g)(1) and 31 C.F.R. § 1022.320(a)(2).

¹⁶ 31 U.S.C. § 5318(g)(1) and 31 C.F.R. §§ 1022.320(a)(2)(i)-(iv).

¹⁷ “Operator Of Unlawful Bitcoin Exchange Pleads Guilty In Multimillion-Dollar Money Laundering And Fraud Scheme,” Department of Justice, U.S. Attorney’s Office for the Southern District of New York, January 9, 2017, <https://www.justice.gov/usao-sdny/pr/operator-unlawful-bitcoin-exchange-pleads-guilty-multimillion-dollar-money-laundering>.

payments. Even after the conviction of Coin.MX's operator, BTC-e failed to conduct reviews of the transactions that BTC-e processed for Coin.MX and failed to file any SARs.

Criminals, and cybercriminals in particular, used BTC-e to process the proceeds of their illicit activity. This was particularly the case for some of the largest ransomware purveyors, which used BTC-e as a means of storing, distributing, and laundering their criminal proceeds. FinCEN has identified at least \$800,000 worth of transactions facilitated by BTC-e tied to the ransomware known as "Cryptolocker," which affected computers in 2013 and 2014. Further, over 40 percent of all bitcoin transactions, over 6,500 bitcoin, associated with the ransomware scheme known as "Locky" were sent through BTC-e. Despite readily available, public information identifying the bitcoin addresses associated with Locky, BTC-e failed to conduct any due diligence on the recipients of the funds and failed to file SARs.

BTC-e also failed to file SARs on transactions that involved the money laundering website Liberty Reserve. Liberty Reserve was a Costa Rica-based administrator of virtual currency that laundered approximately \$6 billion in criminal proceeds. Liberty Reserve's website was seized by the U.S. government and shut down when its owner and six other individuals were charged with conspiracy to commit money laundering and operating an unlicensed money transmitting business. FinCEN issued a finding under Section 311 of the USA PATRIOT Act that Liberty Reserve was a financial institution of primary money laundering concern.¹⁸ Not only did BTC-e share customers with Liberty Reserve, "BTC-e code" was redeemable for Liberty Reserve virtual currency. BTC-e failed to file SARs even after the public shutdown of Liberty Reserve in May 2013.

¹⁸ "Treasury Identifies Virtual Currency Provider Liberty Reserve as a Financial Institution of Primary Money Laundering Concern under USA Patriot Act Section 311," Department of the Treasury, May 28, 2013, <https://www.treasury.gov/press-center/press-releases/Pages/jl1956.aspx>.

D. Recordkeeping Requirements

The BSA and its implementing regulations require MSBs and other non-bank financial institutions to obtain and retain records related to transmittals of funds in amounts of \$3,000 or more.¹⁹ BTC-e failed to collect even the most basic customer information and lacked adequate procedures for conducting due diligence and monitoring transactions. Transactional records maintained by BTC-e lacked critical information such as name, address, and account numbers.

IV. CIVIL MONEY PENALTY

FinCEN has determined that BTC-e willfully violated the BSA and its implementing regulations, as described in this ASSESSMENT, and that grounds exist to assess civil money penalties for these violations. FinCEN has determined that the proper penalties in this matter are a penalty of \$110,003,314 imposed on BTC-e and a penalty of \$12,000,000 imposed on Alexander Vinnik.

By:

_____/s/_____ Jamal El-Hindi Acting Director FINANCIAL CRIMES ENFORCEMENT NETWORK U.S. Department of the Treasury	7/26/2017 _____ Date:
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¹⁹ 12 U.S.C. § 1829b and 31 C.F.R. § 1010.410(e).

Chapter 14

NEW YORK STATE DEPARTMENT OF FINANCIAL SERVICES NEW YORK CODES, RULES AND REGULATIONS TITLE 23. DEPARTMENT OF FINANCIAL SERVICES CHAPTER I. REGULATIONS OF THE SUPERINTENDENT OF FINANCIAL SERVICES PART 200. VIRTUAL CURRENCIES

NEW YORK STATE
DEPARTMENT OF FINANCIAL SERVICES

NEW YORK CODES, RULES AND REGULATIONS

TITLE 23. DEPARTMENT OF FINANCIAL SERVICES

CHAPTER I. REGULATIONS OF THE SUPERINTENDENT OF FINANCIAL SERVICES

PART 200. VIRTUAL CURRENCIES

(ALL MATERIAL IS NEW)

Statutory Authority: Financial Services Law Sections 102, 104, 201, 206, 301, 302, 309, and 408

Section 200.1 Introduction

Section 200.2 Definitions

Section 200.3 License

Section 200.4 Application

Section 200.5 Application fees

Section 200.6 Action by superintendent

Section 200.7 Compliance

Section 200.8 Capital requirements

Section 200.9 Custody and protection of customer assets

Section 200.10 Material change to business

Section 200.11 Change of control; mergers and acquisitions

Section 200.12 Books and records

Section 200.13 Examinations

Section 200.14 Reports and financial disclosures

Section 200.15 Anti-money laundering program

Section 200.16 Cyber security program

Section 200.17 Business continuity and disaster recovery

Section 200.18 Advertising and marketing

Section 200.19 Consumer protection

Section 200.20 Complaints

Section 200.21 Transitional period

Section 200.22 Severability

Section 200.1 Introduction

This Part contains regulations relating to the conduct of business involving Virtual Currency, as defined herein, in accordance with the superintendent's powers pursuant to the above-stated authority.

Section 200.2 Definitions

For purposes of this Part only, the following definitions shall apply:

- (a) *Affiliate* means any Person that directly or indirectly controls, is controlled by, or is under common control with, another Person;
- (b) *Cyber Security Event* means any act or attempt, successful or unsuccessful, to gain unauthorized access to, disrupt, or misuse a Licensee's electronic systems or information stored on such systems;
- (c) *Department* means the New York State Department of Financial Services;
- (d) *Exchange Service* means the conversion or exchange of Fiat Currency or other value into Virtual Currency, the conversion or exchange of Virtual Currency into Fiat Currency or other value, or the conversion or exchange of one form of Virtual Currency into another form of Virtual Currency;
- (e) *Fiat Currency* means government-issued currency that is designated as legal tender in its country of issuance through government decree, regulation, or law;
- (f) *Licensee* means any Person duly licensed by the superintendent pursuant to this Part;
- (g) *New York* means the State of New York;
- (h) *New York Resident* means any Person that resides, is located, has a place of business, or is conducting business in New York;
- (i) *Person* means an individual, partnership, corporation, association, joint stock association, trust, or other entity, however organized;
- (j) *Prepaid Card* means an electronic payment device that: (i) is usable at a single merchant or an affiliated group of merchants that share the same name, mark, or logo, or is usable at multiple, unaffiliated merchants or service providers; (ii) is issued in and for a specified amount of Fiat Currency; (iii) can be reloaded in and for only Fiat Currency, if at all; (iv) is issued and/or reloaded on a prepaid basis for the future purchase or delivery

of goods or services; (v) is honored upon presentation; and (vi) can be redeemed in and for only Fiat Currency, if at all;

(k) *Principal Officer* means an executive officer of an entity, including, but not limited to, the chief executive, financial, operating, and compliance officers, president, general counsel, managing partner, general partner, controlling partner, and trustee, as applicable;

(l) *Principal Stockholder* means any Person that directly or indirectly owns, controls, or holds with power to vote ten percent or more of any class of outstanding capital stock or other equity interest of an entity or possesses the power to direct or cause the direction of the management or policies of the entity;

(m) *Principal Beneficiary* means any Person entitled to ten percent or more of the benefits of a trust;

(n) *Qualified Custodian* means a bank, trust company, national bank, savings bank, savings and loan association, federal savings association, credit union, or federal credit union in the State of New York, subject to the prior approval of the superintendent. To the extent applicable, terms used in this definition shall have the meaning ascribed by the Banking Law;

(o) *Transmission* means the transfer, by or through a third party, of Virtual Currency from a Person to a Person, including the transfer from the account or storage repository of a Person to the account or storage repository of a Person;

(p) *Virtual Currency* means any type of digital unit that is used as a medium of exchange or a form of digitally stored value. Virtual Currency shall be broadly construed to include digital units of exchange that (i) have a centralized repository or administrator; (ii) are decentralized and have no centralized repository or administrator; or (iii) may be created or obtained by computing or manufacturing effort. Virtual Currency shall not be construed to include any of the following:

(1) digital units that (i) are used solely within online gaming platforms, (ii) have no market or application outside of those gaming platforms, (iii) cannot be converted into, or redeemed for, Fiat Currency or

Virtual Currency, and (iv) may or may not be redeemable for real-world goods, services, discounts, or purchases.

(2) digital units that can be redeemed for goods, services, discounts, or purchases as part of a customer affinity or rewards program with the issuer and/or other designated merchants or can be redeemed for digital units in another customer affinity or rewards program, but cannot be converted into, or redeemed for, Fiat Currency or Virtual Currency; or

(3) digital units used as part of Prepaid Cards;

(q) *Virtual Currency Business Activity* means the conduct of any one of the following types of activities involving New York or a New York Resident:

(1) receiving Virtual Currency for Transmission or Transmitting Virtual Currency, except where the transaction is undertaken for non-financial purposes and does not involve the transfer of more than a nominal amount of Virtual Currency;

(2) storing, holding, or maintaining custody or control of Virtual Currency on behalf of others;

(3) buying and selling Virtual Currency as a customer business;

(4) performing Exchange Services as a customer business; or

(5) controlling, administering, or issuing a Virtual Currency.

The development and dissemination of software in and of itself does not constitute Virtual Currency Business Activity.

Section 200.3 License

- (a) License required. No Person shall, without a license obtained from the superintendent as provided in this Part, engage in any Virtual Currency Business Activity. Licensees are not authorized to exercise fiduciary powers, as defined under Section 100 of the Banking Law.
- (b) Unlicensed agents prohibited. Each Licensee is prohibited from conducting any Virtual Currency Business Activity through an agent or agency arrangement when the agent is not a Licensee.
- (c) Exemption from licensing requirements. The following Persons are exempt from the licensing requirements otherwise applicable under this Part:
 - (1) Persons that are chartered under the New York Banking Law and are approved by the superintendent to engage in Virtual Currency Business Activity; and
 - (2) merchants and consumers that utilize Virtual Currency solely for the purchase or sale of goods or services or for investment purposes.

Section 200.4 Application

(a) Application for a license required under this Part shall be in writing, under oath, and in a form prescribed by the superintendent, and shall contain the following:

(1) the exact name of the applicant, including any doing business as name, the form of organization, the date of organization, and the jurisdiction where organized or incorporated;

(2) a list of all of the applicant's Affiliates and an organization chart illustrating the relationship among the applicant and such Affiliates;

(3) a list of, and detailed biographical information for, each individual applicant and each director, Principal Officer, Principal Stockholder, and Principal Beneficiary of the applicant, as applicable, including such individual's name, physical and mailing addresses, and information and documentation regarding such individual's personal history, experience, and qualification, which shall be accompanied by a form of authority, executed by such individual, to release information to the Department;

(4) a background report prepared by an independent investigatory agency acceptable to the superintendent for each individual applicant, and each Principal Officer, Principal Stockholder, and Principal Beneficiary of the applicant, as applicable;

(5) for each individual applicant; for each Principal Officer, Principal Stockholder, and Principal Beneficiary of the applicant, as applicable; and for all individuals to be employed by the applicant who have access to any customer funds, whether denominated in Fiat Currency or Virtual Currency: (i) a set of completed fingerprints, or a receipt indicating the vendor (which vendor must be acceptable to the superintendent) at which, and the date when, the fingerprints were taken, for submission to the State Division of Criminal Justice Services and the Federal Bureau of Investigation; (ii) if applicable, such processing fees as prescribed by the superintendent; and (iii) two portrait-style photographs of the individuals measuring not more than two inches by two inches;

- (6) an organization chart of the applicant and its management structure, including its Principal Officers or senior management, indicating lines of authority and the allocation of duties among its Principal Officers or senior management;
- (7) a current financial statement for the applicant and each Principal Officer, Principal Stockholder, and Principal Beneficiary of the applicant, as applicable, and a projected balance sheet and income statement for the following year of the applicant's operation;
- (8) a description of the proposed, current, and historical business of the applicant, including detail on the products and services provided and to be provided, all associated website addresses, the jurisdictions in which the applicant is engaged in business, the principal place of business, the primary market of operation, the projected customer base, any specific marketing targets, and the physical address of any operation in New York;
- (9) details of all banking arrangements;
- (10) all written policies and procedures required by, or related to, the requirements of this Part;
- (11) an affidavit describing any pending or threatened administrative, civil, or criminal action, litigation, or proceeding before any governmental agency, court, or arbitration tribunal against the applicant or any of its directors, Principal Officers, Principal Stockholders, and Principal Beneficiaries, as applicable, including the names of the parties, the nature of the proceeding, and the current status of the proceeding;
- (12) verification from the New York State Department of Taxation and Finance that the applicant is compliant with all New York State tax obligations in a form acceptable to the superintendent;
- (13) if applicable, a copy of any insurance policies maintained for the benefit of the applicant, its directors or officers, or its customers;
- (14) an explanation of the methodology used to calculate the value of Virtual Currency in Fiat Currency;
and
- (15) such other additional information as the superintendent may require.

- (b) As part of such application, the applicant shall demonstrate that it will be compliant with all of the requirements of this Part upon licensing.
- (c) Notwithstanding Subsection (b) of this Section, the superintendent may in his or her sole discretion and consistent with the purposes and intent of the Financial Services Law and this Part approve an application by granting a conditional license.
 - (1) A conditional license may be issued to an applicant that does not satisfy all of the regulatory requirements upon licensing.
 - (2) A Licensee that holds a conditional license may be subject to heightened review, whether in regard to the scope and frequency of examination or otherwise.
 - (3) Unless the superintendent removes the conditional status of or renews a conditional license, said license shall expire two years after its date of issuance.
 - i) The superintendent may in his or her sole discretion and consistent with the purposes and intent of the Financial Services Law and this Part:
 - (A) renew a conditional license for an additional length of time; or
 - (B) remove the conditional status from a conditional license.
 - (4) A conditional license may be suspended or revoked pursuant to Section 200.6 of this Part.
 - (5) A conditional license may impose any reasonable condition or conditions, as determined by the superintendent in his or her sole discretion.
 - (6) The superintendent may remove any condition or conditions from a conditional license that has been issued.
 - (7) In determining whether to issue a conditional license, renew or remove the conditional status of a conditional license, or impose or remove any specific conditions on a conditional license, the superintendent may consider any relevant factor or factors. Relevant factors may include but are not limited to:

- i) the nature and scope of the applicant's or Licensee's business;
 - ii) the anticipated volume of business to be transacted by the applicant or Licensee;
 - iii) the nature and scope of the risks that the applicant's or Licensee's business presents to consumers, Virtual Currency markets, financial markets, and the general public;
 - iv) the measures which the applicant or Licensee has taken to limit or mitigate the risks its business presents;
 - v) whether the applicant or Licensee is registered with FinCEN;
 - vi) whether the applicant or Licensee is licensed, registered, or otherwise authorized by any governmental or self-regulatory authority to engage in financial services or other business activities;
 - vii) the applicant's or Licensee's financial services or other business experience; and
 - viii) the Licensee's history as a holder of a conditional license issued by the superintendent.
- (d) The superintendent may permit that any application for a license under this Part, or any other submission required by this Part, be made or executed by electronic means.

Section 200.5 Application fees

As part of an application for licensing under this Part, each applicant must submit an initial application fee, in the amount of five thousand dollars, to cover the cost of processing the application, reviewing application materials, and investigating the financial condition and responsibility, financial and business experience, and character and general fitness of the applicant. If the application is denied or withdrawn, such fee shall not be refunded. Each Licensee may be required to pay fees to the Department to process additional applications related to the license.

Section 200.6 Action by superintendent

(a) Generally. Upon the filing of an application for licensing under this Part, payment of the required fee, and demonstration by the applicant of its ability to comply with the provisions of this Part upon licensing, the superintendent shall investigate the financial condition and responsibility, financial and business experience, and character and general fitness of the applicant. If the superintendent finds these qualities are such as to warrant the belief that the applicant's business will be conducted honestly, fairly, equitably, carefully, and efficiently within the purposes and intent of this Part, and in a manner commanding the confidence and trust of the community, the superintendent shall advise the applicant in writing of his or her approval of the application, and shall issue to the applicant a license to conduct Virtual Currency Business Activity, subject to the provisions of this Part and such other conditions as the superintendent shall deem appropriate; or the superintendent may deny the application.

(b) Approval or denial of application. The superintendent shall approve or deny every application for a license hereunder within 90 days from the filing of an application deemed by the superintendent to be complete. Such period of 90 days may be extended at the discretion of the superintendent for such additional reasonable period of time as may be required to enable compliance with this Part. A license issued pursuant to this Part shall remain in full force and effect until it is surrendered by the Licensee, is revoked or suspended, or expires as provided in this Part.

(c) Suspension or revocation of license. The superintendent may suspend or revoke a license issued under this Part on any ground on which the superintendent might refuse to issue an original license, for a violation of any provision of this Part, for good cause shown, or for failure of the Licensee to pay a judgment, recovered in any court, within or without this State, by a claimant or creditor in an action arising out of, or relating to, the Licensee's Virtual Currency Business Activity, within thirty days after the judgment becomes final or within thirty days after expiration or termination of a stay of execution thereon; provided, however, that if execution on

the judgment is stayed, by court order or operation of law or otherwise, then proceedings to suspend or revoke the license (for failure of the Licensee to pay such judgment) may not be commenced by the superintendent during the time of such stay, and for thirty days thereafter. "Good cause" shall exist when a Licensee has defaulted or is likely to default in performing its obligations or financial engagements or engages in unlawful, dishonest, wrongful, or inequitable conduct or practices that may cause harm to the public.

(d) Hearing. No license issued under this Part shall be revoked or suspended except after a hearing thereon. The superintendent shall give a Licensee no less than ten days' written notice of the time and place of such hearing by registered or certified mail addressed to the principal place of business of such Licensee. Any order of the superintendent suspending or revoking such license shall state the grounds upon which it is based and be sent by registered or certified mail to the Licensee at its principal place of business as shown in the records of the Department.

(e) Preliminary injunction. The superintendent may, when deemed by the superintendent to be in the public interest, seek a preliminary injunction to restrain a Licensee from continuing to perform acts that violate any provision of this Part, the Financial Services Law, Banking Law, or Insurance Law.

(f) Preservation of powers. Nothing in this Part shall be construed as limiting any power granted to the superintendent under any other provision of the Financial Services Law, Banking Law, or Insurance Law, including any power to investigate possible violations of law, rule, or regulation or to impose penalties or take any other action against any Person for violation of such laws, rules, or regulations.

Section 200.7 Compliance

- (a) Generally. Each Licensee is required to comply with all applicable federal and state laws, rules, and regulations.
- (b) Compliance officer. Each Licensee shall designate a qualified individual or individuals responsible for coordinating and monitoring compliance with this Part and all other applicable federal and state laws, rules, and regulations.
- (c) Compliance policy. Each Licensee shall maintain and enforce written compliance policies, including policies with respect to anti-fraud, anti-money laundering, cyber security, privacy and information security, and any other policy required under this Part, which must be reviewed and approved by the Licensee's board of directors or an equivalent governing body.

Section 200.8 Capital requirements

(a) Each Licensee shall maintain at all times such capital in an amount and form as the superintendent determines is sufficient to ensure the financial integrity of the Licensee and its ongoing operations based on an assessment of the specific risks applicable to each Licensee. In determining the minimum amount of capital that must be maintained by a Licensee, the superintendent may consider a variety of factors, including but not limited to:

- (1) the composition of the Licensee's total assets, including the position, size, liquidity, risk exposure, and price volatility of each type of asset;
- (2) the composition of the Licensee's total liabilities, including the size and repayment timing of each type of liability;
- (3) the actual and expected volume of the Licensee's Virtual Currency Business Activity;
- (4) whether the Licensee is already licensed or regulated by the superintendent under the Financial Services Law, Banking Law, or Insurance Law, or otherwise subject to such laws as a provider of a financial product or service, and whether the Licensee is in good standing in such capacity;
- (5) the amount of leverage employed by the Licensee;
- (6) the liquidity position of the Licensee;
- (7) the financial protection that the Licensee provides for its customers through its trust account or bond;
- (8) the types of entities to be serviced by the Licensee; and
- (9) the types of products or services to be offered by the Licensee.

(b) Each Licensee shall hold capital required to be maintained in accordance with this Section in the form of cash, virtual currency, or high-quality, highly liquid, investment-grade assets, in such proportions as are acceptable to the superintendent.

Section 200.9 Custody and protection of customer assets

- (a) Each Licensee shall maintain a surety bond or trust account in United States dollars for the benefit of its customers in such form and amount as is acceptable to the superintendent for the protection of the Licensee's customers. To the extent a Licensee maintains a trust account in accordance with this section, such trust account must be maintained with a Qualified Custodian.
- (b) To the extent a Licensee stores, holds, or maintains custody or control of Virtual Currency on behalf of another Person, such Licensee shall hold Virtual Currency of the same type and amount as that which is owed or obligated to such other Person.
- (c) Each Licensee is prohibited from selling, transferring, assigning, lending, hypothecating, pledging, or otherwise using or encumbering assets, including Virtual Currency, stored, held, or maintained by, or under the custody or control of, such Licensee on behalf of another Person except for the sale, transfer, or assignment of such assets at the direction of such other Person.

Section 200.10 Material change to business

- (a) Each Licensee must obtain the superintendent's prior written approval for any plan or proposal to introduce or offer a materially new product, service, or activity, or to make a material change to an existing product, service, or activity, involving New York or New York Residents.
- (b) A "materially new product, service, or activity" or a "material change" may occur where:
 - (1) the proposed new product, service, or activity, or the proposed change may raise a legal or regulatory issue about the permissibility of the product, service, or activity;
 - (2) the proposed new product, service, or activity, or the proposed change may raise safety and soundness or operational concerns; or
 - (3) a change is proposed to an existing product, service, or activity that may cause such product, service, or activity to be materially different from that previously listed on the application for licensing by the superintendent.
- (c) The Licensee shall submit a written plan describing the proposed materially new product, service, or activity, or the proposed material change, including a detailed description of the business operations, compliance policies, and the impact on the overall business of the Licensee, as well as such other information as requested by the superintendent.
- (d) If a Licensee has any questions about the materiality of any proposed new product, service, or activity, or of any proposed change, the Licensee may seek clarification from the Department prior to introducing or offering that new product, service, or activity or making that change.

Section 200.11 Change of control; mergers and acquisitions

(a) Change of Control. No action shall be taken, except with the prior written approval of the superintendent, that may result in a change of control of a Licensee.

(1) Prior to any change of control, the Person seeking to acquire control of a Licensee shall submit a written application to the superintendent in a form and substance acceptable to the superintendent, including but not limited to detailed information about the applicant and all directors, Principal Officers, Principal Stockholders, and Principal Beneficiaries of the applicant, as applicable.

(2) For purposes of this Section, the term "control" means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of a Licensee whether through the ownership of stock of such Licensee, the stock of any Person that possesses such power, or otherwise. Control shall be presumed to exist if a Person, directly or indirectly, owns, controls, or holds with power to vote ten percent or more of the voting stock of a Licensee or of any Person that owns, controls, or holds with power to vote ten percent or more of the voting stock of such Licensee. No Person shall be deemed to control another Person solely by reason of his being an officer or director of such other Person.

(3) The superintendent may determine upon application that any Person does not or will not upon the taking of some proposed action control another Person. Such determination shall be made within 30 days or such further period as the superintendent may prescribe. The filing of an application pursuant to this Subsection in good faith by any Person shall relieve the applicant from any obligation or liability imposed by this Section with respect to the subject of the application until the superintendent has acted upon the application. The superintendent may revoke or modify his or her determination, after notice and opportunity to be heard, whenever in his or her judgment revocation or modification is consistent with this Part. The superintendent may consider the following factors in making such a determination:

i) whether such Person's purchase of common stock is made solely for investment purposes and not to acquire control over the Licensee;

ii) whether such Person could direct, or cause the direction of, the management or policies of the Licensee;

iii) whether such Person could propose directors in opposition to nominees proposed by the management or board of directors of the Licensee;

iv) whether such Person could seek or accept representation on the board of directors of the Licensee;

v) whether such Person could solicit or participate in soliciting proxy votes with respect to any matter presented to the shareholders of the Licensee; or

vi) any other factor that indicates such Person would or would not exercise control of the Licensee.

(4) The superintendent shall approve or deny every application for a change of control of a Licensee hereunder within 120 days from the filing of an application deemed by the superintendent to be complete. Such period of 120 days may be extended by the superintendent, for good cause shown, for such additional reasonable period of time as may be required to enable compliance with the requirements and conditions of this Part.

(5) In determining whether to approve a proposed change of control, the superintendent shall, among other factors, take into consideration the public interest and the needs and convenience of the public.

(b) Mergers and Acquisitions. No action shall be taken, except with the prior written approval of the superintendent, that may result in a merger or acquisition of all or a substantial part of the assets of a Licensee.

(1) Prior to any such merger or acquisition, an application containing a written plan of merger or acquisition shall be submitted to the superintendent by the entities that are to merge or by the acquiring entity, as applicable. Such plan shall be in form and substance satisfactory to the superintendent, and shall specify

each entity to be merged, the surviving entity, or the entity acquiring all or substantially all of the assets of the Licensee, as applicable, and shall describe the terms and conditions of the merger or acquisition and the mode of carrying it into effect.

(2) The superintendent shall approve or deny a proposed merger or a proposed acquisition of all or a substantial part of the assets of a Licensee within 120 days after the filing of an application that contains a written plan of merger or acquisition and is deemed by the superintendent to be complete. Such period of 120 days may be extended by the superintendent, for good cause shown, for such additional reasonable period of time as may be required to enable compliance with the requirements and conditions of this Part.

(3) In determining whether to so approve a proposed merger or acquisition, the superintendent shall, among other factors, take into consideration the public interest and the needs and convenience of the public.

Section 200.12 Books and records

(a) Each Licensee shall, in connection with its Virtual Currency Business Activity, make, keep, and preserve all of its books and records in their original form or native file format for a period of at least seven years from the date of their creation and in a condition that will allow the superintendent to determine whether the Licensee is complying with all applicable laws, rules, and regulations. The books and records maintained by each Licensee shall, without limitation, include:

- (1) for each transaction, the amount, date, and precise time of the transaction, any payment instructions, the total amount of fees and charges received and paid to, by, or on behalf of the Licensee, and the names, account numbers, and physical addresses of (i) the party or parties to the transaction that are customers or accountholders of the Licensee; and (ii) to the extent practicable, any other parties to the transaction;
- (2) a general ledger containing all asset, liability, ownership equity, income, and expense accounts;
- (3) bank statements and bank reconciliation records;
- (4) any statements or valuations sent or provided to customers and counterparties;
- (5) records or minutes of meetings of the board of directors or an equivalent governing body;
- (6) records demonstrating compliance with applicable state and federal anti-money laundering laws, rules, and regulations, including customer identification and verification documents, records linking customers to their respective accounts and balances, and a record of all compliance breaches;
- (7) communications and documentation related to investigations of customer complaints and transaction error resolution or concerning facts giving rise to possible violations of laws, rules, or regulations;
- (8) all other records required to be maintained in accordance with this Part; and
- (9) all other records as the superintendent may require.

(b) Each Licensee shall provide the Department, upon request, immediate access to all facilities, books, records, documents, or other information maintained by the Licensee or its Affiliates, wherever located.

(c) Records of non-completed, outstanding, or inactive Virtual Currency accounts or transactions shall be maintained for at least five years after the time when any such Virtual Currency has been deemed, under the Abandoned Property Law, to be abandoned property.

Section 200.13 Examinations

- (a) Each Licensee shall permit and assist the superintendent to examine the Licensee whenever in the superintendent's judgment such examination is necessary or advisable, but not less than once every two calendar years, including, without limitation, to determine:
- (1) the financial condition of the Licensee;
 - (2) the safety and soundness of the conduct of its business;
 - (3) the policies of its management;
 - (4) whether the Licensee has complied with the requirements of laws, rules, and regulations; and
 - (5) such other matters as the superintendent may determine, including, but not limited to, any activities of the Licensee outside the State of New York if in the opinion of the superintendent such activities may affect the Licensee's Virtual Currency Business Activity.
- (b) Each Licensee shall permit and assist the superintendent at any time to examine all of the Licensee's books, records, accounts, documents, and other information.
- (c) Each Licensee shall permit and assist the superintendent to make such special investigations as the superintendent shall deem necessary to determine whether a Licensee has violated any provision of the applicable laws, rules, or regulations and to the extent necessary shall permit and assist the superintendent to examine all relevant facilities, books, records, accounts, documents, and other information.
- (d) For the purpose of determining the financial condition of the Licensee, its safety and soundness practices, or whether it has complied with the requirements of laws, rules, and regulations, the Licensee shall permit and assist the superintendent, when in the superintendent's judgment it is necessary or advisable, to examine an Affiliate of the Licensee.

Section 200.14 Reports and financial disclosures

(a) Each Licensee shall submit to the superintendent quarterly financial statements within 45 days following the close of the Licensee's fiscal quarter in the form, and containing such information, as the superintendent shall prescribe, including without limitation, the following information:

(1) a statement of the financial condition of the Licensee, including a balance sheet, income statement, statement of comprehensive income, statement of change in ownership equity, cash flow statement, and statement of net liquid assets;

(2) a statement demonstrating compliance with any financial requirements established under this Part;

(3) financial projections and strategic business plans;

(4) a list of all off-balance sheet items;

(5) a chart of accounts, including a description of each account; and

(6) a report of permissible investments by the Licensee as permitted under this Part.

(b) Each Licensee shall submit audited annual financial statements, together with an opinion and an attestation by an independent certified public accountant regarding the effectiveness of the Licensee's internal control structure. All such annual financial statements shall include:

(1) a statement of management's responsibilities for preparing the Licensee's annual financial statements, establishing and maintaining adequate internal controls and procedures for financial reporting, and complying with all applicable laws, rules, and regulations;

(2) an assessment by management of the Licensee's compliance with such applicable laws, rules, and regulations during the fiscal year covered by the financial statements; and

(3) certification of the financial statements by an officer or director of the Licensee attesting to the truth and correctness of those statements.

- (c) Each Licensee shall notify the superintendent in writing of any criminal action or insolvency proceeding against the Licensee or any of its directors, Principal Stockholders, Principal Officers, and Principal Beneficiaries, as applicable, immediately after the commencement of any such action or proceeding.
- (d) Each Licensee shall notify the superintendent in writing of any proposed change to the methodology used to calculate the value of Virtual Currency in Fiat Currency that was submitted to the Department in accordance with Section 200.4 or this Subsection.
- (e) Each Licensee shall submit a report to the superintendent immediately upon the discovery of any violation or breach of law, rule, or regulation related to the conduct of activity licensed under this Part.
- (f) Each Licensee shall make additional special reports to the superintendent, at such times and in such form, as the superintendent may request.

Section 200.15 Anti-money laundering program

- (a) All values in United States dollars referenced in this Section must be calculated using the methodology to determine the value of Virtual Currency in Fiat Currency that was provided to the Department under this Part.
- (b) Each Licensee shall conduct an initial risk assessment that will consider legal, compliance, financial, and reputational risks associated with the Licensee's activities, services, customers, counterparties, and geographic location and shall establish, maintain, and enforce an anti-money laundering program based thereon. The Licensee shall conduct additional assessments on an annual basis, or more frequently as risks change, and shall modify its anti-money laundering program as appropriate to reflect any such changes.
- (c) The anti-money laundering program shall, at a minimum:
- (1) provide for a system of internal controls, policies, and procedures designed to ensure ongoing compliance with all applicable anti-money laundering laws, rules, and regulations;
 - (2) provide for independent testing for compliance with, and the effectiveness of, the anti-money laundering program to be conducted by qualified internal personnel of the Licensee, who are not responsible for the design, installation, maintenance, or operation of the anti-money laundering program, or the policies and procedures that guide its operation, or a qualified external party, at least annually, the findings of which shall be summarized in a written report submitted to the superintendent;
 - (3) designate a qualified individual or individuals in compliance responsible for coordinating and monitoring day-to-day compliance with the anti-money laundering program; and
 - (4) provide ongoing training for appropriate personnel to ensure they have a fulsome understanding of anti-money laundering requirements and to enable them to identify transactions required to be reported and maintain records required to be kept in accordance with this Part.

- (d) The anti-money laundering program shall include a written anti-money laundering policy reviewed and approved by the Licensee's board of directors or equivalent governing body.
- (e) Each Licensee, as part of its anti-money laundering program, shall maintain records and make reports in the manner set forth below.
 - (1) Records of Virtual Currency transactions. Each Licensee shall maintain the following information for all Virtual Currency transactions involving the payment, receipt, exchange, conversion, purchase, sale, transfer, or transmission of Virtual Currency:
 - i) the identity and physical addresses of the party or parties to the transaction that are customers or accountholders of the Licensee and, to the extent practicable, any other parties to the transaction;
 - ii) the amount or value of the transaction, including in what denomination purchased, sold, or transferred;
 - iii) the method of payment;
 - iv) the date or dates on which the transaction was initiated and completed; and
 - v) a description of the transaction.
 - (2) Reports on transactions. When a Licensee is involved in a Virtual Currency to Virtual Currency transaction or series of Virtual Currency to Virtual Currency transactions that are not subject to currency transaction reporting requirements under federal law, including transactions for the payment, receipt, exchange, conversion, purchase, sale, transfer, or transmission of Virtual Currency, in an aggregate amount exceeding the United States dollar value of \$10,000 in one day, by one Person, the Licensee shall notify the Department, in a manner prescribed by the superintendent, within 24 hours.
 - (3) Monitoring for suspicious activity. Each Licensee shall monitor for transactions that might signify money laundering, tax evasion, or other illegal or criminal activity.

(i) Each Licensee shall file Suspicious Activity Reports (“SARs”) in accordance with applicable federal laws, rules, and regulations.

(ii) Each Licensee that is not subject to suspicious activity reporting requirements under federal law shall file with the superintendent, in a form prescribed by the superintendent, reports of transactions that indicate a possible violation of law or regulation within 30 days from the detection of the facts that constitute a need for filing. Continuing suspicious activity shall be reviewed on an ongoing basis and a suspicious activity report shall be filed within 120 days of the last filing describing continuing activity.

(f) No Licensee shall structure transactions, or assist in the structuring of transactions, to evade reporting requirements under this Part.

(g) No Licensee shall engage in, facilitate, or knowingly allow the transfer or transmission of Virtual Currency when such action will obfuscate or conceal the identity of an individual customer or counterparty. Nothing in this Section, however, shall be construed to require a Licensee to make available to the general public the fact or nature of the movement of Virtual Currency by individual customers or counterparties.

(h) Each Licensee shall also maintain, as part of its anti-money laundering program, a customer identification program.

(1) Identification and verification of account holders. When opening an account for, or establishing a service relationship with, a customer, each Licensee must, at a minimum, verify the customer’s identity, to the extent reasonable and practicable, maintain records of the information used to verify such identity, including name, physical address, and other identifying information, and check customers against the Specially Designated Nationals (“SDNs”) list maintained by the Office of Foreign Asset Control (“OFAC”), a part of the U.S. Treasury Department. Enhanced due diligence may be required based on additional factors, such as for high risk customers, high-volume accounts, or accounts on which a suspicious activity report has been filed.

(2) Enhanced due diligence for accounts involving foreign entities. Licensees that maintain accounts for non-U.S. Persons and non-U.S. Licensees must establish enhanced due diligence policies, procedures, and controls to detect money laundering, including assessing the risk presented by such accounts based on the nature of the foreign business, the type and purpose of the activity, and the anti-money laundering and supervisory regime of the foreign jurisdiction.

(3) Prohibition on accounts with foreign shell entities. Licensees are prohibited from maintaining relationships of any type in connection with their Virtual Currency Business Activity with entities that do not have a physical presence in any country.

(4) Identification required for large transactions. Each Licensee must require verification of the identity of any accountholder initiating a transaction with a value greater than \$3,000.

(i) Each Licensee shall demonstrate that it has risk-based policies, procedures, and practices to ensure, to the maximum extent practicable, compliance with applicable regulations issued by OFAC.

(j) Each Licensee shall have in place appropriate policies and procedures to block or reject specific or impermissible transactions that violate federal or state laws, rules, or regulations.

(k) The individual or individuals designated by the Licensee, pursuant to Paragraph 200.15(c)(3), shall be responsible for day-to-day operations of the anti-money laundering program and shall, at a minimum:

(1) Monitor changes in anti-money laundering laws, including updated OFAC and SDN lists, and update the program accordingly;

(2) Maintain all records required to be maintained under this Section;

(3) Review all filings required under this Section before submission;

(4) Escalate matters to the board of directors, senior management, or appropriate governing body and seek outside counsel, as appropriate;

- (5) Provide periodic reporting, at least annually, to the board of directors, senior management, or appropriate governing body; and
- (6) Ensure compliance with relevant training requirements.

Section 200.16 Cyber security program

(a) Generally. Each Licensee shall establish and maintain an effective cyber security program to ensure the availability and functionality of the Licensee's electronic systems and to protect those systems and any sensitive data stored on those systems from unauthorized access, use, or tampering. The cyber security program shall be designed to perform the following five core cyber security functions:

(1) identify internal and external cyber risks by, at a minimum, identifying the information stored on the Licensee's systems, the sensitivity of such information, and how and by whom such information may be accessed;

(2) protect the Licensee's electronic systems, and the information stored on those systems, from unauthorized access, use, or other malicious acts through the use of defensive infrastructure and the implementation of policies and procedures;

(3) detect systems intrusions, data breaches, unauthorized access to systems or information, malware, and other Cyber Security Events;

(4) respond to detected Cyber Security Events to mitigate any negative effects; and

(5) recover from Cyber Security Events and restore normal operations and services.

(b) Policy. Each Licensee shall implement a written cyber security policy setting forth the Licensee's policies and procedures for the protection of its electronic systems and customer and counterparty data stored on those systems, which shall be reviewed and approved by the Licensee's board of directors or equivalent governing body at least annually. The cyber security policy must address the following areas:

(1) information security;

(2) data governance and classification;

(3) access controls;

(4) business continuity and disaster recovery planning and resources;

- (5) capacity and performance planning;
 - (6) systems operations and availability concerns;
 - (7) systems and network security;
 - (8) systems and application development and quality assurance;
 - (9) physical security and environmental controls;
 - (10) customer data privacy;
 - (11) vendor and third-party service provider management;
 - (12) monitoring and implementing changes to core protocols not directly controlled by the Licensee, as applicable; and
 - (13) incident response.
- (c) Chief Information Security Officer. Each Licensee shall designate a qualified employee to serve as the Licensee's Chief Information Security Officer ("CISO") responsible for overseeing and implementing the Licensee's cyber security program and enforcing its cyber security policy.
- (d) Reporting. Each Licensee shall submit to the Department a report, prepared by the CISO and presented to the Licensee's board of directors or equivalent governing body, at least annually, assessing the availability, functionality, and integrity of the Licensee's electronic systems, identifying relevant cyber risks to the Licensee, assessing the Licensee's cyber security program, and proposing steps for the redress of any inadequacies identified therein.
- (e) Audit. Each Licensee's cyber security program shall, at a minimum, include audit functions as set forth below.
- (1) Penetration testing. Each Licensee shall conduct penetration testing of its electronic systems, at least annually, and vulnerability assessment of those systems, at least quarterly.
 - (2) Audit trail. Each Licensee shall maintain audit trail systems that:

- (i) track and maintain data that allows for the complete and accurate reconstruction of all financial transactions and accounting;
 - (ii) protect the integrity of data stored and maintained as part of the audit trail from alteration or tampering;
 - (iii) protect the integrity of hardware from alteration or tampering, including by limiting electronic and physical access permissions to hardware and maintaining logs of physical access to hardware that allows for event reconstruction;
 - (iv) log system events including, at minimum, access and alterations made to the audit trail systems by the systems or by an authorized user, and all system administrator functions performed on the systems; and
 - (v) maintain records produced as part of the audit trail in accordance with the recordkeeping requirements set forth in this Part.
- (f) Application Security. Each Licensee's cyber security program shall, at minimum, include written procedures, guidelines, and standards reasonably designed to ensure the security of all applications utilized by the Licensee. All such procedures, guidelines, and standards shall be reviewed, assessed, and updated by the Licensee's CISO at least annually.
- (g) Personnel and Intelligence. Each Licensee shall:
- (1) employ cyber security personnel adequate to manage the Licensee's cyber security risks and to perform the core cyber security functions specified in Paragraph 200.16(a)(1)-(5);
 - (2) provide and require cyber security personnel to attend regular cyber security update and training sessions; and
 - (3) require key cyber security personnel to take steps to stay abreast of changing cyber security threats and countermeasures.

Section 200.17 Business continuity and disaster recovery

(a) Each Licensee shall establish and maintain a written business continuity and disaster recovery (“BCDR”) plan reasonably designed to ensure the availability and functionality of the Licensee’s services in the event of an emergency or other disruption to the Licensee’s normal business activities. The BCDR plan, at minimum, shall:

- (1) identify documents, data, facilities, infrastructure, personnel, and competencies essential to the continued operations of the Licensee’s business;
- (2) identify the supervisory personnel responsible for implementing each aspect of the BCDR plan;
- (3) include a plan to communicate with essential Persons in the event of an emergency or other disruption to the operations of the Licensee, including employees, counterparties, regulatory authorities, data and communication providers, disaster recovery specialists, and any other Persons essential to the recovery of documentation and data and the resumption of operations;
- (4) include procedures for the maintenance of back-up facilities, systems, and infrastructure as well as alternative staffing and other resources to enable the timely recovery of data and documentation and to resume operations as soon as reasonably possible following a disruption to normal business activities;
- (5) include procedures for the back-up or copying, with sufficient frequency, of documents and data essential to the operations of the Licensee and storing of the information off site; and
- (6) identify third parties that are necessary to the continued operations of the Licensee’s business.

(b) Each Licensee shall distribute a copy of the BCDR plan, and any revisions thereto, to all relevant employees and shall maintain copies of the BCDR plan at one or more accessible off-site locations.

(c) Each Licensee shall provide relevant training to all employees responsible for implementing the BCDR plan regarding their roles and responsibilities.

- (d) Each Licensee shall promptly notify the superintendent of any emergency or other disruption to its operations that may affect its ability to fulfill regulatory obligations or that may have a significant adverse effect on the Licensee, its counterparties, or the market.
- (e) The BCDR plan shall be tested at least annually by qualified, independent internal personnel or a qualified third party, and revised accordingly.

Section 200.18 Advertising and marketing

- (a) Each Licensee engaged in Virtual Currency Business Activity shall not advertise its products, services, or activities in New York or to New York Residents without including the name of the Licensee and the legend that such Licensee is "Licensed to engage in Virtual Currency Business Activity by the New York State Department of Financial Services."
- (b) Each Licensee shall maintain, for examination by the superintendent, all advertising and marketing materials for a period of at least seven years from the date of their creation, including but not limited to print media, internet media (including websites), radio and television advertising, road show materials, presentations, and brochures. Each Licensee shall maintain hard copy, website captures of material changes to internet advertising and marketing, and audio and video scripts of its advertising and marketing materials, as applicable.
- (c) In all advertising and marketing materials, each Licensee shall comply with all disclosure requirements under federal and state laws, rules, and regulations.
- (d) In all advertising and marketing materials, each Licensee and any person or entity acting on its behalf, shall not, directly or by implication, make any false, misleading, or deceptive representations or omissions.

Section 200.19 Consumer protection

(a) Disclosure of material risks. As part of establishing a relationship with a customer, and prior to entering into an initial transaction for, on behalf of, or with such customer, each Licensee shall disclose in clear, conspicuous, and legible writing in the English language and in any other predominant language spoken by the customers of the Licensee, all material risks associated with its products, services, and activities and Virtual Currency generally, including at a minimum, the following:

(1) Virtual Currency is not legal tender, is not backed by the government, and accounts and value balances are not subject to Federal Deposit Insurance Corporation or Securities Investor Protection Corporation protections;

(2) legislative and regulatory changes or actions at the state, federal, or international level may adversely affect the use, transfer, exchange, and value of Virtual Currency;

(3) transactions in Virtual Currency may be irreversible, and, accordingly, losses due to fraudulent or accidental transactions may not be recoverable;

(4) some Virtual Currency transactions shall be deemed to be made when recorded on a public ledger, which is not necessarily the date or time that the customer initiates the transaction;

(5) the value of Virtual Currency may be derived from the continued willingness of market participants to exchange Fiat Currency for Virtual Currency, which may result in the potential for permanent and total loss of value of a particular Virtual Currency should the market for that Virtual Currency disappear;

(6) there is no assurance that a Person who accepts a Virtual Currency as payment today will continue to do so in the future;

(7) the volatility and unpredictability of the price of Virtual Currency relative to Fiat Currency may result in significant loss over a short period of time;

(8) the nature of Virtual Currency may lead to an increased risk of fraud or cyber attack;

(9) the nature of Virtual Currency means that any technological difficulties experienced by the Licensee may prevent the access or use of a customer's Virtual Currency; and

(10) any bond or trust account maintained by the Licensee for the benefit of its customers may not be sufficient to cover all losses incurred by customers.

(b) Disclosure of general terms and conditions. When opening an account for a new customer, and prior to entering into an initial transaction for, on behalf of, or with such customer, each Licensee shall disclose in clear, conspicuous, and legible writing in the English language and in any other predominant language spoken by the customers of the Licensee, all relevant terms and conditions associated with its products, services, and activities and Virtual Currency generally, including at a minimum, the following, as applicable:

- (1) the customer's liability for unauthorized Virtual Currency transactions;
 - (2) the customer's right to stop payment of a preauthorized Virtual Currency transfer and the procedure to initiate such a stop-payment order;
 - (3) under what circumstances the Licensee will, absent a court or government order, disclose information concerning the customer's account to third parties;
 - (4) the customer's right to receive periodic account statements and valuations from the Licensee;
 - (5) the customer's right to receive a receipt, trade ticket, or other evidence of a transaction;
 - (6) the customer's right to prior notice of a change in the Licensee's rules or policies; and
 - (7) such other disclosures as are customarily given in connection with the opening of customer accounts.
- (c) Disclosures of the terms of transactions. Prior to each transaction in Virtual Currency, for, on behalf of, or with a customer, each Licensee shall furnish to each such customer a written disclosure in clear, conspicuous, and legible writing in the English language and in any other predominant language spoken by the customers of the Licensee, containing the terms and conditions of the transaction, which shall include, at a minimum, to the extent applicable:

- (1) the amount of the transaction;
 - (2) any fees, expenses, and charges borne by the customer, including applicable exchange rates;
 - (3) the type and nature of the Virtual Currency transaction;
 - (4) a warning that once executed the transaction may not be undone, if applicable; and
 - (5) such other disclosures as are customarily given in connection with a transaction of this nature.
- (d) Acknowledgement of disclosures. Each Licensee shall ensure that all disclosures required in this Section are acknowledged as received by customers.
- (e) Receipts. Upon completion of any transaction, each Licensee shall provide to a customer a receipt containing the following information:
- (1) the name and contact information of the Licensee, including a telephone number established by the Licensee to answer questions and register complaints;
 - (2) the type, value, date, and precise time of the transaction;
 - (3) the fee charged;
 - (4) the exchange rate, if applicable;
 - (5) a statement of the liability of the Licensee for non-delivery or delayed delivery;
 - (6) a statement of the refund policy of the Licensee; and
 - (7) any additional information the superintendent may require.
- (f) Each Licensee shall make available to the Department, upon request, the form of the receipts it is required to provide to customers in accordance with Subsection 200.19(e).
- (g) Prevention of fraud. Licensees are prohibited from engaging in fraudulent activity. Additionally, each Licensee shall take reasonable steps to detect and prevent fraud, including by establishing and maintaining a written anti-fraud policy. The anti-fraud policy shall, at a minimum, include:
- (1) the identification and assessment of fraud-related risk areas;

- (2) procedures and controls to protect against identified risks;
- (3) allocation of responsibility for monitoring risks; and
- (4) procedures for the periodic evaluation and revision of the anti-fraud procedures, controls, and monitoring mechanisms.

Section 200.20 Complaints

- (a) Each Licensee shall establish and maintain written policies and procedures to fairly and timely resolve complaints.
- (b) Each Licensee must provide, in a clear and conspicuous manner, on its website or websites, in all physical locations, and in any other location as the superintendent may prescribe, the following disclosures:
 - (1) the Licensee's mailing address, email address, and telephone number for the receipt of complaints;
 - (2) a statement that the complainant may also bring his or her complaint to the attention of the Department;
 - (3) the Department's mailing address, website, and telephone number; and
 - (4) such other information as the superintendent may require.
- (c) Each Licensee shall report to the superintendent any change in the Licensee's complaint policies or procedures within seven days.

Section 200.21 Transitional Period

A Person already engaged in Virtual Currency Business Activity must apply for a license in accordance with this Part within 45 days of the effective date of this regulation. In doing so, such applicant shall be deemed in compliance with the licensure requirements of this Part until it has been notified by the superintendent that its application has been denied, in which case it shall immediately cease operating in this state and doing business with New York State Residents. Any Person engaged in Virtual Currency Business Activity that fails to submit an application for a license within 45 days of the effective date of this regulation shall be deemed to be conducting unlicensed Virtual Currency Business Activity.

Section 200.22 Severability

If any provision of this Part or the application thereof to any Person or circumstance is adjudged invalid by a court of competent jurisdiction, such judgment shall not affect or impair the validity of the other provisions of this Part or the application thereof to other Persons or circumstances.

Part III

Software Freedom Law Center
Presentations

Chapter 15

Kodi Trademark Trolls - The Hidden Battle (Nathan Betzen)



NEWS

Kodi Trademark Trolls - The Hidden Battle



Many users are aware of the tug of war being played between piracy add-on writers on one side and legitimate services on the other that are using Kodi as a platform. Far fewer are aware of the other battle the Kodi project is dealing with on a regular basis. For some reason, when we announced the name Kodi would be replacing the name XBMC back in August of 2014, a number of individuals with what appear to be less than altruistic motives decided to act as trademark trolls. They attempted to register the Kodi name in various countries outside the United States with the goal of earning money off the Kodi name without doing any work beyond sending threatening letters.

We are not entirely sure why the name change prompted this behavior. When we went by XBMC, nobody ever did the trademark squatting thing. So when it started happening with the Kodi name, we were caught flatfooted without any real plan for dealing with these trolls or even tracking their actions.

There have already been lawsuits involving these trolls, though none so far that we have been a party to. A few trolls, after being contacted by us, agreed to hand back their illegitimate trademark registrations. The ones who agreed tended to be helped along by ongoing piracy-related lawsuits against them.

At least one trademark troll has so far not agreed to voluntarily release their grasp on their registration of our trademark and is actively blackmailing hardware vendors in an entire country, trying to become as rich as possible off of our backs and the backs of Kodi volunteers everywhere. His name is Geoff Gavora. He had written several letters to the Foundation over the years, expressing how important XBMC and Kodi were to him and his sales. And then, one day, for whatever reason, he decided to register the Kodi trademark in his home country of

Canada. We had hoped, given the positive nature of his past emails, that perhaps he was doing this for the benefit of the Foundation. We learned, unfortunately, that this was not the case.

Instead, companies like Mygica and our sponsor Minix have been delisted by Gavora on Amazon, so that only Gavora's hardware can be sold, unless those companies pay him a fee to stay on the store. Now, if you do a search for Kodi on Amazon.ca, there's a very real chance that every box you see is giving Gavora money to advertise that they can run what should be the entirely free and open Kodi. Gavora and his company are behaving in true trademark troll fashion.

We are writing this blogpost today for a few reasons:

First, we want to let the users know that in some countries, trademark trolls are actively trying to make Kodi no longer free. By this we mean that today any user can take a clean and untouched copy of Kodi and distribute it however they please. Sell hardware with it installed. Give it away on USB sticks or online. Or, heck, a person could even sell it if they wanted to. As long as users follow our basic trademark requirements, they can do with Kodi as they please. Trademark trolls want to stop this. They want to make it so that if you want to distribute Kodi, you need to pay them a fee first. Want to sell hardware with Kodi pre-installed? Too bad, fees first. Heck, if they wanted to, they could try to prevent Team Kodi from distributing the software in their country by suing us for trademark infringement.

Second, we want to let the trolls know that we have caught on to this game and will not accept it. We are actively taking the necessary steps to ensure that the Kodi trademark trolls are dealt with appropriately. There is no value proposition in trolling the Kodi name.

And finally, **third**, while our goal has always been to avoid going to the court to ensure Kodi remains free in countries where trolls are attempting to get rich off of the Kodi name, we will not back down from protecting the free, open source nature of our software. If that time comes for legal action, we hope to have the community's support.

For the most part, this battle has been waged in lawyers' offices, rather than on the front page of newspapers, but because the freedom of Kodi hinges on it, it is no less important.

Right now, there is no call to action. There is nothing most of you need to do, save for reminding people that Kodi is free. We only ask that you be prepared for the future, as we move forward in defending the freedom of this software that we all take for granted. And if you happen to notice someone trademark trolling Kodi in your country, let us know.



Nathan Betzen

Date

Sep 8, 2017

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Chapter 16

California Labor Code: Employment Relations 2870-2872


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DIVISION 3. EMPLOYMENT RELATIONS [2700 - 3098] (*Division 3 enacted by Stats. 1937, Ch. 90.)*

CHAPTER 2. Employer and Employee [2750 - 2930] (*Chapter 2 enacted by Stats. 1937, Ch. 90.)*

ARTICLE 3.5. Inventions Made by an Employee [2870 - 2872] (*Article 3.5 added by Stats. 1979, Ch. 1001.)*



2870. (a) Any provision in an employment agreement which provides that an employee shall assign, or offer to assign, any of his or her rights in an invention to his or her employer shall not apply to an invention that the employee developed entirely on his or her own time without using the employer's equipment, supplies, facilities, or trade secret information except for those inventions that either:


(1) Relate at the time of conception or reduction to practice of the invention to the employer's business, or actual or demonstrably anticipated research or development of the employer; or

(2) Result from any work performed by the employee for the employer.

(b) To the extent a provision in an employment agreement purports to require an employee to assign an invention otherwise excluded from being required to be assigned under subdivision (a), the provision is against the public policy of this state and is unenforceable.

(*Amended by Stats. 1991, Ch. 647, Sec. 5.)*

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CHAPTER 2. Employer and Employee [2750 - 2930] *(Chapter 2 enacted by Stats. 1937, Ch. 90.)*

ARTICLE 3.5. Inventions Made by an Employee [2870 - 2872] *(Article 3.5 added by Stats. 1979, Ch. 1001.)*

2871. No employer shall require a provision made void and unenforceable by Section 2870 as a condition of employment or continued employment. Nothing in this article shall be construed to forbid or restrict the right of an employer to provide in contracts of employment for disclosure, provided that any such disclosures be received in confidence, of all of the employee's inventions made solely or jointly with others during the term of his or her employment, a review process by the employer to determine such issues as may arise, and for full title to certain patents and inventions to be in the United States, as required by contracts between the employer and the United States or any of its agencies.

(Added by Stats. 1979, Ch. 1001.)


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DIVISION 3. EMPLOYMENT RELATIONS [2700 - 3098] (*Division 3 enacted by Stats. 1937, Ch. 90.)*

CHAPTER 2. Employer and Employee [2750 - 2930] (*Chapter 2 enacted by Stats. 1937, Ch. 90.)*

ARTICLE 3.5. Inventions Made by an Employee [2870 - 2872] (*Article 3.5 added by Stats. 1979, Ch. 1001.)*

2872. If an employment agreement entered into after January 1, 1980, contains a provision requiring the employee to assign or offer to assign any of his or her rights in any invention to his or her employer, the employer must also, at the time the agreement is made, provide a written notification to the employee that the agreement does not apply to an invention which qualifies fully under the provisions of Section 2870. In any suit or action arising thereunder, the burden of proof shall be on the employee claiming the benefits of its provisions.

(Added by Stats. 1979, Ch. 1001.)

Chapter 17

A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood (Steven Cherenksy)

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A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood

Steven Cheren sky

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COMMENT

A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood

Steven Cherenky

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PREINVENTIONS AND PERSONHOOD

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A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood

Steven Cherensky†

Most technologists at American corporations work under preinvention assignment agreements whereby the employee-inventor promises to assign to the employer all interests in future patentable inventions that arise from the employment relationship. These agreements are typically upheld by courts. This Comment suggests that employee-inventors should retain greater property interests in their inventions. The author argues that the rubrics under which preinvention assignment agreements have been analyzed in the past—patent and contract doctrine and traditional property theories—fail to address the complex employee-employer and inventor-invention relationships implicit in organized invention. As an alternative framework for resolving preinvention assignment conflicts, the author proposes the application of personhood theory, particularly the market-inalienability concept forwarded by Margaret Radin. This approach suggests that an employee-inventor's relationship with her work can be justifiably constitutive of her personhood and that preinvention assignment agreements can interfere with this relationship. The Comment discusses specific proposals that preserve the personhood interests of employee-inventors without unduly impairing the economic interests of employer-corporations.

I

INTRODUCTION

If a man write a better book, preach a better sermon, or make a better mousetrap than his neighbour, though he build his house in the woods, the world will make a beaten path to his door.

—Ralph Waldo Emerson¹

† B.S. 1980, The Johns Hopkins University; M.S. 1982, University of Michigan, Ann Arbor; J.D. candidate 1993, Boalt Hall School of Law, University of California, Berkeley.

I would like to thank Professor Rachel Moran for her assistance and encouragement. This Comment benefited greatly from her generosity, insight, and energy. Thanks also to Professor Peter Menell for his significant contributions to earlier drafts. Special thanks to Jodie Carter, Tom Freedman, Gary Gold, my editors Stephanie Siegel, Ann Kim, and Jeff Rake, and my friends and colleagues on the *California Law Review*. Finally, I wish to thank my parents, Carl and Gilda Cherensky, for their love and support.

1. Ralph W. Emerson, lecture, quoted in *THE PENGUIN DICTIONARY OF QUOTATIONS* 155 (J.M. Cohen & M.J. Cohen eds., 1977).

The world is probably beating down the wrong path in search of the better mousetrap. For today, that mousetrap was likely invented not in a house in the woods, but rather in a corporate research and development facility. And it is also likely that the employee who invented that better mousetrap agreed, before it was even invented, to assign her entire interest in the invention to her employer. Such an agreement is known as a preinvention assignment agreement.²

This Comment focuses on what are referred to here as "preinventions." Preinventions are inventions³ that have not yet been (and may never be) conceived at the time the parties agree to assign potential future patent rights. Whereas inventions are tangible, identifiable things, preinventions are intangible expectancies. Although much of what is said here will apply to inventions as well as preinventions, the goal of this Comment is to better understand and help to resolve the conflicting interests of employee-inventors⁴ and their employers in preinvention assignment agreements.

Preinvention assignment agreements have presented "ancient but eternal"⁵ problems of contract and patent law for courts and commentators. These problems are different from those raised by assignment agreements for existing inventions. While assignment of rights in existing inventions commodify and alienate the tangible invention, assignment of rights in preinventions commodify and alienate the inventive process. Consequently, parties who bargain for interests in existing inventions know or should know exactly what they are getting and giving up. Parties who bargain for preinventions have no such knowledge.

Both employee-inventors and their employers have strong proprietary interests in the inventions that result from the employment relationship. The employee-inventors' interest may be based on their investment of personal capital: training and education, personality, individual genius, extraordinary effort, creative spark, and even divine revelation. The employers' interest, in contrast, may be based on the financial capital invested in creating a work environment conducive, if not essential, to invention: plant and equipment, employee salaries, management and oversight, and opportunities for collegial exchange.

For much of this century, courts, commentators, and legislators

2. A preinvention assignment agreement is a clause of an employment contract that obligates the employee to assign to the employer all interests in any future inventions conceived during (and in some cases, before and after) the employment term.

3. Unless otherwise stated, "invention" is used in this Comment as shorthand for patentable invention or discovery.

4. The phrase "employee-inventors" is used in this Comment to indicate that the individual is employed (by another individual, a corporation, a government, or others), not to indicate the type of employment (that is, employed *as* an inventor).

5. 6 DONALD S. CHISUM, PATENTS: A TREATISE ON THE LAW OF PATENTABILITY, VALIDITY, AND INFRINGEMENT § 22.03, at 22-8.1 (1992).

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PREINVENTIONS AND PERSONHOOD

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have tried to balance the proprietary interests of employee-inventors and their employers in preinvention rights.⁶ The courts have developed a comprehensive set of common law rules to allocate preinvention rights; however, the pervasiveness of private agreements allocating these rights between employee-inventors and their employers has made these rules all but irrelevant. Today, virtually all technical employees agree, as a condition of employment, to assign to the employer all rights to inventions conceived by the employee while at work, or in subject matters related to work, or while using any resources of the employer.⁷ These preinvention assignment agreements are generally upheld by courts.⁸

Courts may be enforcing preinvention assignment agreements in part because they feel such agreements fill a gap in patent law. In its current state, patent law (or, more accurately, instrumental arguments about granting property rights in order to encourage invention) cannot provide a normative solution to preinvention assignment disputes. The business and nature of invention have changed dramatically since the first Patent Act was enacted in 1790, but Congress and the courts have not adequately adapted the meaning of invention to reflect these changes. Today's Patent Code⁹ retains the eighteenth-century paradigm of the sol-

6. For examples of judicial decisions concerning the allocation of rights between employee-inventors and employers, see *infra* notes 93-124 and accompanying text. A partial list of commentary on the subject includes Robert L. Gullette, *Fact or Fiction: Legislative Control of Employer-Employee Ownership Rights in Inventions and Other Intellectual Property*, 1985 PAT. L. ANN. 7-1; Christopher M. Mislow, *Necessity May Be the Mother of Invention, but Who Gets Custody? The Ownership of Intellectual Property Created by an Employed Inventor*, 1 COMPUTER & HIGH-TECH. L.J. 59 (1985); Arthur Nobile, *Experiences with Industrial Patent Policy*, in PATENT POLICY: GOVERNMENT, ACADEMIC, AND INDUSTRY CONCEPTS 156 (Willard Marcy ed., 1978) [hereinafter PATENT POLICY]; John P. Sutton, *The Inventor's Interest*, in PATENT POLICY, *supra*, at 150; Paul C. Van Slyke & Mark M. Friedman, *Employer's Rights to Inventions and Patents of Its Officers, Directors and Employees*, 18 AM. INTELL. PROP. L. ASS'N Q.J. 127 (1990); Richard C. Witte & Eric W. Gutttag, *Employee Inventions*, 71 J. PAT. & TRADEMARK OFF. SOC'Y 467 (1989); Arvid V. Zuber, *Impact of Patent Policies on Creativity in Industrial Research Laboratories*, in PATENT POLICY, *supra*, at 145; Jay Dratler, Jr., Note, *Incentives for People: The Forgotten Purpose of the Patent System*, 16 HARV. J. ON LEGIS. 129 (1979); Lucy Gamon, Note, *Patent Law in the Context of Corporate Research*, 8 J. CORP. L. 497 (1983); William P. Hovell, Note, *Patent Ownership: An Employer's Rights to His Employee's Invention*, 58 NOTRE DAME L. REV. 863 (1983); Henrik D. Parker, Note, *Reform for Rights of Employed Inventors*, 57 S. CAL. L. REV. 603 (1984); Thomas C. Siekman, Comment, *Employer's and Employee's Rights in Patents Arising from the Employment*, 11 VILL. L. REV. 823 (1966). For a discussion of legislative treatment of this area, see *infra* Section II.D.

7. The employee typically receives a token payment in exchange for the assignment. Some firms may make more than a token payment, however, perhaps even a percentage of the value of the invention or of the royalties accruing from the invention. It will generally be assumed here that any consideration received by the employee in return for her promise to assign future inventions to her employer is either nominal or substantially less than the value of the inventions. Thus, the arguments put forward here are independent of consideration. For a discussion of consideration in the context of preinvention assignment agreements, see *infra* notes 124-30 and accompanying text.

8. See *infra* notes 106-07 and accompanying text. Some states do impose statutory limits on the scope of such agreements, however. See *infra* notes note 136-37 and accompanying text.

9. 35 U.S.C. §§ 1-376 (1988 & Supp. II 1990).

itary, heroic inventor and fails to take into account the modern paradigm of the team as inventor. Thus, existing patent laws justify granting property rights to the inventor-entity,¹⁰ but they do not help in determining whether the employee-inventor or employer should be entitled to such rights.

Similarly, courts may enforce preinvention assignment agreements in order to avoid difficult contract issues such as adhesion and unconscionability, adequacy of consideration, freedom of contract, and structural difficulties implicit in *ex ante* bargaining for speculative rights. For example, employers almost universally offer preinvention assignment agreements on a take-it-or-leave-it basis. Given the employer's advantages in bargaining power,¹¹ these preinvention assignment agreements raise thorny questions of contract law. By granting blanket enforcement of such agreements, courts avoid these questions, thereby obscuring and devaluing the contributions of individuals.

A word on the methodological organization of this Comment is appropriate here before the substantive organization is discussed. The use of preinvention assignment agreements to appropriate the future inventions of employee-inventors presents courts with a difficult problem—difficult not in the sense of determining what the positive law is,¹² but rather in reconciling patent and contract doctrine with the complex relationships between, and contributions of, employee-inventors and their employers.¹³ After establishing the limitations of doctrine, this Comment will proceed to apply traditional theories of property law to the problem. Like doctrine, however, traditional theory is not up to the task of resolving preinvention assignment disputes. Thus, an alternative theoretical approach—personhood theory—will be investigated as a potentially powerful tool for analyzing preinvention assignment disputes.

The approach taken here differs from many prior studies of preinvention assignment agreements by focusing on the underlying theoretical property issues rather than on issues of patent or contract law. General property law theory, however, is itself not without problems in analyzing preinvention assignment disputes. Most theories of property law suffer from the same deficiencies as does patent law when applied to rights in preinventions; that is, most traditional justifications of private property focus on the rights of claimholders as against society and do not

10. The phrase "inventor-entity" is used in this Comment to refer to the combination of employee-inventor and employer.

11. The very nature of bargaining for nonexistent inventions tends to favor the employer. See *infra* note 126 and accompanying text.

12. The positive law of preinvention assignment agreements is fairly well settled; such agreements are valid and enforceable. See *infra* note 106 and accompanying text.

13. This is how Judge Harry Edwards defines a "hard" case. See Harry T. Edwards, *The Growing Disjunction Between Legal Education and the Legal Profession*, 91 MICH. L. REV. 34, 44 (1992).

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resolve disputes between arguably legitimate claimholders. The focus here will be on examining claims to property interests made by employee-inventors and employers. It will be argued that each has significant, cognizable proprietary interests in preinventions; that these interests are different interests based on different property justifications; and that the property rights in preinventions should be disaggregated and allocated between employee-inventor and employer according to the interests of each.

This Comment concentrates on inventorship and the allocation of property rights in patentable inventions in the corporate workplace.¹⁴ Although the discussion is largely relevant to invention in other organizational environments, such as university and government laboratories, and to other forms of innovation and intellectual property, such as copyrights and mask works, the focus is not on these other areas. Where useful, distinctions from and comparisons to these other areas will be made.

The substantive organization of the Comment follows the methodological organization outlined above. Part II discusses the limitations of patent and contract doctrine as applied to preinvention assignment agreements. Because doctrine fails to deal adequately with the problems posed by these agreements, Part III examines traditional property law theory as a potential dispositive source of legal authority. Traditional property justifications, it will be shown, provide little guidance for resolving preinvention assignment disputes. Part IV presents an alternative property approach for the resolution of preinvention assignment agreement disputes: personhood theory. Personhood theory suggests that certain rights of employee-inventors in their inventions be non-appropriable when those rights are justifiably constitutive of the inventor's personhood.

This Comment explores two consequences of applying personhood theory to the problem of preinvention assignment agreements. First, the employee-inventor should retain rights in her invention only when she can demonstrate a justifiable personhood interest in the invention; otherwise, the employer should retain all interests in the invention, including credit as the inventor-entity. Thus, corporate inventorship is appropriate under certain conditions. Second, when the employee-inventor can demonstrate a justifiable personhood interest in her invention, this personhood interest should be protected by removing the protected interest from the market.

14. The employer will generally be assumed to be a corporation. At some points in this Comment, the corporate status of the employer is an explicit and important part of the discussion. For the most part, however, terms such as "employer," "corporation," and "firm" will be used interchangeably.

II

THE LIMITATIONS OF DOCTRINE: THE EMPLOYEE-
INVENTOR AND PREINVENTION ASSIGNMENT
AGREEMENTS UNDER PATENT AND
CONTRACT LAW

Most inventions today result from the efforts of employee-inventors.¹⁵ The Patent Code does not address the issue of inventions arising out of employment relationships, but the courts have devised a common law allocation of patent rights between employee-inventor and employer. Most corporations, however, perhaps uncomfortable with the level of uncertainty that exists in the common law scheme, require their technical employees (and often all employees) to sign preinvention assignment agreements. This Part explores the legal context of these preinvention assignments.

A. Patents: Inventorship and Ownership

The term "inventorship" defies precise definition. The Constitution grants Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries,"¹⁶ but does not elaborate on what is meant by "inventors" or "discoveries." Although the Supreme Court has often ruled on the meaning of authorship,¹⁷ it has had little to say concerning the constitutional meaning of inventorship.¹⁸

Patent law is no clearer on the subject. Under common law, inventorship refers to the process of conception and reduction to practice of a patentable invention.¹⁹ As William Bennett notes, an inventor is

15. By most estimates, 80% to 90% of all patentable inventions are the product of employee-inventors. See, e.g., *Ingersoll Rand Co. v. Ciavatta*, 542 A.2d 879, 886 (N.J. 1988); A. Samuel Oddi, *Beyond Obviousness: Invention Protection in the Twenty-First Century*, 38 AM. U. L. REV. 1097, 1136 n.219 (1989); Parker, *supra* note 6, at 604.

16. U.S. CONST. art. I, § 8, cl. 8.

17. See, e.g., *Goldstein v. California*, 412 U.S. 546, 561 (1973) (describing the constitutional meaning of "author" as "'originator,' 'he to whom anything owes its origin'" and of "writings" as "any physical rendering of the fruits of creative intellectual or aesthetic labor") (quoting *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884)); see also *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 111 S. Ct. 1282, 1288 (1991) (discussing the constitutional meanings of "author" and "writings"); *Community for Creative Non-Violence v. Reid*, 490 U.S. 730, 737 (1989) ("As a general rule, the author is the party who actually creates the work, that is, the person who translates an idea into a fixed, tangible expression entitled to copyright protection.").

18. See Donald S. Chisum, *The Patentability of Algorithms*, 47 U. PITT. L. REV. 959, 1013 (1986) (noting paucity of Supreme Court rulings on meaning of inventorship).

19. See, e.g., *Whitely v. Swaine*, 74 U.S. (7 Wall.) 685, 687 (1868) ("[H]e is the first inventor, and entitled to the patent, who, being an original discoverer, has first perfected and adapted the invention to actual use.").

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simply "the agency through which invention is effected."²⁰ Although this definition is straightforward to apply in the simple case of an individual, self-employed inventor, it becomes murky in cases where the invention arises from an employment relationship or where multiple inventors are involved.

The Patent Code does little to ameliorate these difficulties. According to the Code, the inventor of a "process, machine, manufacture, or composition of matter"²¹ may obtain a patent provided that the invention is "useful,"²² "novel,"²³ and "non-obvious,"²⁴ the subject matter is patentable,²⁵ and the patentee complies with certain procedural requirements.²⁶ A patent, once issued, grants the patent holder the right "to exclude others from making, using, or selling the invention throughout the United States"²⁷ for a period of years.²⁸ The patent, however, does not grant the patent holder the right to exploit the invention itself,²⁹ as such right may be blocked by another patent.³⁰

Although the Patent Code defines precisely what constitutes a patentable invention, it is not as precise in defining the term "inventor." One qualification is clearly required, however: only "natural" (that is, human) persons may qualify as inventors. Corporations and other non-natural persons cannot be inventors under the Patent Code.³¹ Neither the legislative history nor commentators have articulated a clear justification for denying the fiction of the corporate person.³²

20. WILLIAM B. BENNETT, *THE AMERICAN PATENT SYSTEM: AN ECONOMIC INTERPRETATION* 27 (1943).

21. 35 U.S.C. § 101 (1988).

22. *Id.*

23. *Id.* § 102.

24. *Id.* § 103.

25. See, e.g., JAY DRATLER, JR., *INTELLECTUAL PROPERTY LAW: COMMERCIAL, CREATIVE, AND INDUSTRIAL PROPERTY* § 2.02 (1991).

26. *Id.*

27. 35 U.S.C. § 154 (1988).

28. Fourteen years for a design patent, *id.* § 173, and 17 years for a utility or process patent, *id.* § 154.

29. As will be discussed *infra* Section III.B, the right of an inventor to practice her own invention is based on common law rather than statute.

30. For example, inventor A's valid patent for a self-cleaning bathtub may be blocked by inventor B's basic bathtub patent.

31. See 35 U.S.C. § 115 (1988) (requiring that the "applicant shall make oath that he believes himself to be the original and first inventor of the [invention] for which he solicits a patent," a requirement that no corporate person could fulfill); 6 CHISUM, *supra* note 5, § 22.01; Van Slyke & Friedman, *supra* note 6, at 128 n.2; Dratler, *supra* note 6, at 141. Despite the common designation of the corporate entity as a "legal person," the rights accorded to corporations are limited in areas of the law beyond property. For example, a corporation is not a citizen, is not protected by the liberty provision of the Fourteenth Amendment, may not assert a right against self-incrimination, and is not protected by the Privileges and Immunities Clause of the Constitution. See Note, *Constitutional Rights of the Corporate Person*, 91 YALE L.J. 1641, 1644 (1982).

32. This is especially surprising in light of the fact that patent law may be unique among forms of American intellectual property in this preclusion of "creatorship" by the corporate entity. The Copyright Code, for example, provides that the "employer or other person for whom [a] work was

Establishing inventorship represents only the starting point for determining patent right ownership. Inventorship and patent ownership are distinct concepts under patent law. Inventorship is significant primarily for determining the patentability of claims and the procedural sufficiency of a patent application.³³ Patent ownership, by contrast, carries with it the temporary, exclusive right to make, use, or sell an invention. Thus, "inventorship" connotes a "power"-constituted³⁴ relationship between individuals (inventors and non-inventors) with respect to inventions, whereas "patent ownership" connotes a "claim-right"-constituted³⁵ relationship between individuals (patent holders and non-patent holders) with respect to patents.

There is no necessary legal relationship between inventor and patent holder for any given invention. Although the inventor is the presumptive owner of property rights to patents issued for her invention, these rights are transferable by assignment. Patents have the attributes of personal property,³⁶ and patents and patent applications may be assigned by written instrument.³⁷ In fact, patents granted to inventors who have assigned their interest may be issued directly to the assignee,³⁸ which may be any

prepared is considered the author" of such work. 17 U.S.C. §§ 101, 201(b) (1988 & Supp. III 1991). But the scope of copyright protection for corporate authors is not precisely the same in all respects as for human authors. For example, due to the theoretically infinite lifetime of corporations, copyright protection for works made for hire "endures for a term of seventy-five years from the year of its first publication, or a term of one hundred years from the year of its creation, whichever expires first" rather than the "life of the author and fifty years" duration of protection for works of human authorship. *Id.* § 302(a), (c).

Similarly, the Semiconductor Chip Protection Act of 1984 [SCPA], a *sui generis* form of intellectual property protection for mask works fixed in semiconductor chip products provides authorship rights to financing entities. *See id.* §§ 901(6), 902. The "human inventor" requirement in the Patent Code may be explained by the higher threshold of originality and novelty needed for protection under this Code than under the Copyright Code or the SCPA. Note that while the Patent Code does not recognize corporate inventors, it does recognize that an invention may be the result of a collaborative effort among several humans. *See* 35 U.S.C. § 116 (1988) (providing for joint inventorship). The question of corporate inventorship is explored further *infra* Section IV.B.

33. The procedural requirements of a patent application include the identification of the inventor and the performance of certain acts by the inventor. *See, e.g.*, 35 U.S.C. § 115 (1988) (requiring the oath of the inventor); *id.* § 111 (requiring a written application).

34. "Power" is used in the Hohfeldian sense that the holder of a power can alter the legal position of either herself or another. In Hohfeldian terms, non-inventors have a "liability" with respect to inventions: they are susceptible to having their legal position altered. *See* WESLEY N. HOHFELD, *FUNDAMENTAL LEGAL CONCEPTIONS AS APPLIED IN JUDICIAL REASONING* 7, 50-60 (Walter W. Cook ed., 1923); *see also* STEPHEN R. MUNZER, *A THEORY OF PROPERTY* 18-19 (1990) (discussing Hohfeld's "power/liability" legal conception).

35. *See* JAMES O. GRUNEBaum, *PRIVATE OWNERSHIP* 4 (1987) ("Ownership in general is a right constituted relationship, or set of relationships, between persons with respect to things."). Again, "right" is used in the Hohfeldian sense of entailing a duty in others, here the duty to refrain from making, using, or selling the subject matter of the patent for a period of 17 years after the patent issues. *See* HOHFELD, *supra* note 34, at 6-7, 36-38; *see also* MUNZER, *supra* note 34, at 18 (discussing Hohfeld's "right/duty" correlative relationship).

36. 35 U.S.C. § 261 (1988).

37. *Id.*

38. *Id.* § 152.

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legal entity, including a corporation.³⁹

B. Invention Paradigms and Metaphors: From "Hero-Inventor" to "Team-as-Hero"⁴⁰ and Beyond

The current Patent Code is based on the eighteenth-century view of invention—a view centered on a "hero-inventor" model. Eli Whitney, Alexander Graham Bell, and Thomas Edison, for example, represent familiar images of "hero-inventors."⁴¹ Today, "hero-inventors" are less common.⁴² Although the disappearance of the "hero-inventor" may reflect, in part, changes in societal values,⁴³ it reflects more significantly a shift from individual to team invention. The late-twentieth-century ana-

39. See *Dorsey Harvester Revolving-Rake Co. v. Marsh*, 7 F. Cas. 939, 942 (C.C.E.D. Pa. 1873) (No. 4,014) ("The right to acquire and hold patents is here clearly given to corporations . . .").

40. The phrase is borrowed from Robert B. Reich, *Entrepreneurship Reconsidered: The Team as Hero*, HARV. BUS. REV., May-June 1987, at 77 (arguing that American industry must strive for a model of collective entrepreneurship, as portrayed in Tracy Kidder's portrayal of the computer industry, *The Soul of a New Machine*, rather than the old model of "heroes and drones").

41. Interesting biographies of these hero-inventors include: ROBERT V. BRUCE, BELL: ALEXANDER GRAHAM BELL AND THE CONQUEST OF SOLITUDE (1973); CONSTANCE McL. GREEN, ELI WHITNEY AND THE BIRTH OF AMERICAN TECHNOLOGY (1956); and WORKING AT INVENTING: THOMAS A. EDISON AND THE MENLO PARK EXPERIENCE (William S. Pretzer ed., 1989) [hereinafter WORKING AT INVENTING].

For a description of hero-inventors generally, see ROGER BURLINGAME, INVENTORS BEHIND THE INVENTOR 3 (1947):

When you say the word *inventor* to most Americans, a lot of pictures jump suddenly into their minds. They see Samuel Morse with his great white beard and his chest covered with medals standing by a telegraph key, ticking off the message "What Hath God Wrought." They see Robert Fulton watching his awkward little steamboat with great clouds of black smoke pouring out of it, crawling up the Hudson. They see Eli Whitney grinding away at his cotton gin and they see Edison standing stiffly by a large incandescent bulb, considerably bored by the crowd of admirers round him. Some Americans even see Henry Ford watching his cars roll twenty seconds apart off his assembly line at River Rouge.

These are all pictures of popular American heroes. There is a regular parade of them before your mind's eye whenever anyone says the word *inventor*.

This "regular parade" of familiar images does not accurately reflect the diversity of early American or, for that matter, contemporary American inventors. For a discussion of the contributions of women inventors, see ANNE L. MACDONALD, FEMININE INGENUITY: WOMEN AND INVENTION IN AMERICA (1992). For a discussion of the contributions of African-American inventors, see PORTIA P. JAMES, THE REAL MCCOY: AFRICAN-AMERICAN INVENTION AND INNOVATION, 1619-1930 (1989).

42. See BURLINGAME, *supra* note 41, at 4 ("[T]he old-time inventor hero is no longer there when you go to look for him."); MACDONALD, *supra* note 41, at 333 (noting that during the course of the 20th century, "[women] inventors had apparently ceased to be the heroines they once had been to their sisters."). There are well-known technologists, to be sure, but to a large extent the "hero-inventor" has been supplanted in popular folklore by the "hero-entrepreneur." Individuals such as Steven Jobs (Apple Computer and Next, Inc.), Bill Gates (Microsoft), and other well-known "technologists" are really famous for their business exploits rather than for any personal technological achievements. See, e.g., KENNETH A. BROWN, INVENTORS AT WORK 219 (1988). Brown notes, in an introduction to his interview with Steven Wozniak, designer of the Apple II personal computer, that "Wozniak was the thinker behind Apple Computer; Jobs was the driver. While Wozniak designed computers, Jobs set about marketing them." *Id.*

43. For example, technological "advances" are more often seen as a mixed blessing today than in the past. See, e.g., SAMUEL C. FLORMAN, THE EXISTENTIAL PLEASURES OF ENGINEERING 45

logue to the "hero-inventor" is the "team-as-hero;" that is, invention resulting from the combined, coordinated efforts of a group rather than from the heroic efforts of an individual.

This Section will briefly describe some of the dominant characteristics of eighteenth- and twentieth-century invention and will discuss aspects of the modern inventive process relevant to preinvention assignment disputes.⁴⁴ This Section will show that, while the "hero-inventor" paradigm inaccurately explains contemporary invention by devaluing the contributions of teams, support staffs, and facilities, its widely accepted replacement—the "team-as-hero" model—inaccurately reflects contemporary invention by devaluing individual contributions.

The term "inventive process" is itself inappropriate to the extent that it implies there exists some formula of how to invent. There is, of course, no such formula. Nevertheless, there are some common characteristics among the work environments in which much of today's invention takes place. A description of these common characteristics is what is referred to here as an "inventorship paradigm."⁴⁵ Certainly, inventorship paradigms will vary among industries and technologies, among firm sizes, and even from inventor-entity to inventor-entity. In fact, as will be argued, the tendency of courts, legislators, corporations, and indeed, individual inventors to subscribe to a single (albeit different) inventorship paradigm lies at the root of preinvention assignment agreement conflicts.

The patent system, as originally conceived, was intended to encourage invention in a regime of individual inventors that differs markedly from today's workplace. "When this country's patent system was adopted . . . it was the independent, the 'lone' inventor who created new ideas through the exercise of his inventive faculties."⁴⁶ Eighteenth-cen-

(1976) (describing the anti-technology movement of the 1960s and '70s that held "technology to be the root of all evil").

44. This Section relies in large part on JOHN JEWKES ET AL., *THE SOURCES OF INVENTION* (1958). Written in 1958 and revised and enlarged in 1969, this thoughtful essay remains a fruitful starting point for any study on the nature of invention and innovation.

45. The term "inventorship paradigm" here refers to the nature of the inventor-entity and has nothing to do with the subject matter, theory, technology, or techniques of the underlying invention. The term is used to refer to typical or representative descriptions of who or what invents, both individually and within organizations. Thus, inventorship paradigms describe inventor-entity organizational structures and interactions, or invention environments.

Inventorship paradigms are to be distinguished from scientific paradigms as that term is used by Thomas S. Kuhn in his influential essay, *The Structure of Scientific Revolutions*. Kuhn uses the term "scientific paradigm" to refer to an unprecedented achievement that establishes a school of scientific thought. Thus, Newtonian dynamics and Copernican astronomy are examples of scientific paradigms. THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* 10 (2d ed. enlarged 1970).

Inventorship paradigms can be used both as an attempt to describe and catalog inventor-entities (and thus have the attributes of "model") and as a description of the public (or judicial or legislative) perception of inventor-entities (and thus have the attributes of "metaphor").

46. GEORGE E. FOLK, *PATENTS AND INDUSTRIAL PROGRESS* 144 (1942); see also Sutton, *supra* note 6, at 150 ("In 1790, when the first patent act was passed, there was no middle man

tury invention was characterized by the individual efforts of non-professional, unspecialized, untrained inventors who worked primarily in their "house in the woods," as Emerson would say,⁴⁷ or on their farms.⁴⁸ These independent inventors had little need for capital beyond living expenses since they did not hire employees and generally used readily available materials in their work.

Eli Whitney's invention of the cotton gin in many ways typifies late-eighteenth-century invention.⁴⁹ Whitney did not study to be an inventor; indeed, such an education would have been unavailable had he desired it.⁵⁰ While a guest at a South Carolina plantation, he heard neighboring planters discuss the difficulty of cleaning the local upland cotton of its seeds and the importance to the region of an improved cleaning machine. Whitney was persuaded to try his hand at a solution:

Whitney had never seen a cotton boll and had scarcely listened to the talk around him. But when his hostess proposed, albeit without undue urging, that he try to devise a machine, he pursued her suggestion

. . . A few days [later] he "involuntarily happened to be thinking on the subject and struck out a plan of a machine"⁵¹

That machine, of course, was the cotton gin. Whitney built his first model from wood, wire, and other materials that were readily available on the plantation.⁵²

Invention has changed dramatically in the 200 years since Whitney "struck out a plan" of his machine. Whitney's development of the cotton

between G[overnment] and I[n]ventors]. The inventor disclosed his invention in return for the right to exclude others for limited times.").

47. See *supra* text accompanying note 1.

48. See E. BURKE INLOW, *THE PATENT GRANT* 37 (1950) (describing the 18th century in America as the "age of home industry").

49. For a detailed discussion of Eli Whitney and his invention of the cotton gin, see GREEN, *supra* note 41.

50. In fact, Whitney studied at Yale with the eventual goal of practicing law:

In the late eighteenth century . . . Yale was still primarily a training school for the pulpit, for the teacher's rostrum, for the bar and thence for posts of public responsibility. To attend college as preparation for an inventor's or manufacturer's career would have seemed a bizarre notion to the men of the time. Whitney himself had no such thought.

Id. at 29.

51. *Id.* at 45-46. For a quite different account of the invention of the cotton gin, attributing significant inventive credit to Whitney's South Carolina hostess, Catherine Greene, see MACDONALD, *supra* note 41, at xx-xxiv. Macdonald relates several versions of the invention, including the following:

[W]hen the cotton clogged the wooden teeth of Whitney's model, Greene remarked laughingly, "What! Allow such a trifle as that worry you? Trust to a woman's wit to find the cure," seized the wire hearth-brush, and suggested to Whitney that he use it to comb through the cotton. Whitney gallantly replied, "Thank you for the hint. I think I have it now," and repaired to his workshop where he eventually developed the machine he patented—the one with wire teeth.

Id. at xxi. But see GREEN, *supra* note 41, at 48 (discounting the contribution of Catherine Greene).

52. GREEN, *supra* note 41, at 48.

gin is the inventorship paradigm envisioned by the drafters of the first Patent Act: the ad hoc problem-solving of the individual, generalist "hero-inventor." Organized invention was virtually unheard of at this time.⁵³ Although the work of independent inventors remains important,⁵⁴ most economically significant inventions today arise out of organizational environments.⁵⁵ Thus, this Comment proceeds from the assumption that the most important changes in inventorship paradigms over the last two centuries have been due to the appearance and growth of industrial laboratories and the professionalization of invention.

Nineteenth-century firms, were, by and large, passive consumers of technology rather than active participants in the inventive process.⁵⁶ Inventors were not retained by firms as regular employees to develop needed products or processes—indeed, firms made little or no effort to direct independent inventors' efforts towards their specific needs.⁵⁷

Most firms interested in acquiring improvements adhered to this passive approach, because they considered invention to be a product of individual inspiration, which could be guided in only the most general fashion. It was up to the inventors themselves to direct their efforts towards particular markets in the hope they might gain fame and fortune.⁵⁸

Firms began to abandon this ad hoc approach to invention in the late-nineteenth century and sought to exert some control over invention through the establishment of industrial laboratories.

Early examples of influential industrial laboratories include Thomas Edison's "invention laboratory" established in Menlo Park, New Jersey, in 1876,⁵⁹ the Eastman Kodak Industrial Research Laboratory estab-

53. There were, for example, only seven joint-stock companies and corporations in existence in 1780. INLOW, *supra* note 48, at 37.

54. See, e.g., BROWN, *supra* note 42 (containing interviews with several prolific independent inventors); Edmund L. Andrews, *Rich in the 90's on Ideas Hatched in the 50's*, N.Y. TIMES, Nov. 13, 1992, at A1 (describing Jerome Lemelson, an independent inventor who has obtained nearly 500 patents); Carlos V. Greth, *Technical Tinkerers*, CHI. TRIB., Nov. 18, 1990, at C6 (describing the work of independent inventors); Robert Kanigel, *One Man's Mousetraps*, N.Y. TIMES, May 17, 1987, § 6 (Magazine), at 48 (same).

55. This trend reflects the transformation of American society during the same period from individualist to organizational. See, e.g., MEIR DAN-COHEN, RIGHTS, PERSONS, AND ORGANIZATIONS: A LEGAL THEORY FOR BUREAUCRATIC SOCIETY 13 (1986) ("In the early nineteenth century, four out of five Americans were self-employed; the number is now less than one in ten." *Id.* at 212 n.3) (quoting CHARLES LINDBLOM, POLITICS AND MARKETS 28 (1977)); PAUL ISRAEL, FROM MACHINE SHOP TO INDUSTRIAL LABORATORY: TELEGRAPHY AND THE CHANGING CONTEXT OF AMERICAN INVENTION, 1870-1920, at 151 (1992) (noting that changes in the post-Civil War telegraph industry "reflected a general transformation taking place in American society, as economic and political power began to shift from individuals to large-scale bureaucratic organizations").

56. See, e.g., ISRAEL, *supra* note 55, at 121-51.

57. *Id.*

58. *Id.* at 130.

59. See, e.g., Thomas P. Hughes, *Thomas Alva Edison and the Rise of Electricity*, in

lished in Rochester, New York, in 1912,⁶⁰ and the laboratories at Bell Telephone and DuPont.⁶¹ There are many reasons for the rise of industrial laboratories at the beginning of the twentieth century,⁶² but perhaps the primary reason was the desire to improve efficiency and focus by bringing invention and innovation within the same firm.⁶³

Innovation has been described as “the search for, and the discovery, development, improvement, and adoption of new processes, new products, and new organizational structures and procedures.”⁶⁴ Invention is a much narrower concept, encompassing merely the “discovery” part of innovation.⁶⁵ Innovation is an inherently risky and cumulative activity,

TECHNOLOGY IN AMERICA: A HISTORY OF INDIVIDUALS AND IDEAS 117, 119 (Carroll W. Pursell, Jr. ed., 1990) [hereinafter *TECHNOLOGY IN AMERICA*]; David A. Hounshell, *The Modernity of Menlo Park*, in *WORKING AT INVENTING*, *supra* note 41, at 116 (characterizing Edison’s laboratory as the model for 20th-century research and development facilities). Edison was a “hero-inventor” who fully understood the value of the “team-as-hero” and thus embodied both paradigms. *See, e.g.*, Paul Israel, *Telegraphy and Edison’s Invention Factory*, in *WORKING AT INVENTING*, *supra* note 41, at 66. In many ways, Edison’s story is

the story of a change in America; the story of how all work and effort from being separate, free, individual, disjointed, became organized and coordinated until finally, the team replaced the lone wolf in almost every department of life and work including technological invention. Perhaps the most curious aspect of the whole story is Edison’s part in this change. For, after his wandering career as one of the most rugged individuals in the history of invention, he became the pioneer of its collectivization; the first American to apply teamwork to a pursuit which, above all others, was traditionally the property of lonely investigators living in garrets and carrying on their researches by the light of a candle shining dimly through cobwebs.

BURLINGAME, *supra* note 41, at 178.

60. Reese V. Jenkins, *George Eastman and the Coming of Industrial Research in America*, in *TECHNOLOGY IN AMERICA*, *supra* note 59, at 129.

61. *Id.*

62. Some of the reasons include: the growth of monopolies and conglomerates which collected the capital and human resources necessary for the establishment of corporate laboratories, *see, e.g.*, BURLINGAME, *supra* note 41, at 193-94; William S. Pretzer, *Introduction: The Meanings of the Two Menlo Parks*, in *WORKING AT INVENTING*, *supra* note 41, at 12, 17 (noting that Edison received funding for the Menlo Park laboratory from Western Union, “one of the great American monopolies”); the great need for invention created by the growth of the country and the development of new technologies, *see, e.g.*, BURLINGAME, *supra* note 41, at 194-95; the parallel development of corporate and academic research in Europe, *see, e.g.*, Israel, *supra* note 59, at 83; Jenkins, *supra* note 60, at 136-38; and the growing availability of academically trained scientists and engineers, *see, e.g.*, Jenkins, *supra* note 60, at 141.

63. JEWKES ET AL., *supra* note 44, at 182. The combination of these functions within the firm was intended to further the following goals:

[F]irst, to gather together more of the resources incidental to research, to provide the research worker with the best aids, devices and working conditions; second, to encourage co-operation between different minds, and third, to try to give some guidance about the kind of inventions which would be most useful to the firm.

Id. at 132. As Jewkes points out, while the first goal is attainable in industrial laboratories, the latter two are far more elusive. *Id.* at 133-34. Perhaps more to the point, the latter two goals are really aimed at innovation rather than invention.

64. Thomas M. Jorde & David J. Teece, *Innovation, Cooperation and Antitrust*, 4 HIGH TECH. L.J. 1, 5 (1989).

65. Not all discoveries are inventions, of course. For a definition of “invention,” *see supra* notes 3, 21-26 and accompanying text.

often turning up "dry holes" and "blind alleys,"⁶⁶ while requiring the inventor to "build[] on what went before."⁶⁷ Moreover, innovation is complex, requires contributions from many disciplines, and can be very expensive.

Industrial laboratories are intended to address these aspects of innovation. According to one commentator, "Since innovation is so risky, so complex, and so expensive, companies strive to rationalize it—to build 'innovation factories.' That's the Holy Grail that launched Bell Labs, GE Labs, and the very idea of industrial research in America."⁶⁸ These "innovation factories" are designed to provide a fertile environment for invention and eliminate the distractions faced by the independent inventor.⁶⁹

A development that paralleled and helped to facilitate the rise of the industrial laboratory was the professionalization of invention.⁷⁰ At about the time Edison established his "invention factory," science and invention became linked as never before.⁷¹ This linking of science and invention resulted in the development of the modern engineering disciplines and modern technical education.⁷² The formalization of the engineering

66. Jorde & Teece, *supra* note 64, at 5.

67. *Id.*

68. Michael Schrage, *Innovation and Applied Failure*, HARV. BUS. REV., Nov.-Dec. 1989, at 42, 43.

69. These distractions include the provision of "atmosphere, background information, direction and resources in terms of space, heat, light, equipment, time, supporting services, salary and in many cases the identification of the problem to be solved." H. Fredrick Hamann, *Invention in the Corporate Environment*, 1 AM. PAT. L. ANN. Q.J. 102, 106 (1972).

70. Edison himself was one of the first "professional inventors." See BURLINGAME, *supra* note 41, at 190-91.

71. It would be overly simplistic to characterize 18th-century invention as "empirical" (that is, somewhat accidental or not based on prior scientific knowledge) and 20th-century invention as "scientific." There is some truth, however, in Jewkes' characterization of "an earlier heroic age of clumsy individual pioneering and a modern age in which highly trained, closely organised teams of technologists, fortified by an easily accessible and constantly expanding body of scientific knowledge, move forward with deliberation to results which can largely be predetermined." JEWKES ET AL., *supra* note 44, at 32; see also NEWTON H. COPP & ANDREW W. ZANELLA, *DISCOVERY, INNOVATION, AND RISK* 5-9 (1993) (contrasting the trial-and-error approach to technology taken in the 18th and early 19th centuries to the more systematic and scientific approach taken in the late 19th and 20th centuries).

72. See, e.g., COPP & ZANELLA, *supra* note 71, at 5 (noting how the relationship between engineering and the natural sciences has grown notably closer over the past 100 to 150 years); EDWIN T. LAYTON, JR., *THE REVOLT OF THE ENGINEERS: SOCIAL RESPONSIBILITY AND THE AMERICAN ENGINEERING PROFESSION* 38 (1986) ("The professionalization of engineering was everywhere associated with the shift from a craft to a scientific base for the underlying technology . . ."); Bruce Sinclair, *Thomas P. Jones and the Evolution of Technical Education*, in *TECHNOLOGY IN AMERICA*, *supra* note 59, at 62-70 (describing the development of scientifically oriented technical education in America). The difference between science and engineering has been expressed in the following terms: "Scientists seek general patterns in nature that can be summarized in models and theories. . . . Engineers have come to use much of the methodology of science, but the nature of the questions differ from science as engineers seek better machines, structures, systems, chemicals, or processes." COPP & ZANELLA, *supra* note 71, at 5.

disciplines, in turn, resulted in the professionalization of invention:

And what has engineering done for the inventor? Through the development and application of scientific principles [engineering] has not only supplied necessary controls for design, construction, and operation, but [it] has in addition provided the great background of knowledge for use in further invention. In earlier times the inventor was an individualist. Today he is most likely to work in groups. The time has passed when it is easy for the lawyer or the doctor to come forth with a fundamental invention.⁷³

The professionalization of invention is, in some respects, a self-perpetuating condition that has contributed both to the decline of the independent inventor and to the routinization of invention.⁷⁴ Today, virtually all would-be inventors will complete some minimum standard of technical training. It is debatable whether scientific training is now required for invention or whether that is simply a perception entertained by firms.⁷⁵ Whichever the case, at least an undergraduate degree in science or engineering is considered generally to be a prerequisite for many types of inventive employment.⁷⁶ By requiring that technical employees come from similar educational backgrounds, the professionalization of invention has served to limit the intellectual,⁷⁷ gender,⁷⁸ and racial diver-

73. S.C. Hollister, *The Inventor's Contribution to Engineering Progress*, in UNITED STATES PATENT LAW SESQUICENTENNIAL CELEBRATION 5, 7 (U.S. Patent Office, Dep't of Commerce ed., 1941).

74. Routinized invention may have a certain attraction to firms seeking specific results or maintenance of the status quo. But routinized invention may not be in the best interests of society, which benefits most from revolutionary inventions. One commentator has described routinized invention thus:

Unfortunately, there is a trade-off [involved in industrial laboratories]. . . [The] director of . . . a leading German chemical manufacturer, decided that [industrial] laboratories routinized invention. He characterized the inventions of industrial research laboratories as establishment or institutional inventions that had *von Gedankenblitz keine Spur* (no trace of a flash of genius).

Schrage, *supra* note 68, at 43 (third alteration in original). In the terminology of Thomas Kuhn, industrial laboratories do not produce invention paradigms, but rather "normal invention" (that is, they work within established paradigms). See KUHN, *supra* note 45, at 10-34; see also FLOYD L. VAUGHAN, *THE UNITED STATES PATENT SYSTEM: LEGAL AND ECONOMIC CONFLICTS IN AMERICAN PATENT HISTORY* 276 (1956) ("In spite of, and partly because of, these alleged advantages [of industrial laboratories, the employed inventor] seldom brings forth a great invention, although he and his fellow-employees are very effective in developing and improving the inventions of others . . .").

75. It is also debatable whether technical training (or current levels of technical training) is even desirable as a means of fostering invention. See, e.g., BURLINGAME, *supra* note 41, at 182 (noting that the famous radio inventor Edward Howard Armstrong believed that too much scientific schooling may hinder an inventor).

76. There are, of course, exceptions to this rule. For example, some corporations with hierarchical technician (non-degreed) and engineer (degreed) job classifications occasionally permit exceptionally talented or experienced technicians to jump to the engineer classification.

77. For example, formally trained engineers tend to be theoretical inventors rather than experimental inventors. See, e.g., BURLINGAME, *supra* note 41, at 180-83.

78. Professionalization has made it more difficult for those who do not meet the preconceived

sity⁷⁹ of inventors.

The rise of the industrial laboratory and the professionalization of invention may have come at great financial and creative cost. Prospective inventors must make a significant financial investment to attain the level of education required for today's inventive careers. This investment may cause individuals to become risk-averse, making the secure salaries of industrial laboratories even more enticing. Furthermore, the standard training received at most universities emphasizes tools and techniques that are beyond the financial means of most individuals. Thus, professionalism can undermine entrepreneurship, which lies at the heart of the traditional concept of patent law. As one commentator has asked:

[S]ince invention has traditionally been so closely bound up with independence and since, even in this century, so many significant innovations have seen the light of day [in industrial laboratories], it may be asked whether the growing importance of the industrial research laboratory is an unmixed blessing. To put it in terms of policy, is the trend one which should be consciously encouraged? Or is it one to which we should seek to set limits by trying to make easier the lot of the inventor who prefers to choose a path for himself?⁸⁰

The development of institutional research and the professionalization of invention reflected general societal trends toward specialization

corporate profile of "inventor" to obtain access to and positions of responsibility in research facilities. In 1957, for example, then-director of RCA Patent Operations, Clarence Tuska, an "admittedly 'old-fashioned' man," pointed out that the "Lord intended [women] to be mothers rather than inventors." MACDONALD, *supra* note 41, at 334. Many lab directors today doubtless share Mr. Tuska's sentiments. For a discussion of the historical and continuing structural barriers faced by women in engineering and the physical sciences, see Shirley M. Tilghman, *Science vs. the Female Scientist*, N.Y. TIMES, Jan. 25, 1993, at A11 (noting that women earn just seven percent of new engineering doctorates and that little progress has been made on this front in the last 50 years). See also Deborah L. Rhode, *Perspectives on Professional Women*, 40 STAN. L. REV. 1163 (1988) (discussing women in the professions generally, including engineering).

79. See, e.g., JAMES, *supra* note 41, at 15:

As technology became more complicated, inventors in emerging fields began to have more formal education. Advanced degrees in engineering and the sciences were necessary to participate in these new technologies. Blacks found it difficult to get access to higher education and also found it difficult to obtain research staff positions.

See also *id.* at 95-96 (describing how African-American men and women have historically found it difficult to obtain the requisite degrees for corporate technical employment and to overcome the reluctance of corporations to employ them).

80. JEWKES ET AL., *supra* note 44, at 126. The professionalization of invention may thus have brought about an ironic result: fewer people enter the profession, resulting in fewer inventors and hence, fewer inventions. Prospective inventors are all but required to invest human and financial capital in technical education, driving most to careers in industrial laboratories. But careers as corporate inventors have limited upside potential because the corporation has appropriated most of the upside. This limited potential in turn deters potential inventors from investing in technical education (or at least eliminates the incentive for investing in technical education which the patent system should in theory provide). Worse yet, those who have already invested in the education and have worked in the industrial laboratories may decide to leave the profession because of the inability to realize significant gain on their inventions.

and the division of labor, as connoted by the phrase "invention factory." It was believed that the economies of mass production and division of labor that Adam Smith documented in the production of pins⁸¹ could be applied to the production of inventions.⁸² Inventions are not pins, however, and industrial laboratories are not necessarily efficient producers of inventions.⁸³ Moreover, the specialization of labor encouraged, if not demanded, by institutional research can work to the disadvantage of individual employee-inventors. While firms can spread technology risks by acquiring a diversified portfolio of technologically trained employee-inventors, it is impracticable for individual employee-inventors to acquire a diversified portfolio of technology- or firm-specific skills.⁸⁴

Thus, the "team-as-hero" paradigm of invention has both positive and negative implications. The benefit of "team-as-hero" inventing is that through specialization and division of labor, inventions that might never have resulted from individual, independent, haphazard efforts can be realized. A darker side is the personal cost to the individual inventor, as described above. There may be societal costs as well. Revolutionary inventions appear to occur less frequently in large institutional environments.⁸⁵ Perhaps this is due to the numbing effects of the professionalization of invention or to the exigencies of "rational" firm goal-setting. Another possibility, though, is that the organizational environments, complete with preinvention assignment agreements that remove individual incentives (and, as will be argued in Part IV, alienate the inventor's personhood interests) constitute structural impediments to truly creative

81. Smith admirably described the mass production of pins as follows:

One man draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head, to make the head requires two or three distinct operations; to put it on is a peculiar business, to whiten the pins is another; it is even a trade by itself to put them into the paper; and the important business of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands

1 ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 6 (James E.T. Rogers ed., 2d ed., Oxford, Clarendon Press 1880) (1776).

82. See JEWKES ET AL., *supra* note 44, at 238 ("The underlying principle, rarely formulated precisely but ever present, has been that originality can be organized . . . that mass production will produce originality just as it can produce sausages."). Jewkes relates the story of a corporate executive who, upon hearing an estimate that a certain piece of research would require six men for two years, instructed the director of research to put 12 men on the job for one year. *Id.* at 137 n.1.

83. *Id.* at 132 (noting that "[t]he industrial laboratory does not appear to be a favorable environment for inducing invention"); *id.* at 185 (asserting that "[t]he large research organizations of industrial corporations have not been responsible in the past fifty years for the greater part of the significant inventions").

84. See, e.g., OLIVER E. WILLIAMSON, THE ECONOMIC INSTITUTIONS OF CAPITALISM 258-59 (1985). Williamson downplays the importance of this effect, however, by noting that employees can choose between general purpose and firm-specific skills, and that highly skilled workers can usually obtain alternative employment, albeit at reduced productivity levels. Williamson fails to note that many firm- and technology-specific skills are required as a condition of continued employment and that reduced compensation often accompanies the reduced productivity.

85. JEWKES ET AL., *supra* note 44, at 184-86.

invention. These impediments reflect a larger cost associated with the popular perception of "team-as-hero" inventing: the societal devaluation of inventors and inventing. It is difficult for the general public, legislatures, and courts to appreciate the efforts of those inventors who may be perceived as "corporate tools" and more difficult still to appreciate the efforts of individual members of corporate teams.⁸⁶

The preceding pages may paint a rather depressing picture of corporate drones marching blindly but methodically through corporate laboratories squelching individual invention and creativity—"crowds of people milling around with an air of fictitious activity, behind a facade of massive mediocrity."⁸⁷ But this scenario is clearly not representative. While *independent* invention may be on the decline, *individual* invention is still thriving. Individuals invent, even in large organizations.⁸⁸ In fact, much of what teams do at industrial laboratories can be characterized more as innovation or development than invention; that is, corporate laboratories and teams "rationalize" innovation, not invention.

The act of invention is still described by many commentators as essentially an individual act, even within large corporate laboratories.⁸⁹ Consider the comments of a CEO of a large corporation known for innovation:

The creative process usually starts with a brilliant idea

. . . .

. . . Innovation is an emotional experience. . . . The desire to innovate comes partly from the genes; you're born with it. It also comes from your early life, your education, the kind of encourage-

86. This might, in part, explain the general hostility of courts toward patents throughout much of the 20th century (that is, courts themselves may have devalued invention). See, e.g., Robert P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 CALIF. L. REV. 803, 821 n.65 (1988) (noting that the various federal circuit courts found two-thirds of patents adjudicated between 1921 and 1973 to be invalid). Some circuits (namely, the Second, Third, Eighth, and D.C. Circuits) were considerably worse. See Robert L. Risberg, Jr., Comment, *Five Years Without Infringement Litigation Under the Semiconductor Chip Protection Act: Unmasking the Spectre of Chip Piracy in an Era of Diverse and Incompatible Process Technologies*, 1990 WIS. L. REV. 241, 267 n.130. The Supreme Court has been notoriously hostile to patents, at one point prompting Justice Jackson to declare that "the only patent that is valid is one which this court has not been able to get its hands on." *Jungersen v. Ostby & Barton Co.*, 335 U.S. 560, 572 (1949) (Jackson, J., dissenting). The Court of Appeals for the Federal Circuit, formed in 1982 to have jurisdiction over patent appeals (among other duties), has been distinctly more "pro-patent" than its predecessor circuits and the Supreme Court. See Merges, *supra*, at 822 (noting that during its first four years, the Federal Circuit invalidated only 44% of the patents it adjudicated); Eric Schmitt, *Judicial Shift in Patent Cases*, N.Y. TIMES, Jan. 21, 1986, at D2 (noting the increasingly pro-patent sentiment of the Federal Circuit). But see Edmund L. Andrews, *Rolling Back the Power of Inventors*, N.Y. TIMES, Jan. 4, 1993, at C2 (noting a possible reversal of this trend).

87. JEWKES ET AL., *supra* note 44, at 162 n.1 (quoting S.C. Harland, *Recent Progress in the Breeding of Cotton for Quality*, J. TEXTILE INST., Conference Issue, Feb. 1955).

88. See FOLK, *supra* note 46, at 166 ("The inventor, whether he be a lone worker or a group worker, is as important as he ever was.")

89. See, e.g., Mary H. Sears, *The Corporate Patent: Reform or Retrogression*, 22 VILL. L. REV. 1085, 1120-21 nn.158-59 (1977) and sources cited therein.

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ment you got to be creative and original. Innovative people come in all shapes and sizes and in all personality types. Some people are happiest when they're wrestling with a problem; I'm one of those. Others go into a green funk. They're miserable and depressed until they have the answer. But you can't have a good technologist who's not emotionally involved in the work. You can't have a good technologist who doesn't wake up in the middle of the night searching for answers. You can't have a good technologist who doesn't come into the lab eager to see the results of last night's experiment.⁹⁰

The danger, then, of the "team-as-hero" paradigm is that it is applied overinclusively; that is, those outside the team (including courts) discount the contribution of individuals and focus solely on the team. The challenge faced by Patent Code revisers is thus to develop a concept of inventorship which recognizes both organizational and individual inventors.

This Section has discussed how the inventorship paradigm upon which the Patent Code was premised—"hero-as-inventor"—is, in many respects, not the inventorship paradigm under which invention proceeds today. Similarly, the inventorship paradigm that has largely supplanted the eighteenth-century paradigm—"team-as-hero"—does not accurately describe much of today's invention. Neither paradigm nor, for that matter, the Patent Code or the courts recognize the special problems of the employee-inventor.

Perhaps the problem is that "hero-inventor" and "team-as-hero" are more metaphor than paradigm. That is, "heroes" and "teams" are merely figures of speech that suggest the two poles of inventorship rather than models that accurately describe inventorship in any particular instance. If this is true, then it is important that the law not rely on one or the other as a rigid paradigm, but rather be flexible enough to encompass the spectrum of inventorship that exists between the poles.

Despite the problems with using the term "inventorship paradigm," it continues to be useful when employed as a shorthand means of expressing changing conceptions and meanings of inventorship. As used in this Comment, then, "inventorship paradigm" will have a very broad meaning, encompassing both model and metaphor.

This Section has discussed some of the many changes that have occurred over the last 200 years in inventorship and in the public and legal perception of inventorship, and how patent law has remained relatively

90. Comments of Paul Cook, CEO of Raychem Corporation, in William Taylor, *The Business of Innovation: An Interview with Paul Cook*, HARV. BUS. REV., Mar.-Apr. 1990, at 96, 98-99; see also Schrage, *supra* note 68, at 44 ("The most successful corporate innovation systems aren't 'systems' at all. They are environments hospitable to interesting people with innovative ideas.").

static during this time.⁹¹ The next Section will document how the common law has played a "gap-filling" role⁹² by resolving employee-inventor disputes in light of the disjunction between changing inventorship paradigms and the relatively unchanging patent law. The next Section will also discuss how private agreements between employee-inventors and their employers have largely supplanted the common law formulation.

C. *The Legal Status of Employee-Inventors*

1. *The Common Law*

Absent an express agreement between the parties, courts use equitable common law principles to allocate property rights in inventions between employee-inventors and employers based on the nature of the employment relationship, the subject matter of the invention, and the resource contributions of the employer. The common law formulation⁹³ distinguishes among three types of employment: (1) specific inventive employment, which is employment for the express purpose of creating employer-specified inventions; (2) general inventive employment, which is typically referred to today as "research," "design," or "development" employment;⁹⁴ and (3) general employment. Specific inventions are the

91. *But see infra* 293-300 and accompanying text (discussing changes in the Patent Code and related case law).

92. *See* MELVIN A. EISENBERG, *THE NATURE OF THE COMMON LAW* 159-60 (1988) (discussing the court's role as gap-filler for the common law).

93. The common law allocation of property rights between employee and employer was developed over 90 years in a series of 19th- and early 20th-century Supreme Court cases culminating in the landmark case of *United States v. Dubilier Condenser Corp.* *See* *McClurg v. Kingsland*, 42 U.S. (1 How.) 202 (1843) (holding that the employment relationship justified the presumption of a license from employee to employer); *United States v. Burns*, 79 U.S. (12 Wall.) 246 (1871) (holding that employers had a right to inventions of "specifically employed" inventors); *Hapgood v. Hewitt*, 119 U.S. 226 (1886) (holding that an employer's implied license is personal and non-transferable); *Solomons v. United States*, 137 U.S. 342 (1890) (discussing the "employed to invent" doctrine); *McAleer v. United States*, 150 U.S. 424 (1893) (finding an express agreement to assign); *Gill v. United States*, 160 U.S. 426 (1896) (holding that an implied license estopped an employee from bringing an action against her employer); *Standard Parts Co. v. Peck*, 264 U.S. 52 (1924) (establishing the implied shop-right of an employer); *United States v. Dubilier Condenser Corp.*, 289 U.S. 178 (1933) (concluding that an employee not hired to invent is not obligated to assign a patent absent an express agreement). Many of the cases, including *Dubilier*, involved inventions of employees of the federal government. The common law concerning the allocation of rights to inventions of federal government employees have been modified by executive order and by statute, thus largely superseding *Dubilier* on its specific facts. *See, e.g.*, Exec. Order No. 10,096, 3 C.F.R. 292 (1949-1953), *reprinted as amended in* 35 U.S.C. § 266 (1988) (establishing basic policy with respect to domestic rights in inventions made by federal employees); 37 C.F.R. §§ 501.1-10 (1991) (regulations implementing Exec. Order 10,096); *Heinemann v. United States*, 796 F.2d 451 (Fed. Cir. 1986) (upholding Exec. Order 10,096), *cert. denied*, 490 U.S. 930 (1987); *infra* note 142 (discussing 15 U.S.C. § 3710c-3710d (1988), which provides for mandatory compensation for inventors employed by the federal government). Nevertheless, *Dubilier* continues to state the general common law as to non-governmental employees.

94. *Dubilier*, 289 U.S. at 188 ("[E]mployment merely to design or to construct or to devise methods of manufacture is not the same as employment to invent.").

property of the employer.⁹⁵ General inventions—which include inventions of specifically inventive employees that are not employer-specified, inventions of generally inventive employees, and inventions of general employees—are the property of the employee-inventor, though employers have a “shop-right” or non-exclusive right to practice the invention if it is developed on company time or through the use of company resources.⁹⁶ Free inventions, which include all other inventions, are the exclusive property of employee-inventors.⁹⁷

Today, the operational significance of the common law allocation of property rights between employee-inventor and employer is slight due to the prevalence of express preinvention assignment agreements, which are essentially private agreements not to abide by the common law or default allocation. Nevertheless, the common law rules are instructive in that they provide an indication of norms, policies, and usages as understood by the courts over a period of time.⁹⁸

2. Preinvention Assignment Agreements

The common law approach applies equitable principles to the factual circumstances of individual cases. Most employers are unwilling to rely on the uncertainty⁹⁹ and perceived equities¹⁰⁰ of the common law. Thus, most employers make preinvention assignment agreements a condition of employment.¹⁰¹ These agreements supersede the common law

95. *Id.* at 187.

96. *Id.* at 187-89. This shop-right extends for the duration of the patent term and does not expire with termination of the employment relationship. A derivative of the shop-right doctrine, the “reverse shop-right,” is discussed *infra* note 333 and accompanying text.

97. *Dubilier*, 289 U.S. at 187-88. Interestingly, this common law allocation appears to have been based on the existence of an implied preinvention assignment agreement for inventive employees:

The reason [that an inventive employee is bound to assign his patents to the employer] is that he has only produced that which he was employed to invent. His invention is the precise subject of the contract of employment. A term of the [employment] agreement necessarily is that what he is paid to produce belongs to his paymaster. On the other hand, if the employment be general, albeit it cover a field of labor and effort in the performance of which the employee conceived the invention for which he obtained the patent, the [employment] contract is not so broadly construed as to require an assignment of the patent.

Id. at 187 (citations omitted).

98. See EISENBERG, *supra* note 92, at 14-42 (1988) (discussing ways in which social propositions figure into judicial reasoning).

99. For example, it can be difficult to distinguish specifically inventive from generally inventive employees on a legal basis. See, e.g., Mislow, *supra* note 6, at 63-67 and cases noted therein.

100. Implicit in the common law formulation is the belief that generally inventive employees should, as a matter of fairness, be entitled to patent rights in their inventions. Employers, however, undoubtedly view the common law formulation as inequitable.

101. In 1973, 84% of U.S. patents went to corporate assignees. See Parker, *supra* note 6, at 604 n.12. Additionally, a study of California inventors issued chemical patents during the last quarter of 1973 indicated that 90% had signed preinvention assignment agreements. *Id.* at 604 n.15; see also Dratler, *supra* note 6, at 155 (stating that “nearly all of the . . . American scientists and engineers who work in industry have executed some sort of assignment agreement”).

allocation rules.

This Comment argues that, based on property law principles, preinvention assignment agreements should not be enforced in their entirety. Such agreements appropriate from the employee-inventor that which should be inalienable.¹⁰² This property analysis makes the contractual analysis to some extent irrelevant.¹⁰³ However, because the solution proposed by this Comment will leave much of the attempted preinvention transfer intact, and because courts rely so heavily upon a contractual analysis in resolving preinvention assignment disputes, this Section will address some of the salient points of preinvention assignment agreements *qua* contracts. Contrary to the position generally taken by the courts, this Section will argue that these agreements are problematic under a contract law analysis.

The scope of most preinvention assignment agreements is broad.¹⁰⁴ Some agreements require employee-inventors to assign all inventions

102. The inalienable interest and the extent to which preinvention assignment agreements ought not to be enforced will be discussed *infra* Part IV.

103. For example, we would not analyze whether the terms of a contract for the *inter vivos* transfer of a vital bodily organ were enforceable on contract grounds. The property concept prohibiting alienability of such essential organs supersedes any contractual consideration. *See* MUNZER, *supra* note 34, at 43.

104. Typical preinvention assignment agreements provide:

The undersigned agrees that he will disclose to the Company all inventions, improvements, software, processes, ideas, and innovations (hereinafter referred to, for convenience only, as "Discoveries"), made or conceived by him, whether or not patentable or copyrightable, either solely or in concert with others, and whether or not made or conceived during working hours, during the period of his employment, which (a) relate to the existing or contemplated business or research activities of the Company; (b) result from the use of the Company's proprietary information, facilities, or resources; or (c) arise out of or result from work performed for the Company. [The undersigned acknowledges that he is employed to engage in research, design, and development.] The undersigned further agrees to keep full and complete records concerning the development of discoveries as above defined and to tender such records to the company upon request.

ROBERT A. SPANNER, WHO OWNS INNOVATION? THE RIGHTS AND OBLIGATIONS OF EMPLOYERS AND EMPLOYEES 120 (1984).

The author of this Comment has signed several preinvention assignment agreements, the latest of which provided, in pertinent part:

2. I hereby agree to disclose promptly to [Company, the employer, a California corporation] and hereby, without further compensations, assign and agree to assign to [Company] or its designee, my entire right, title and interest in, and to all designs, trademarks, discoveries, formula, processes, manufacturing techniques, trade secrets, inventions, improvements, ideas or copyrightable works (the "Proprietary Interests"), including all rights to obtain, register, perfect and enforce these Proprietary Interests

- (i) which relate to any of my work during the period of my employment with [Company], whether or not during normal working hours; or
- (ii) which pertain to any line of current or anticipated business activity of [Company]; or
- (iii) which are aided by the use of time, material or facilities of [Company].

(agreement on file with author). For limitations on the reach of such agreements required by California statute, see *infra* note 137. For other forms of such agreements, see *Cubic Corp. v. Marty*, 229 Cal. Rptr. 828, 830 (Ct. App. 1986); *Fletcher-Terry Co. v. Grzeika*, 473 A.2d 1227, 1228 (Conn. App. Ct. 1984); *Ingersoll-Rand Co. v. Ciavatta*, 542 A.2d 879, 882, (N.J. 1988); *Andreaggi v. Relis*, 408 A.2d 455, 458 (N.J. Super. Ct. Ch. Div. 1979).

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made during the employment term,¹⁰⁵ while others reach only those inventions related to the employer's business or research interests or made with the assistance of the employer's resources. In some cases, these contracts may extend to periods prior to or subsequent to the employment period.

As a general rule, courts uphold preinvention assignment agreements as valid and enforceable contracts.¹⁰⁶ The agreements may not be enforced, however, if the employer overreaches, for example, by attempting to appropriate inventions unrelated in subject matter to the employment relationship or inventions conceived long after the termination of the employment relationship.¹⁰⁷

A threshold question in determining the validity of a preinvention assignment agreement is whether federal or state law applies. Although patents are creatures of federal law, state law is not preempted simply because a patent is at issue.¹⁰⁸ For example, federal statutory law, which has exclusive control over the manner in which patents may be assigned,¹⁰⁹ contains no provision for the assignment of patents for inventions not yet made.¹¹⁰ Thus, *agreements* to assign patents have no federal statutory basis.¹¹¹ Consequently, "[s]tate law, rather than federal

105. See David Stipp, *Lab Legacy: Inventors Are Seeking Bigger Share of Gains from Their Successes*, WALL ST. J., Sept. 9, 1982, at 1 ("At [one company], for example, says a spokesman for the . . . concern, most employees must sign an agreement specifying, in effect, that 'even if they invent something in their sleep, it belongs to the company.'").

106. See, e.g., *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 187 (1933) ("A patent is property and title to it can pass only by assignment. If not yet issued an agreement to assign when issued, if valid as a contract, will be specifically enforced."); see also *Hovell*, *supra* note 6, at 876-77.

107. See *Mislow*, *supra* note 6, at 103; *Dratler*, *supra* note 6, at 142. For examples of overreaching, see *Guth v. Minnesota Mining & Mfg. Co.*, 72 F.2d 385 (7th Cir. 1934) (holding the portion of an agreement that was limitless in time and subject matter contrary to public policy and hence void); *Aspinwall Mfg. Co. v. Gill*, 32 F. 697 (C.C.D.N.J. 1887) (invalidating an agreement to assign all the products of one's future labors as an inventor).

108. *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979).

109. See *University Patents, Inc. v. Kligman*, 762 F. Supp. 1212, 1219 (E.D. Pa. 1991) ("[A] patent is a creature of federal statutory law [and] may be transferred only in the manner provided by such law.").

110. 35 U.S.C. § 261 (1988) provides for assignment of "[a]pplications for patent, patents, or any interest therein." A preinvention is a mere expectancy and thus cannot be assigned under this section.

111. *Kligman*, 762 F. Supp. at 1219 (holding that "contracts to assign patent rights do not have a statutory basis"). Preinvention assignment agreements are agreements to assign expectancies that ripen into transferable property. This concept has parallels in other areas of the law. See, e.g., EUGENE F. SCOLES & EDWARD C. HALBACH, JR., *PROBLEMS AND MATERIALS ON DECEDENTS' ESTATES AND TRUSTS* 83 (4th ed. 1987):

An expectancy, being but a hope of succeeding to the property of another living person, is not treated as an existing property interest and therefore cannot be assigned gratuitously. Thus, in a true sense no present transfer of an expectancy is possible. Statutes in some states expressly codify these common law principles. Consequently releases and "assignments" of expectancies can be made binding only under some theory other than that of a present transfer. In appropriate transactions, . . . a court of equity may label the purported assignment an *equitable assignment* or a specifically enforceable *contract to assign*.

patent law, generally governs ownership rights in patentable inventions, including the rights as between an employer and employee."¹¹²

Courts generally enforce preinvention assignment agreements on the basis of freedom-of-contract principles.¹¹³ Of course, "freedom of contract" is really free only if there is parity of bargaining power between the

Similarly, current tort law forbids trading in unmatured tort claims, that is, claims for accidents that may occur in the future. See Robert Cooter, *Towards a Market in Unmatured Tort Claims*, 75 VA. L. REV. 383, 383 (1989).

112. *Kligman*, 762 F. Supp. at 1219 n.8; see also *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979) ("Commercial agreements traditionally are the domain of state law. State law is not displaced merely because the contract relates to intellectual property which may or may not be patentable; the states are free to regulate the use of such intellectual property in any manner not inconsistent with federal law."); Donald S. Chisum, *The Allocation of Jurisdiction Between State and Federal Courts in Patent Litigation*, 46 WASH. L. REV. 633 (1971); Hovell, *supra* note 6, at 865 n.13 ("[T]he patent laws do not create a federal common law concerning the pre-invention title to patents.").

Perhaps this is an area where Congress ought to "make a federal case out of it." The analytical distinctions between preinvention and postinvention agreements which justify the application of state law to the former and federal law to the latter are subtle, at best. Furthermore, this is an area where uniformity among the states is desirable.

113. The sentiment of the courts is echoed by one commentator as follows:

A basic policy of contract law is that persons should be able to structure consensual transactions as they see fit and obtain the benefit of any bargains reached. A likely assumption between parties to an employment relationship is that when inventive behavior is part of the agreed relationship, such behavior has already been fully compensated by wages. In a sense, the products of the employee's mind have already been bought. Having given consideration for inventive services and having assumed the risk that such services might not be successful, the employer should receive as the benefit of the bargain any resulting intellectual property rights.

6 CHISUM, *supra* note 5, § 22.03[2], at 22-25.

Although preinvention assignment agreements are generally enforced, courts have refused to uphold them under certain factual circumstances. Assignment clauses may not be enforced (depending in some cases on the jurisdiction), for example, if they: (1) are unartfully drafted, *see, e.g., Ferroline Corp. v. General Aniline & Film Corp.*, 207 F.2d 912, 926 (7th Cir. 1953) (narrowly construing a poorly drafted agreement), *cert. denied*, 347 U.S. 953 (1954); *Motorola, Inc. v. Fairchild Camera and Instrument Corp.*, 366 F. Supp. 1173, 1179 (D. Ariz. 1973) (finding an agreement impermissibly vague); (2) are oral or implied (for example, through an employee handbook), *see, e.g., Kligman*, 762 F. Supp. at 1220-29 (questioning the enforceability of assignment agreements implied through employee handbooks); (3) unreasonably attempt to bind employees for a period of time following the termination of the employment relationship (so-called "holdover clauses"), *see, e.g., Ingersoll-Rand Co. v. Ciavatta*, 542 A.2d 879, 895 (N.J. 1988); (4) are applied to inventions conceived but not reduced to practice during the term of employment, *see, e.g., Jamesbury Corp. v. Worcester Valve Co.*, 443 F.2d 205, 213 (1st Cir. 1971); (5) are "afterthought" agreements, *see generally* Jordan Leibman & Richard Nathan, *The Enforceability of Post-Employment Noncompetition Agreements Formed After at-Will Employment Has Commenced: The "Afterthought" Agreement*, 60 S. CAL. L. REV. 1465 (1987); (6) are applicable to inventions that do not relate to the employer's present or anticipated business and that were developed on the employee's own time with the employee's own resources, *see infra* notes 136-43 and accompanying text (discussing state legislative responses); or (7) are unsupported by consideration other than the continued at-will employment of the employee or otherwise insufficient consideration, *see, e.g., Kadis v. Britt*, 29 S.E.2d 543, 548 (N.C. 1944) (noting that "consideration cannot be constituted out of something that is given and taken in the same breath—of an employment which need not last longer than the ink is dry upon the signature of the employee"). The position of the *Kadis* court is distinctly a minority one.

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contracting parties.¹¹⁴ This parity may be lacking between employee-inventors and employers. Today, the majority of employment contracts are offered on a "take-it-or-leave-it" basis.¹¹⁵ The process by which an employee-inventor agrees to assign her preinvention rights to her employer is not one of hard arms-length bargaining, "but rather of a fly and flypaper."¹¹⁶ As a result, most commentators agree that freedom of contract does not generally exist in the employee-inventor context; that is, preinvention assignment agreements are contracts of adhesion.¹¹⁷

The fact that a contract is adhesive does not, however, end the court's inquiry. As one court recently noted in a preinvention assignment agreement context:

The determination that a contract is adhesive is "only the beginning and not the end of the analysis insofar as enforceability of its terms is concerned." A contract of adhesion can be fully enforced according to its terms unless some other factors exist, such as the oppressive or "unconscionable" provision. Unconscionability includes "... an absence of meaningful choice on the part of one of the parties together with contract terms which are unreasonably favorable to the other party."¹¹⁸

There are two types of unconscionability: substantive and procedural.¹¹⁹

114. See, e.g., JOHN D. CALAMARI & JOSEPH M. PERILLO, *CONTRACTS* § 1-3, at 6 (3d ed. 1987) ("Most of contract law is premised upon a model consisting of two alert individuals, mindful of their self-interest, hammering out an agreement by a process of hard bargaining.").

115. Modern contract law has significantly eroded the 19th-century model of unrestricted freedom of contract, particularly in the employment area. *Id.* Furthermore, employment contracts deserve a higher level of judicial scrutiny than, say, contracts for the sale of commodities, because "[a]fter all, what is being purchased and sold in the labor market is control over the time and activities of a human being." PAUL C. WEILER, *GOVERNING THE WORKPLACE: THE FUTURE OF LABOR AND EMPLOYMENT LAW* 21 (1990).

116. Arthur A. Leff, *Contract as Thing*, 19 AM. U. L. REV. 131, 143 (1970).

117. See e.g., John P. Sutton, *Employment Contracts*, in *LEGAL RIGHTS OF CHEMISTS AND ENGINEERS* 45, 58, 62 (Warren D. Niederhauser & E. Gerald Meyer eds., 1977):

A contract of adhesion occurs when the terms are prepared entirely for the benefit of one of the parties, and the other party does not have sufficient bargaining power to alter the terms. Today the employment contract is a contract of adhesion. Whether it is enforceable or not depends on whether it is unconscionable. . . .

. . . . The problem is that unless you are a Nobel Laureate you are not going to get [fair] provisions into the contract. It's bargaining power that gets fair contract provisions. . . . Those in demand, like corporation presidents, can write their own tickets. Most employees cannot.

See also Franklin D. Ubell, *Assignor Estoppel: A Wrong Turn from Lear*, J. PAT. & TRADEMARK OFF. SOC'Y, Jan. 1989, at 26, 27 ("The new employee is compelled to accept such assignment provisions because of the far greater bargaining power of the employer and lack of access to patent counsel. The employee's salary at this point would appear to be dictated by supply and demand in the teeming marketplace for technical talent, rather than by any expectation that the employee will develop valuable patentable inventions.").

118. *Cubic Corp. v. Marty*, 229 Cal. Rptr. 828, 834 (Ct. App. 1986) (quoting *Chretien v. Donald L. Bren Co.*, 198 Cal. Rptr. 523 (Ct. App. 1984)).

119. See, e.g., CALAMARI & PERILLO, *supra* note 114, § 9-40 (distinguishing "substantive" or

Substantive unconscionability refers to grossly one-sided and oppressive contractual terms;¹²⁰ procedural unconscionability refers to the unfair process through which an agreement is reached.¹²¹ Preinvention assignment agreements present arguable cases of both types of unconscionability.

A claim of substantive unconscionability must be based on the absence of meaningful choice together with unreasonable contract terms. In the preinvention assignment context, absence of meaningful choice may exist because such agreements are used on an industry-wide basis.¹²² A claim of procedural unconscionability must be based on unfair surprise together, again, with unreasonable contract terms. The unfair surprise in the preinvention assignment context may arise if a valuable invention comes out of the employment relationship even though such an event seemed highly unlikely at the time of contracting.¹²³ Many employee-inventors may be quite surprised to find out that they have no rights to their inventions, particularly when the inventions are unrelated to the employer's business or not developed on company time. The preinvention assignment agreement thus eviscerates a basic expectation of the employee-inventor.

In the preinvention assignment context, both substantive and procedural unconscionability rest ultimately on the reasonableness of the agreement's terms.¹²⁴ Here, reasonableness is determined by analyzing the adequacy of consideration. This analysis is particularly difficult in the preinvention context because the parties are bargaining for something which does not exist and which may never exist, and thus is not easy for the parties to evaluate.

Ex ante bargaining for patent rights in preinventions is difficult due to their speculative nature; the likelihood that any given employee-inventor will invent a truly valuable invention sometime in the future is ex-

"oppressive" unconscionability from "procedural" or "unfair surprise" unconscionability); Melvin A. Eisenberg, *The Bargain Principle and Its Limits*, 95 HARV. L. REV. 741, 752-53 (1982) (same).

120. CALAMARI & PERILLO, *supra* note 114, § 9-40.

121. *Id.* The *Marty* court is referring, of course, to substantive rather than procedural unconscionability.

122. See, e.g., *Marty*, 229 Cal. Rptr. at 834 (noting that the agreements at issue "are required on an industry-wide basis because the government requires defense contractors to give it title or license in any patents conceived or reduced to practice during the course of performance of government contracts").

123. Thus, the preinvention assignment agreement is in some ways analogous to a liquidated damages provision, where one or both parties are unable (or unlikely) to estimate reasonably the likelihood of breach. Such provisions are often struck down by the courts. For further discussion of the import of the low probability of invention, see *infra* note 126 and accompanying text.

124. Although courts have historically been reluctant to review the reasonableness of contract terms, this reluctance has been softening in recent years. See, e.g., Eisenberg, *supra* note 119, at 752 ("Over the last fifteen years, however, there have been strong indications that the principle of unconscionability authorizes a review of elements well beyond unfair surprise . . .").

ceedingly small.¹²⁵ Neither employee-inventor nor employer is likely to evaluate properly the worth of a given employee-inventor's preinvention rights *ex ante*. The employee-inventor will have little basis for making a realistic estimate of the likelihood of invention or of any such invention's value. The employer, particularly the large employer, may have an informational advantage over employee-inventors based on the employer's ability to evaluate preinvention rights statistically over a large sample size.¹²⁶ The employer will probably be unable to account for special attributes of particular employees, and thus will discount the value of preinvention rights of those employees most likely to be the best inventors. Preinvention assignment agreements are in this way similar to contracts between firms and consumers where the difference in access to information has led to regulation of such contracts.¹²⁷

Ex post bargaining presents equally difficult problems. Even if the total value of the invention may be agreed upon by the parties, the value of each party's contribution will be difficult to agree upon. The employer will tend to overvalue the contribution of the work environment and the employee-inventor will tend to overvalue her individual contribution.

Some preinvention assignment agreements offer no additional consideration for the assignment of an employee-inventor's invention to the employer beyond the continued employment of the employee.¹²⁸ Most courts hold that even this is adequate consideration, since the employee-inventor is dischargeable "at will."¹²⁹ Certainly, there is no requirement that the consideration approximate the value of the invention, though some courts may find that nominal consideration is inadequate.¹³⁰

125. See Rebecca S. Eisenberg, *Proprietary Rights and the Norms of Science in Biotechnology Research*, 97 YALE L.J. 177, 217 (1987) ("The serendipitous nature of research discoveries may make it difficult to place a value on the right to use a patented invention before the outcome of a research project is known.").

126. Commentators note that contracting parties systematically tend to underestimate the likelihood of low-probability events, and that this tendency makes judicial intervention appropriate for long-term contracts. See, e.g., Melvin A. Eisenberg, *The Structure of Corporation Law*, 89 COLUM. L. REV. 1461, 1464-65 (1989). While the likelihood of a significant invention is a low-probability event for the employee-inventor, it is a high-probability event for the typical employer who has a diversified inventor portfolio.

127. See generally Alan Schwartz & Louis L. Wilde, *Imperfect Information in Markets for Contract Terms: The Examples of Warranties and Security Interests*, 69 VA. L. REV. 1387 (1983) (discussing contracts between firms and consumers and the role of imperfect information).

128. See VAUGHAN, *supra* note 74, at 34 ("The hired inventors and technicians of business corporations generally receive only salaries for compensation . . ."). This Comment assumes that the agreement is of the no-additional-consideration type. Of course, some, if not most, corporations will offer some additional compensation for patents applied for and/or granted. However, this additional compensation is often part of a separate "invention incentive" plan rather than part of the preinvention assignment agreement, and rarely bares any relationship to the actual value of the invention.

129. Mislou, *supra* note 6, at 100. The continuation of the at-will employment, therefore, constitutes consideration for the patent assignment.

130. *Id.* at 102.

Is continued at-will employment adequate consideration for the assignment of valuable patents? Take the case of an employee-inventor who agrees to a preinvention assignment clause but never develops a patentable invention. Is she in breach of her contract? Almost certainly she is not.¹³¹ The employer cannot reasonably expect that a particular employee-inventor will conceive of a valuable patentable invention. After all, a patentable invention, by definition, must be unanticipated (that is, "novel" and "non-obvious").¹³² Similarly, most employee-inventors do not consider it likely that they will conceive of a valuable patentable invention. Thus, the terms of the assignment clause are probably not of utmost importance at the time of the contract's formation. It is therefore unlikely that either employee-inventor or employer really mistakes continued employment as consideration for the assignment of valuable patents by the employee-inventor.

This Section has discussed how employers use their bargaining advantage over employee-inventors to appropriate rights in inventions that would otherwise accrue to the employee-inventors under the common law formulation. The prevalence of preinvention assignment agreements can be attributed to a form of market failure: labor monopsony.¹³³ There is, in effect, no market for technical jobs that does not require relinquishment of preinvention rights. This market failure has eviscerated the policy of individual incentive and recognition implicit in a Patent Code that recognizes only human inventors.¹³⁴ Because failures of the self-regulatory mechanism of the market are viewed as appropriate occasions for public regulation,¹³⁵ state and federal legislators have initiated several responses to the proliferation of preinvention assignment agreements. These responses will be examined in the following Section.

131. I am unaware of any cases where an employee's failure to create valuable, patentable inventions was asserted as a breach of an employment contract or used as evidence of cause for termination.

132. See *supra* notes 23-24 and accompanying text.

133. See, e.g., RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 299-300 (3d ed. 1986) (describing labor monopsony as a form of market failure, though Judge Posner does not believe labor monopsony is a serious problem today in this country). Employers can typically exercise considerably more power over employees than they can over, say, consumers because jobs, especially jobs for employees with highly specialized skills, are less fungible than most products. See, e.g., WEILER, *supra* note 115, at 21-22; Parker, *supra* note 6, at 608-09.

134. Contractual evisceration of governmental policies is not unique to the preinvention assignment agreement context. For example, corporate subsidized insurance and routine indemnification of directors and managers have collapsed the dual liability regime of corporate law whereby firms and their agents are jointly and severally liable for crimes and torts committed within the scope of the agent's employment. See, e.g., Reinier H. Kraakman, *Corporate Liability Strategies and the Costs of Legal Controls*, 93 *YALE L.J.* 857, 859 (1984).

135. See POSNER, *supra* note 133, at 343.

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D. Legislative Responses to Preinvention Assignment Agreements

To date, five states have enacted legislation to limit the reach of preinvention assignment agreements.¹³⁶ The statutes all require some relationship between the employee-inventor's invention and the employer's resources, or its present or contemplated business areas, in order to justify mandatory assignment.¹³⁷ None of the state statutes, however, give employee-inventors any rights to inventions related to the work that the employee-inventor was hired to perform for the employer.

The state statutes have been effective in restricting employers from overreaching or appropriating inventions of employee-inventors where those inventions do not relate to the employer's actual or anticipated line of business or research. It is reasonable to expect, however, that most inventions—particularly most *important* inventions—an employee-inventor might produce *would* relate to the employer's business, and more specifically, to the actual work the employee-inventor performs for the employer; after all, this is the area of the employee-inventor's expertise and focus.¹³⁸ Thus, the state statutes by design do not reach the most important inventions of employee-inventors.

Federal legislation to reform patent law with respect to private sector employee-inventors has been proposed at least nine times since 1963.¹³⁹ The proposed bills ranged from a return to the common law allocation of patent rights¹⁴⁰ to mandatory compensation for employee-

136. These states are California, Illinois, Minnesota, North Carolina, and Washington. See CAL. LAB. CODE §§ 2870-2872 (West Supp. 1992); ILL. REV. STAT. ch. 140, para. 302 (1991); MINN. STAT. § 181.78 (Supp. 1991); N.C. GEN. STAT. §§ 66-57.1, .2 (1991); WASH. REV. CODE ANN. §§ 49.44.140, .150 (West Supp. 1991).

137. For example, the California statute makes inoperative any preinvention assignment agreement as applied to inventions made on the employee-inventor's own time and with the employee-inventor's own resources unless, at the time of conception or reduction to practice, the invention relates to the employer's business or anticipated research or development, or unless the invention resulted from work performed by the employee for the employer. CAL. LAB. CODE § 2870(a).

The second preinvention assignment agreement set forth *supra* note 104, which was controlled by California law, contained the following provision:

3. I understand and agree that the foregoing does not apply to an invention for which no equipment, supplies, facility or trade secret information of [Company] was used and which was developed entirely on my own time, and which does not relate (1) to the business of [Company], or (2) to the actual or demonstrably anticipated research or development of [Company], or (3) which does not result from any work performed by me for [Company], or (4) any invention which qualifies fully under the provision of California Labor Code Section 2870, a copy of which has been provided to me as an attachment to my copy of this agreement.

138. By "important" inventions, I refer both to inventions that are of economic significance as well as to inventions that are of the greatest personal importance to the employee. The latter concept will be addressed *infra* Part IV, in the discussion of "personhood" interests in inventions.

139. See Parker, *supra* note 6, at 617-19. For a discussion of the history of the proposed federal reforms, see *id.* See also Witte & Gutttag, *supra* note 6, at 467-81.

140. See, e.g., H.R. 4392, 88th Cong., 1st Sess. (1963).

inventors who assign patent rights to employers.¹⁴¹ None of these proposals has been enacted. It is unlikely that such legislation will be enacted in the foreseeable future due to the strong lobbying efforts of corporate employers.¹⁴² Moreover, engineer- and scientist-employees and potential employees represent a diffuse and poorly organized lobby.¹⁴³

This Part has discussed the failure of patent and contract doctrine to resolve adequately the problem of the employee-inventor. Patent law is limited by its antiquated and rigid conception of inventorship. Under its current formulation, patent law does not address the inventorship environments in which today's employee-inventors operate. Similarly, contract law is limited by its wooden application of freedom-of-contract principles to situations in which market failure has made such principles inappropriate. In addition, contract law analysis fails to address the underlying property issues implicated by preinvention assignment agreements. Finally, federal and state reforms have not resolved the problems of preinvention assignment agreements because policymakers have viewed the dispute in terms of inadequate contract or patent doctrine.

Part III will look beyond doctrine to theory in an attempt to resolve preinvention assignment disputes. Several traditional private property justifications will be examined in the context of preinvention assignment disputes.

141. See, e.g., H.R. 3285, 98th Cong., 1st Sess. (1983); S. 1321, 93d Cong., 1st Sess. § 263, 119 CONG. REC. 9102, 9113 (1973); H.R. 15,512, 91st Cong., 1st Sess. (1970).

142. See, e.g., *Innovation and Patent Law Reform: Hearings Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judiciary*, 98th Cong., 2d Sess. (1984) [hereinafter *Innovation and Patent Law Reform*] (containing the testimony and statements of many industry representatives opposing legislation establishing a mandatory compensation scheme for employee-inventors). Interestingly, however, the Technology Transfer Act of 1986 enacted, among other provisions, mandatory compensation for inventors employed by the federal government, including a forced minimum 15% share for inventors of any royalties or income received by the government for the inventions of its employee-inventors. 15 U.S.C. § 3710c (1988). The legislative history of the Act, however, specifically provides: "Some representatives of businesses that employ scientists fear that establishing royalty sharing for Federal employees will set a precedent for legislation mandating royalty sharing for private inventors. . . . The Committee does not intend for this provision affecting Government employees to set a precedent for private employees." S. REP. NO. 283, 99th Cong., 2d Sess. 13 (1986), reprinted in 1986 U.S.C.A.N. 3442, 3455.

143. But see *Innovation and Patent Law Reform*, supra note 142 (testimony of several representatives of professional technical employees supporting proposed legislation establishing a mandatory compensation scheme for employee-inventors); *Rights of Employed Inventors: Hearing Before the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judiciary*, 97th Cong., 2d Sess. 21-53 (1982) (same).

III

THE LIMITATIONS OF THEORY: THE EMPLOYEE-INVENTOR
AND PREINVENTION ASSIGNMENT AGREEMENTS
UNDER TRADITIONAL THEORIES OF
PROPERTY

As discussed in Part II, commentators, judges, and legislators have been aware for years of the limitations of patent and contract doctrine as applied to the employee-inventor. Yet little significant reform has occurred at judicial or legislative levels. Although there are possible structural explanations for the lack of reform,¹⁴⁴ this Comment will focus on a theoretical explanation: that preinvention assignment disputes are ultimately a property law problem rather than a contract or patent law problem, and that traditional property law itself is ill-equipped to resolve these disputes.

This Part will examine how, although preinventions share many of the attributes of real and personal property,¹⁴⁵ traditional property law theory is of limited utility due to the distinctive nature of the property and the manner in which the property is created within the employer-employee relationship. Although they are ultimately rejected, traditional property law theories are useful for illuminating the strengths and weaknesses of the approach advocated in Part IV: the removal of an employee-inventor's future inventions from a contract-law-only regime (a regime of full market alienability) to a property law regime (a regime of partial market *inalienability*).

A. The Distinctive Nature of Intellectual Property

An appreciation of the distinctive nature of intellectual property is a necessary prerequisite to the application of property theories to preinvention disputes. This Section will briefly describe those attributes of intellectual property that distinguish it from other forms of property, such as real property and tangible personal property.

The Patent Code provides that "patents shall have the attributes of personal property."¹⁴⁶ Patents, and indeed, all forms of intellectual property have some of the attributes of personal or tangible property, such as the right to exclude and the right to alienate. However, there are significant differences between the *nature* of intellectual property and that of personal or tangible property. Because of these differences, some of the property rules that govern tangible property may be inappropriate for intellectual property.

Several distinctive aspects of intellectual property are of particular

144. See, e.g., *supra* notes 142-43 and accompanying text.

145. See, e.g., Frank H. Easterbrook, *Intellectual Property Is Still Property*, 13 HARV. J.L. & PUB. POL'Y 108, 112-13 (1990).

146. 35 U.S.C. § 261 (1988).

significance in the preinvention context: intellectual property has both "free good" and "public good" attributes;¹⁴⁷ intellectual property rights are of limited scope;¹⁴⁸ and intellectual property rights have traditionally been thought of as a "democratic" form of property.¹⁴⁹ These aspects of intellectual property must be considered as part of any proposed resolution to preinvention assignment agreement disputes.¹⁵⁰

147. An idea can be used and enjoyed by many people at any given time without depriving other people of use or enjoyment of the idea, and thus has the attributes of an inexhaustible resource, or, in economic terms, a "free good." See DRATLER, *supra* note 25, § 1.01[1]. Ideas are inexhaustible in another sense: the potential number of ideas is unlimited. At the same time, it is difficult to prevent others from using an idea once it is divulged and thus, like clean air or national defense, ideas have the attributes of a "public good." Therefore, ideas may be utilized by "free riders" who did not share in the cost of producing the information. Because ideas can be public goods, intellectual property protection is necessary to prevent an informational "tragedy of the commons." As one commentator has noted, "Assuming rational investors, absolute freedom to use information, i.e. an informational commons, could only result in *there being no information worth using*. Valuable information, i.e. information that is the result of purposive investment in learning, therefore depends upon the existence of private property rights." WILLIAM KINGSTON, *INNOVATION, CREATIVITY AND LAW* 83 (1990).

148. Intellectual property rights are more limited in scope than are many tangible property rights. Intellectual property rights are of limited duration; tangible property rights, particularly in real property, are of unlimited duration. Even though some interests in tangible property may be of limited duration, the property vests in *somebody* indefinitely. The rights of ownership of intellectual property are more circumscribed than are those in other forms of property. For example, while a landowner has the right to possess the land, to exclude others, to dispose of the land, to use the land, to enjoy the fruits of the land, and to destroy, harm, or alter the land, a patent owner has only the right to exclude others from making, using, and selling the subject matter of the patent, and, in most cases (though not all), the right to dispose of the patent.

149. Traditionally, tangible property, particularly real property, has been a device for concentrating wealth within families and for the maintenance of the status quo. Tangible property tends to perpetuate social stratification through primogeniture. Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287, 290-91 (1988). Intellectual property, on the other hand, due to its means of creation and its limited duration is in theory wealth-redistributive or at least more wealth-neutral. *Id.* at 291. Intellectual property, then, is a "democratic" form of property; that is, it is a form of property obtainable by all citizens. See Hugo A. Meier, *Thomas Jefferson and a Democratic Technology*, in *TECHNOLOGY IN AMERICA*, *supra* note 59, at 17, 28-30 (discussing Jefferson's belief that inventions should not be monopolized). Consider, too, the following remarks, made on the 150th anniversary of the patent system:

The success of our patent system is due to the fact that it is essentially democratic. Patents are granted as a matter of right and a good patent makes the little man an effective competitor of the big man. Our patents are, unlike others, not used for tariff purposes and are not burdened by taxes; nor are the exclusive rights granted for a limited period diluted by requirements for compulsory licenses or compulsory workings. These considerations have made us a nation of inventors, for even the least of us has the opportunity by creative thought to take his place among the great. The perpetuation of that system and the maintenance of the standard of living that we enjoy require that research and invention must continue to be encouraged and protected.

William B. Kerkam, *Some Historical and Current Reflections on the American Patent System*, in *UNITED STATES PATENT LAW SESQUICENTENNIAL CELEBRATION*, *supra* note 73, at 8, 9.

150. Although the differences between intellectual property and tangible property were understood at the time the first Patent Act was drafted, they were not of great significance because most valuable property was tangible property. This is no longer the case today. Intellectual property is becoming increasingly valuable relative to tangible property. As one commentator recently noted:

[A] profound reallocation of wealth has been under way during the past thirty years.

B. Traditional Property Theories

Although a number of theories have been put forth to justify the concept of private property,¹⁵¹ those most frequently invoked are based on either natural law or utilitarian foundations. There is a certain tension between these two bases, for, as will be demonstrated, natural law focuses on the rights of individuals at the expense of the general welfare of society, whereas utilitarianism emphasizes general welfare at the expense of individual right.¹⁵² This dichotomy may help to explain why neither theory is particularly helpful in resolving preinvention assignment disputes, for both employers and employee-inventors can make legitimate and persuasive individual rights and general welfare arguments.

1. Natural Law Justifications

The term "natural rights" refers to universally recognized rights attributable to human nature or to immutable conceptions of "reason" rather than to the enactment of statute.¹⁵³ The Declaration of Independence, for example, is based on a natural rights justification.¹⁵⁴ Although the Declaration of Independence does not speak directly of natural rights in property (except obliquely through the phrase "pursuit of happiness"), such rights were widely regarded as self-evident in eighteenth- and nineteenth-century America: "It may then be taken as an

Increasingly, wealth is being defined in terms of intangible property: information and things done with information.

... The traditional forms of intangible property, patents and copyrights, do have their own statutory schemes for ownership and transfer, but these eighteenth century mechanisms hardly provide an ideal model for the future [T]hey were enacted as analogs to the rules which regulate real and personal property and as such they fail to account for the essential difference between tangible and intangible property; namely, that one loses value when it is divided while the other does not.

Samuel J. Sutton, Book Review, 31 JURIMETRICS J. 357, 357-58 (1991).

151. These theories include first occupancy or discovery, labor theory, personality theory, utilitarian theory, and critical legal studies. See JESSE DUKEMINIER & JAMES E. KRIER, PROPERTY 132-41 (2d ed. 1988).

152. See ALAN RYAN, PROPERTY 70 (1987).

153. See, e.g., Phillip E. Johnson, *Some Thoughts About Natural Law*, 75 CALIF. L. REV. 217, 217 (1987) ("[A]nyone who attempts to found concepts of justice upon reason and human nature engages in natural law philosophy."). For various formulations of natural rights, see John Christman, *Can Ownership Be Justified by Natural Rights?*, 15 PHIL. & PUB. AFF. 156 (1986). Christman identifies a "strong sense" of natural right as a "right if and only if persons would have this right in a state of nature, prior to, and independent of, the establishment of any civil or political institution." *Id.* at 157. He identifies a "weak sense" of natural right as a right "not created or conferred by men's voluntary action," that is, it is not a right which is derived from positive law or social institutions." *Id.* at 158 (quoting H.L.A. Hart, *Are There Any Natural Rights?*, in RIGHTS 15 (David Lyons ed., 1979)). These are all contemporary secularized formulations of natural law. Historically, natural law had been conceptualized as the law of God (the "author" of both man and justice). See, e.g., ALAN RYAN, PROPERTY AND POLITICAL THEORY 14-48 (1984) (discussing the relationship between Locke's labor theories of property and the purposes of God).

154. "We hold these truths to be self-evident; that all men are created equal; that they are endowed by their creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness" THE DECLARATION OF INDEPENDENCE para. 2 (U.S. 1776).

established proposition that whatever thing that is property-subject-matter which a man makes out of materials belonging to no one else, is his exclusive property by natural right."¹⁵⁵

Natural rights form the basis of a common law right of inventors to use their inventions.¹⁵⁶ The natural right and common law right are often treated interchangeably,¹⁵⁷ and will be so treated here. The relationship between natural or common law rights in *inventions* and statutory rights conferred by *patents* ought not to be confused, however. The natural law or common law right is the right of an inventor to make, use, or sell her invention.¹⁵⁸ This right is non-exclusive. An inventor's natural right does not preclude others from making, using, or selling the invention, once the invention is disclosed to the public.¹⁵⁹ The patent right (if held by the inventor) is broader than the common law right, for it is the patent that grants the right to exclude others from making, using, or selling the invention.¹⁶⁰

Therefore, although natural rights in inventions are recognized by the courts, they may be extinguished or suppressed through patents or by other statutes.¹⁶¹ Since patent rights are granted, if at all, to the first inventor of an idea,¹⁶² the natural rights of later independent inventors of equivalent inventions are temporarily suppressed by the patent rights of the former.¹⁶³ Exclusive rights in inventions are not only distinct from

155. William E. Simonds, *Natural Right of Property in Intellectual Production*, 1 YALE L.J. 16, 17 (1891).

156. See, e.g., THE FEDERALIST No. 43, at 309 (James Madison) (Benjamin F. Wright ed., 1961) ("The utility of [the Patent and Copyright Clause] will scarcely be questioned. The copyright of authors has been solemnly adjudged, in Great Britain, to be a right of common law. The right to useful inventions seems with equal reason to belong to the inventors.").

157. See, e.g., *Arachnid, Inc. v. Merit Indus.*, 939 F.2d 1574, 1578 (Fed. Cir. 1991) ("[T]he act of invention itself vests an inventor with a common law or 'natural' right to make, use and sell his or her invention . . .").

158. See *id.*

159. See WILLIAM C. ROBINSON, PATENTS § 24 (1890), quoted in ROBERT A. CHOATE ET AL., PATENT LAW 2 (3d ed. 1987) ("An idea once communicated can no longer be exclusively appropriated and enjoyed. . . . Under the laws of nature the exclusive public use of an invention is thus impossible, and hence there is no natural right to such a use."); see also ROBINSON, *supra*, § 25, quoted in CHOATE ET AL., *supra*, at 3 ("The natural right of the public to appropriate all new ideas that may be voluntarily disclosed is no less evident than that of the inventor to conceal them. It is a law of nature that men should profit by the discoveries and inventions of each other.").

160. See *Arachnid*, 939 F.2d at 1578-79 ("A patent in effect enlarges the natural right, adding to it the right to exclude others from making, using or selling the patented invention. . . . [O]wnership only of the invention gives no right to exclude, which is obtained only from the patent grant.") (citation omitted); see also *Gayler v. Wilder*, 51 U.S. (10 How.) 477, 493 (1850) ("The inventor of a new and useful improvement certainly has no exclusive right to it, until he obtains a patent. This right is created by the patent, and no suit can be maintained by the inventor against any one for using it before the patent is issued.").

161. See Simonds, *supra* note 155, at 23-25.

162. 35 U.S.C. § 102 (1988).

163. See, e.g., *Crown Die & Tool Co. v. Nye Tool & Mach. Works*, 261 U.S. 24, 30 (1923):

The most common case of the separation of the patent and natural rights is where the structure of the patent in suit is dominated by some other and broader patent. The broader

natural rights in inventions, they are also “at odds with the inherently free nature of disclosed ideas.”¹⁶⁴ Furthermore, any natural rights justification for ownership of ideas would seem to be offset by a natural rights argument to copy the ideas of others.¹⁶⁵

The distinction between the natural rights of inventors and patent rights granted by statute, however, does not rule out a natural rights basis in patents. The “embarrassment of an exclusive patent”¹⁶⁶ must be justified on some sound, reasoned, moral basis.¹⁶⁷ Natural rights could provide such a justification; that is, by enacting the Patent Act, Congress could have been trying to protect or codify the natural rights of inventors.

The natural right of inventors to the use of their inventions has long been recognized, usually conceptualized as a form of first occupancy or discovery.¹⁶⁸ Natural rights also form the basis for other justifications of private property, such as the labor justification.¹⁶⁹ Often, however, natural rights are asserted as an undifferentiated justification for intellectual property. First occupancy and undifferentiated natural rights justifica-

patent may be older or younger or of the same date with the narrower patent. In either case, for the whole life of the broader patent, and this may be the whole life of the narrower patent as well, the patentee of the narrower patent has no natural right to make, use or sell the structure of his own patent. . . .

The exclusive right and the natural right flow from different sources, are of different kinds and need not co-exist. It is impossible to maintain any clean-cut line of patent law unless we totally divorce the two rights, and, in discussing the patent right, assume that the natural right is immaterial.

The separation between natural law and patent law property rights was further elaborated in *Graham v. John Deere Co.*, 383 U.S. 1, 9 (1966):

The patent monopoly was not designed to secure to the inventor his natural right in his discoveries. Rather, it was a reward, an inducement, to bring forth new knowledge. The grant of an exclusive right to an invention was the creation of society—at odds with the inherent free nature of disclosed ideas—and was not to be freely given.

Note that since copyright protects the form of expression rather than the idea itself, natural law *can* be used as a justification for copyright protection. See Simonds, *supra* note 155, at 24.

164. *Graham*, 383 U.S. at 9.

165. From the beginning of history, ideas have been shared, particularly in the realm of common defense, gathering food, building shelters, and clothing man.

Thus, it is “natural” both that persons with ideas and skills use them to their own advantage, and that other persons copy what they observe. . . .

. . . .

Regardless of any “natural” rights that artisans or tradesmen had in their own ideas, skills and inventions, these rights could not be profitably utilized without some means of protection and enforcement due to the “natural” right of others to copy what they observed.

CHOATE ET AL., *supra* note 159, at 1-3.

166. Letter from Thomas Jefferson to Isaac McPherson, *The Invention of Elevators*, (Aug. 13, 1813), in *THE WRITINGS OF THOMAS JEFFERSON* 329, 335 (Saul K. Padover ed., 1967).

167. LAWRENCE C. BECKER, *PROPERTY RIGHTS* 22-23 (1977); see also MUNZER, *supra* note 34, at 1-12.

168. See, e.g., 2 WILLIAM BLACKSTONE, *COMMENTARIES* *400-07 (including patents and copyrights with goods captured from alien enemies, things found, and animals wild by nature as having title by occupancy).

169. See *infra* Section III. B.1.b.

tions and their application to preinventions will be discussed first, followed by a discussion of labor theory.

a. First Occupancy Justifications

First occupancy represents one potential natural- rights-based justification for patent rights. The first occupancy justification proposes that previously unowned property belongs to the first party to "occupy" the property.¹⁷⁰ Property justifications based on first occupancy have, however, been widely criticized.¹⁷¹ First occupancy provides a satisfactory justification for private property ownership, it has been argued, only when certain conditions are met; two such conditions are: "(1) the object occupied is unowned; and (2) occupation is in some relevant sense actual as opposed to intentional or declaratory."¹⁷² Neither condition is satisfied in the case of preinvention assignment agreements.

The first requirement for first occupancy seemingly cannot be resolved in the preinvention assignment context. An invention is, of course, unowned until invented; once invented, however, it can be claimed immediately by both employee-inventor and employer. Each can claim a natural right as "inventor" based upon first occupancy.¹⁷³ Thus, while natural rights arguments may support patent rights for inventor-entities as against society, natural rights do not appear helpful in justifying patent rights of employee-inventors as against their employers (or vice versa). In the parlance of property law, the act of invention by an employee-inventor does not create a single first occupant but rather a joint first occupancy in the property.

The second requirement for first occupancy—actual occupancy (or exploitation) of the invention—is not a condition precedent to enforcement of patent rights under current patent law. Thus, a corporation could sue an inventor for infringing a patent issued for her invention (assuming that patent had been assigned to the corporation) merely on the basis of the corporation's status as patent holder. There need be no showing that the corporation ever had any intent to make, use, or sell the

170. See BECKER, *supra* note 167, at 24-26.

171. See, e.g., *id.* at 24-31 (arguing that "being there first" is not a sound basis for claims to ownership); DUKEMINIER & KRIER, *supra* note 151, at 133 (noting that first occupancy provides a weak normative justification for private property, though it fares somewhat better as a descriptive or explanatory theory of the origins of private property).

172. BECKER, *supra* note 167, at 24. Becker lists two other requirements for first occupancy to be a supportable justification of private property: "(3) the concept of actual occupation defines with reasonable clarity how much one can occupy; and (4) the occupier claims no more than a share as defined by (3)." *Id.* The latter two requirements do not preclude first occupancy as a justification when applied to preinvention disputes.

173. The assumption here is that, for natural rights purposes, the employer (if a corporation) would not be limited to the statutory definition of inventor contained within the Patent Code which precludes corporate inventorship. In other words, it is assumed that it is possible for a corporation to have a natural right in an invention.

invention. In other words, contrary to the requirements of first occupancy, ownership can be based on a declaratory occupancy.¹⁷⁴

b. Normative Labor Justifications

The labor theory is the predominant property justification articulated in Anglo-American jurisprudence and philosophy¹⁷⁵ and thus requires careful consideration when analyzing the property issues at stake in preinvention disputes. The labor theory is generally attributed to John Locke and the influential chapter on property in his *Second Treatise of Government*.¹⁷⁶ Locke's theory has both a normative and an instrumental justification.¹⁷⁷ The normative justification maintains that society rewards labor with property because labor is unpleasant and should be rewarded,¹⁷⁸ whereas the instrumental justification maintains that society rewards labor with property because labor (the expenditure of which is beneficial to society) is unpleasant and would not be expended without reward.¹⁷⁹ Although the two justifications are clearly distinct, it can often be difficult to determine which theory is being invoked by the courts.¹⁸⁰ In order to avoid such confusion, only the normative justifica-

174. It should be noted that some commentators continue to find natural rights support for intellectual property. For example, it has been asserted that the constitutional language of "securing" patent and copyright rights may imply a recognition of a natural rights basis in intellectual property. See Dratler, *supra* note 6, at 140 n.46 (citing Ramsey, *The Historical Background of Patents*, 18 J. PAT. OFF. SOC'Y 6, 14-20 (1936)); see also Sutton, *supra* note 117, at 50 ("'Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary, or artistic production of which he is the author.'") (quoting Universal Declaration of Human Rights, art. 27(2), adopted by U.N. General Assembly, Dec. 10, 1948); Amber L. Hatfield, Note, *Life After Death for Assignor Estoppel: Per Se Application to Protect Incentives to Innovate*, 68 TEX. L. REV. 251, 256 (1989) (discussing constitutional language in support of natural rights arguments). This support of natural rights in inventions, however, must be recognized as a justification of property rights of inventor-entities as against society and not as a justification for exclusive rights of either the employee-inventor or the employer.

175. See, e.g., BECKER, *supra* note 167, at 32; GRUNBAUM, *supra* note 35, at 52.

176. JOHN LOCKE, *THE SECOND TREATISE OF GOVERNMENT* 16-30 (Thomas P. Peardon ed., 1952) (1690).

177. Labor theories of property are sometimes divided into "avoidance" theories and "labor-desert" categories, each with normative and instrumental aspects. See Hughes, *supra* note 149, at 302-10. I feel that it is more helpful to divide labor theories into normative and instrumental categories.

178. Hughes, *supra* note 149, at 296.

179. *Id.*

180. Few Supreme Court cases have clearly articulated the distinction between the normative and instrumental purposes underlying patent law. Some cases, particularly the earlier ones, expressly adopted the normative argument. See, e.g., *Brown v. Duchesne*, 60 U.S. (19 How.) 183, 195 (1857) (stating that patent laws "secure to the inventor a just remuneration from those who derive a profit or advantage, within the United States, from his genius and mental labors"); *Scott Paper Co. v. Marcalus Co.*, 326 U.S. 249, 255 (1945) (stating that "by the patent laws Congress has given to the inventor opportunity to secure the material rewards for his invention"); see also *Brenner v. Manson*, 383 U.S. 519, 536 (1966) ("[A patent] is not a reward for the search, but compensation for its successful conclusion."). Others offered normative arguments as important, though secondary to instrumental arguments. See, e.g., *Zacchini v. Scripps-Howard Broadcasting Co.*, 433 U.S. 562, 577 (1977) (although "'reward to the [inventor may be] a secondary consideration,' . . . [patent

tion will be discussed under this heading; the instrumental (or utilitarian) justification will be addressed under a separate heading.

In his *Second Treatise*, Locke articulates three distinct but related normative labor justifications for property.¹⁸¹ The first normative justification—referred to here as the basic labor justification—proceeds in three steps:

- (1) one's body is one's property;
- (2) thus, one's labor—the product of one's body—must be one's property;
- (3) thus, the product of one's labor must also be one's property.¹⁸²

The second justification—referred to here as the "value-added" justification—claims that one's labor, which is one's property, adds value to things as they exist in their natural unlabored-upon state, and this addition of value justifies property in the thing labored upon.¹⁸³ The third justification—referred to here as the "labor-desert" justification—maintains that one's labor, which is one's property, adds value to things as they exist in their natural unlabored-upon state, and it would be unjust for others to appropriate the benefit of one's labors, so long as the laborer

protection was] 'intended definitely to grant valuable, enforceable rights.' ") (citations omitted). Still others clearly favored the instrumental theory over the normative. *See, e.g.,* Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 511 (1917) (emphasizing that the Supreme Court "has consistently held that the primary purpose of our patent laws is not the creation of private fortunes for the owners of patents but is 'to promote the progress of science and useful arts,' " (quoting U.S. CONST. art. I, § 8, cl. 8)), while noting that inventors are to be "fairly, even liberally, treated").

In some cases, it appeared that the court offered both justifications without preference. For example, in *Grant v. Raymond*, 31 U.S. (6 Pet.) 218, 242-43 (1832), Chief Justice Marshall stated that a patent is

the reward stipulated for the advantages derived by the public for the exertions of the individual, and is intended as a stimulus to those exertions. . . .

. . . The great object and intention of the [patent] act is to secure to the public the advantages to be derived from the discoveries of individuals, and the means it employs are the compensation made to those individuals for the time and labour devoted to these discoveries.

The imprecise manner in which courts and commentators invoke labor justifications for intellectual property provides little theoretical guidance for the resolution of preinvention assignment disputes.

181. LOCKE, *supra* note 176, at 17-24. The description of Locke's normative labor theories draws heavily upon BECKER, *supra* note 167, at 32-43.

182. Or in Locke's own words:

[E]very man has a property in his own person; this nobody has any right to but himself. The labor of his body and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature has provided and left it in, he has mixed his labor with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature has placed it in, it has by this labor something annexed to it that excludes the common right of other men. For this labor being the unquestionable property of the laborer, no man but he can have a right to what that is once joined to, at least where there is enough and as good left in common for others.

LOCKE, *supra* note 176, at 17.

183. *Id.* at 18. Note that the "value-added" justification is a variant of the basic labor justification.

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leaves “enough and as good” in the commons for others.¹⁸⁴

Although Locke’s normative labor justifications have come under some criticism from commentators,¹⁸⁵ each provides powerful arguments in support of allocating intellectual property rights to inventors rather than to society.¹⁸⁶ However, the issue underlying preinvention assignment disputes is not *whether* society should allocate intellectual property rights, but rather, *how* society should allocate such rights. None of Locke’s normative justifications provides a satisfactory answer. Instead, the justifications raise additional questions. Who is the laborer under the basic labor justification: the employee-inventor or the employer? What added the value under the value-added justification: the employee-inventor’s personal capital or the employer’s financial capital? And who deserves to be rewarded under the labor-desert justification? Once again, the lack of a meaningful legal definition of inventorship—one that reflects contemporary models of invention—stands in the way of a satisfactory resolution.

2. *Utilitarian (or Instrumental) Labor Justifications*

Instrumental justifications¹⁸⁷ have long been recognized as the basis for both statutory and common law intellectual property rights.¹⁸⁸ In fact, the usual justification for intellectual property in general, and the patent system in particular, is an instrumental one: society rewards inventors with patents (that is, provides exclusive rights to make, use, or

184. *Id.* at 20-21. The “labor-desert” justification is also a variant of the basic labor justification.

185. Robert Nozick, for example, asks why one should expect that mixing one’s labor with a thing results in ownership of the thing rather than in loss of one’s labor. ROBERT NOZICK, *ANARCHY, STATE, AND UTOPIA* 174-75 (1974).

186. Such arguments are based on four basic propositions: (1) inventions require labor; (2) inventions generally have some value to society; (3) one invention does not deplete the “commons” of potential future inventions; and (4) intellectual property rights are necessary to prevent appropriation of the “public good” aspect of the invention. Few would dispute the verity of the first and second propositions, and the third and fourth propositions were identified earlier as general characteristics of intellectual property. *See supra* note 147 and accompanying text.

Some commentators do question, however, the application of labor theory as a justification for intellectual property rights. *See, e.g.,* BECKER, *supra* note 167, at 47 (raising some concerns regarding the application of normative labor justifications to intellectual property, such as why certain classes of ideas are protected while others are unprotected, and why patents and copyrights expire after a term of years when rights in other property acquired by labor do not expire).

187. Instrumental justifications are similar to, but distinguishable from, utilitarian justifications. Utilitarian justifications for private property are based on the assumption that private property is necessary in order to achieve utility, or “human happiness.” *See, e.g.,* BECKER, *supra* note 167, at 57. Traditionally, this definition included a broad range of human social welfare concerns, but due to the difficulty of measuring most forms of human satisfaction, a narrower form of utilitarianism has developed based on the premise that private property is necessary to increase human *economic* welfare. *Id.* The former form of utilitarianism is referred to here as traditional utilitarianism, while the latter is referred to as instrumentalism.

188. *See, e.g.,* THE FEDERALIST, *supra* note 156, at 309 (noting utilitarian basis of constitutional Patent Clause).

sell inventions) because it must do so in order to encourage innovation.¹⁸⁹ The instrumental justification states that real work is required to innovate, and such work is unpleasant enough (at least, relative to leisure) that a rational actor would not engage in it without the expectation of some benefit.¹⁹⁰ Thus, people should be rewarded with property to motivate them to do work.¹⁹¹

With respect to intellectual property, the instrumental argument contends that society rewards inventors and authors with patents and copyrights because inventors and authors must be motivated to exert themselves to create. This theory relies on four essential premises. First, inventions require labor; in other words, the "eureka" model of invention (that is, invention by a sudden stroke of genius) either does not apply or applies so infrequently as to justify a *per se* reward.¹⁹² Second, the labor of invention is unpleasant, or at least less pleasant than leisure.¹⁹³ Thus, inventors will not invent simply for the love of it; they need external incentives.¹⁹⁴ Third, inventions, in aggregate, improve social welfare. Thus, it is worthwhile for society to provide incentives for inventors to suffer the unpleasantness of labor. Finally, the "public good" attribute of inventions requires intellectual property protection for inventors to appropriate value from their inventions.¹⁹⁵

Courts and legal commentators often rely on instrumental labor justifications for the patent system. Congressional grants of exclusive patent rights to inventors are frequently conceptualized as a *quid pro quo* from society to inventors (although there is far from universal agreement as to what is the *quid* and what is the *quo*).¹⁹⁶ The most commonly articu-

189. See, e.g., Hughes, *supra* note 149, at 303-04.

190. Justice Stone's dissent in *United States v. Dubilier Condenser Corp.*, 289 U.S. 178 (1933), describes scientists who are either irrational or from a nobler era: "It has been said that many scientists in the employ of the government regard the acceptance of patent rights leading to commercial rewards in any case as an abasement of their work." *Id.* at 218 n.9 (Stone, J., dissenting) (citing *Hearings on Exploitation of Inventions by Government Employees Before the Senate Comm. on Patents*, 65th Cong., 3d Sess. 16-17 (1919)).

191. Hughes, *supra* note 149, at 303. This instrumental argument should be distinguished from the normative argument, discussed *supra* Section III.B.1.b. Both arguments are based on two ideas: (1) labor is unpleasant, and (2) labor is necessary. The instrumental argument concludes that property must be used to motivate people to do unpleasant but necessary work. The normative argument, in contrast, concludes that people ought to receive property for doing unpleasant but necessary work.

192. See Hughes, *supra* note 149, at 300.

193. See *id.* at 302.

194. But see BENNETT, *supra* note 20, at 31 (showing "Love of Inventing" as the most frequently mentioned motive or incentive in survey of inventors).

195. For a discussion of "public good," see *supra* note 147 and accompanying text.

196. One economic commentator, for example, has parodied the economic literature on patents as follows: "What does the patent system give us, and at what cost? . . . Bentham claims something for nothing; Taussig responds nothing for nothing, Plant rejoins nothing for something; Arrow replies something (but not enough) for something . . ." George L. Priest, *What Economists Can Tell Lawyers About Intellectual Property: Comment on Cheung*, in 8 RES. IN L. & ECON. 19 (John

lated purpose of patents is to foster or stimulate invention.¹⁹⁷ This is often the sole purpose articulated by the courts.¹⁹⁸ Occasionally courts have noted additional instrumental purposes for the patent system, such as creating an incentive to disclose inventions.¹⁹⁹

Economic commentators, too, tend to frame the purposes of the patent system in incentive-based terms. For example, Edwin Mansfield has identified three justifications for patent laws: (1) to induce individual inventors to put in the work required to produce an invention; (2) to induce firms to make the investments required to bring the invention to commercial use; and (3) to induce firms to disclose inventions earlier than would otherwise be the case.²⁰⁰ Economic arguments, such as Mansfield's, tend to focus on the social utility of inventions and the need for inventors to appropriate rents on their creations. It should be noted, however, that not all economists are convinced about the efficacy of pat-

Palmer & Richard O. Zerbo, Jr. eds., 1986). In *United States v. Dubilier Condenser Corp.*, 289 U.S. 178 (1933), the Supreme Court described the *quid pro quo* in the following terms:

An inventor deprives the public of nothing which it enjoyed before his discovery, but gives something of value to the community by adding to the sum of human knowledge. He may keep his invention secret and reap its fruits indefinitely. In consideration of its disclosure and the consequent benefit to the community, the patent is granted. An exclusive enjoyment is guaranteed him for seventeen years, but upon the expiration of that period, the knowledge of the invention enures to the people, who are thus enabled without restriction to practice it and profit by its use.

Id. at 186-87 (citations omitted).

197. See, e.g., *Zacchini v. Scripps-Howard Broadcasting Co.*, 433 U.S. 562, 576 (1977) (stating that the desire to provide "an economic incentive for [the inventor] to make the investment required to produce" an invention underlies the patent law); *Goldstein v. California*, 412 U.S. 546, 555 (1973) ("The objective [of the Copyright and Patent Clause] is to promote the progress of science and the arts. As employed, the terms 'to promote' are synonymous with the words 'to stimulate,' 'to encourage,' or 'to induce.'"). This view, is, of course, consistent with the constitutional grant of authority to Congress "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. I, § 8, cl. 8.

198. See, e.g., *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 221 (1980) ("[T]he policy of stimulating invention that underlies the entire patent system runs [deep in our law]."); *Dr. Miles Medical Co. v. John D. Park & Sons Co.*, 220 U.S. 373, 401 (1911) ("The purpose of the patent law is to stimulate invention . . .").

199. The Court in *Aronson v. Quick Point Pencil Co.*, 440 U.S. 247 (1979), listed the following purposes of the patent system:

First, patent law seeks to foster and reward invention; second, it promotes disclosure of inventions to stimulate further innovation and to permit the public to practice the invention once the patent expires; third, the stringent requirements for patent protection seek to assure that ideas in the public domain remain there for the free use of the public.

Id. at 262.

200. Edwin Mansfield, *Intellectual Property, Technology and Economic Growth*, in *INTELLECTUAL PROPERTY RIGHTS IN SCIENCE, TECHNOLOGY, AND ECONOMIC PERFORMANCE: INTERNATIONAL COMPARISONS* 17, 23 (Francis W. Rushing & Carole G. Brown eds., 1990) [hereinafter *INTERNATIONAL COMPARISONS*]; see also Louis Kaplow, *The Patent-Antitrust Intersection: A Reappraisal*, 97 HARV. L. REV. 1813, 1823-24 (1984) (listing reward to patentee, stimulation of inventive activity, and improvement of social welfare as goals of the patent system); Yusing Ko, Note, *An Economic Analysis of Biotechnology Patent Protection*, 102 YALE L.J. 777, 791-800 (1992) (discussing incentive to invent and incentive to disclose theories).

ent laws in fostering invention.²⁰¹

Setting aside these concerns about the efficacy of patent laws, it remains unclear how one would resolve preinvention assignment disputes based on instrumental justifications. The resolution of these disputes would seem to depend upon the inventorship paradigm that one accepts. Adherents of the "hero-inventor" paradigm are sensitive to the need for individual incentives.²⁰² "Team-as-hero" proponents stress the importance of providing incentives for investment of capital in inventive activities.²⁰³ Both arguments have merit, and there appears to be no analytic

201. See, e.g., SENATE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS, SENATE COMM. ON THE JUDICIARY, 85TH CONG., 2D SESS., AN ECONOMIC REVIEW OF THE PATENT SYSTEM (Study No. 15, Comm. Print 1958):

No economist, on the basis of present knowledge, could possibly state with certainty that the patent system, as it now operates, confers a net benefit or a net loss upon society. The best he can do is to state assumptions and make guesses about the extent to which reality corresponds to these assumptions.

See also WARD S. BOWMAN, PATENT AND ANTITRUST LAW: A LEGAL AND ECONOMIC APPRAISAL 15-32 (1973) (summarizing conflicting economic appraisals of the patent system); Kaplow, *supra* note 200, at 1833-34 ("Yet our knowledge is inadequate to inspire great confidence even in the desirability of having a patent system at all, much less in the ability to make the subtle measurements of marginal effects that determine the ratio implicit in the optimal patent life."); Oddi, *supra* note 15, at 1101 (noting that while there is insufficient economic evidence to abolish the existing patent system, there would be insufficient economic evidence to justifying establishing a patent system in a society that did not already have one); Priest, *supra* note 196, at 21 ("[E]conomists know almost nothing about the effect on social welfare of the patent system or of other systems of intellectual property.").

A recent study has concluded that investors are indifferent to the knowledge that a firm's patent has been found invalid. See Page M. Kaufman, *An Empirical Study of the Effect of Patent Invalidity Judgments on the Abnormal Returns of Publicly Traded Securities*, 19 AM. INTELL. PROP. L. ASS'N Q.J. 282 (1991).

202. This corresponds to Mansfield's first justification. See *supra* text accompanying note 200. For examples of commentary supporting this view, see Sutton, *supra* note 6, at 152-53:

The incentive for a reward as drafted in the Constitution goes to the inventor, not his sponsor, employer, banker or spouse. It is the inventor who is to be encouraged, not the investor of mere money. Money cannot buy inventions, which do not exist until created. Individual people must create them. . . .

An incentive, by definition, is an inducement to action. If the employee has nothing more than a salary, which he will get whether he invents or just performs the research assigned to him, then what is the inducement to create something which is not obvious to one of ordinary skill in the art? . . . Some people will create without economic incentives, a pat on the back being sufficient for a long time. However, economic incentive—money—is a powerful force that can induce the extraordinary creativity that produces inventions. The founding fathers recognized it and wrote the incentive concept into the Constitution. Present-day employers have neutralized this incentive by requiring all inventions to be turned over to the employer even before they are conceived.

See also Ubell, *supra* note 117. Ubell notes that

the Constitution . . . contemplates promoting the progress of science and the useful arts by securing to inventors for a limited time exclusive rights to their inventions. The Constitution does not suggest promoting the progress of science and the useful arts by "securing to capitalists exclusive rights to the creations of inventors."

Id. at 30 (citation omitted).

203. This corresponds to Mansfield's second justification. See *supra* text accompanying note 200. For examples of commentary supporting this view, see Alden F. Abbott, *Developing a Framework for Intellectual Property Protection to Advance Innovation*, in INTERNATIONAL COMPARISONS, *supra* note 200, at 311, 320-21:

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basis upon which to favor one view over the other. It is possible to argue that the purposes of the patent system are best furthered by providing incentives for individuals to invent *or* by providing incentives for firms to invest in invention.

One commentator, Professor Jay Dratler, has proposed recognizing the need for incentives for both employee-inventors and their employers by dividing ownership of patent rights between individuals and firms according to the relative extent of "extraordinary effort" each has contributed towards the invention.²⁰⁴ Because the relationship between patent incentives and inventive output is difficult to demonstrate,²⁰⁵ however, it is difficult to imagine how instrumental arguments can be used to divide the patent incentive *between* employers and employee-inventors. Additionally, as Dratler himself has persuasively argued, incentives do not act on an undifferentiated corporate entity but rather upon individuals within the corporate structure.²⁰⁶ When the roles of individuals other than inventors within firms are examined, patents may not provide real incentives to innovate.²⁰⁷

[R]isk-averse firms will be reluctant to hire research staffs and establish research facilities if there is no assurance that profits can be earned on that small portion of innovative projects. Intellectual property protection provides that necessary assurance. Without such protection firms would run the risk that, because of free-riding, their innovations would earn insufficient profits to offset the losses stemming from failed research efforts. For the same reason, capital markets would be far less willing to provide funds for independent research efforts in a world without intellectual property protection. In short, without intellectual property protection, talented scientists and engineers would find it much harder to obtain the backing needed to explore new avenues of research, and innovation would proceed at a far slower pace to the detriment of society.

See also BOWMAN, *supra* note 201, at 23-28 (summarizing arguments, principally those of Arrow, that markets tend to under-reward invention, and that patent protection is thus needed to correct for this market failure). Commentators adopting this view tend to downplay the role of individuals. See, e.g., Zuber, *supra* note 6, at 146, 148:

Let us look for a moment at the effects of patent policy on the inventor, the repository of the creativity that we are discussing. . . . There is an increased tendency to assert individual rights to ideas which may properly be ascribed to a group effort. . . .

....
In speaking of recognition, direct monetary awards to inventors needs mentioning. Proponents of this type of reward believe that creativity would be fostered. Direct monetary rewards certainly could be part of any patent policy, but, personally, I have great difficulty with this concept stemming from the fact that projects are assigned and are not selected by those doing the research. The truly creative people are a precious few. Good management is apt to reserve them for projects where immediate results are required. I have known cases where scientists of little more than average ability have made inventions of considerable economic importance because management could afford to assign them to long-term projects. Providing high rewards for such efforts is akin to a lottery. Such rewards are not apt to foster a climate in which individuals feel rewards stem from excellence rather than from the luck of the draw. Consequently, I have very deep and profound doubts that direct monetary awards are apt to make a positive contribution to a creative environment.

204. See Dratler, *supra* note 6. Actually, this is really a normative labor argument rather than an instrumental one. It is mentioned here, however, because Dratler frames his argument in instrumental terms.

205. See *supra* note 201 and accompanying text.

206. Dratler, *supra* note 6, at 173.

207. *Id.* at 172-75. Corporate technical workplaces, like most workplaces, are hierarchical

One might argue that it does not matter whether the employee-inventor or employer receives the initial patent entitlement because the parties will distribute it between themselves by private agreement so as to maximize inventive productivity.²⁰⁸ This argument is flawed on several grounds. First, it assumes that transaction costs are zero. As discussed earlier, however, transaction costs are particularly high in the preinvention context because of the difficulties of *ex ante* bargaining for speculative rights, and those of *ex post* bargaining where the contributions of the parties are hard to quantify objectively.²⁰⁹ Second, this claim assumes a functioning market for employee-inventors. In fact, the market for technical employees is susceptible to contracts of adhesion.²¹⁰ Finally, the argument assumes that firms and society value inventions similarly. In reality, a given invention may be of little value to a particular firm but of great value to society generally (or vice versa).

Instrumental labor arguments, then, are not useful in resolving preinvention assignment conflicts. Even if incentives are required to get inventor-entities to invent, it is impossible to determine *ex ante* which component of the inventor-entity—employee-inventor or employer—requires that incentive. Moreover, even if *ex post* determinations can be made to allocate intellectual property rights to the employee-inventor or employer based upon relative contribution or other criteria, such determinations, strictly speaking, are normative rather than instrumental in approach. Furthermore, any incentive effect of an *ex post* reward would be severely attenuated due to the extremely speculative nature of the reward: the likelihood of successful invention is speculative, the likelihood of a patent award upon success is speculative,²¹¹ and the likelihood of a property interest in the patent if awarded is speculative since the relative contributions of the parties cannot be determined *ex ante*.

environments: technicians report to engineers, who report to project leaders, who report to managers, and so on. Each has different priorities. The support of an engineering manager may be critical to an invention's success (such as in assigning resources) but may not rise to the level recognized by the patent law for "reward." In fact, the manager understandably may have a disincentive for the engineer to invent (and expend time and resources) when the invention is unrelated to an area for which the manager has responsibility or in which the corporation has a bona fide business interest. Yet the invention may be very valuable to society. The point is that there is an agency cost associated with allowing corporations to provide their own incentive structures for inventors in place of those provided by the patent law. That is, there is at least a potential divergence between the interests of society and those of corporations in the fostering of inventions.

208. This argument is based on a variation of the Coase Theorem. See Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

209. See *supra* notes 125-26 and accompanying text for discussion of the difficulties of *ex ante* and *ex post* bargaining.

210. See *supra* notes 113-17 and accompanying text for discussion of adhesion contracts.

211. The invention may be deemed non-novel, obvious, or anticipated by the Patent Office.

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3. *The Failure of Traditional Theories*

None of the natural law and utilitarian theories discussed in this Comment is appropriate for resolving preinvention assignment disputes because none adequately distinguishes between the employee-inventor and employer. Similarly, other justifications that have been used for private property generally and for patents in particular²¹² provide little guidance in resolving preinvention assignment disputes. Given this failure of traditional theories, it is not surprising that employee-inventors and employers have been unable to arrive at a contractual agreement that is satisfactory to both parties. Perhaps, then, it is time to go beyond the traditional theories in search of a resolution for preinvention assignment disputes.

IV

PERSONHOOD AND THE EMPLOYEE-INVENTOR: AN ALTERNATIVE FRAMEWORK FOR THE RESOLUTION OF PREINVENTION ASSIGNMENT DISPUTES

Part II explained that the proliferation of preinvention assignment agreements was partly a response by corporations to changes in inventorship paradigms that were not reflected in the patent law conception of inventorship. Although these agreements present numerous contractual difficulties, they are generally enforced by the courts, perhaps in recognition of the deficiencies in patent law.

Part III responded to the limitations of contract and patent doctrine by applying traditional property justifications to the allocation of property rights in preinventions. These traditional justifications were found inadequate for resolving preinvention assignment disputes. However, the full range of theoretical property justifications was not exhausted in Part III. This Part of the Comment will examine an alternative theoretical property framework: personhood theory.

212. Professor Kitch, for example, has proposed a "prospect" theory of patents, analogizing the patent system to the property system protecting mineral rights. Kitch posits that patents essentially grant exclusive rights to develop a prospect—the prospect of *future* inventions. See Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 266 (1977) (first proposing the prospect theory). But see Roger L. Beck, *The Prospect Theory of the Patent System and Unproductive Competition*, in 5 RES. IN L. & ECON. 193, 199-206 (Richard O. Zerbe, Jr., ed., 1983) (arguing that empirical evidence undermines the prospect theory). Grady and Alexander have proposed a rent dissipation theory of patents whereby patents are rewarded to maximize the difference between the value of an invention to society and its development cost by discouraging copying and redundant development costs and preserving such rents for successful inventors. Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305, 316-21 (1992). Neither the prospect theory nor the rent dissipation theory adequately accounts for the firm/employee dichotomy of the inventor-entity.

A. Personhood Theories of Property

The personhood theory of property focuses on the relationship between property and personality. Property, it is argued, is justified because it is conducive, perhaps necessary, to the development of personality. Personality has many meanings. For example, personality can refer to "moral and political personhood,"²¹³ "awareness of individuating characteristics,"²¹⁴ or "the desirable integration of the self's thoughts and attitudes."²¹⁵ Every meaning of personality contains some notion of the person as an autonomous, moral, individuated agent. Although different formulations of personhood theory emphasize different meanings of personality, elements of each of these meanings are always present.

Personhood theory has been characterized here as an alternative theory of property in the sense that the analysis is, to some extent, outside the mainstream of judicial, if not philosophic, thought. However, personhood theories of property are by no means new. Elements of a personhood theory of property are evident in the work of Plato and Aristotle,²¹⁶ although personhood theory as we understand it today was first limited at in the work of Kant in the eighteenth century.²¹⁷ Kant, however, was working within a natural rights framework,²¹⁸ and thus Kantian personhood is really more a variant of traditional property theory than an alternative theory.²¹⁹

213. MUNZER, *supra* note 34, at 81.

214. *Id.* at 82.

215. *Id.* at 84.

216. *See id.* at 125-29.

217. *See* RYAN, *supra* note 153, at 73-90 (discussing Kant and personhood theory). Personhood theory today places property that is constitutive of personality outside the market. This is perhaps first alluded to in a oft-quoted passage by Kant:

In the kingdom of ends everything has either a *price* or a *dignity*. If it has a price, something else can be put in its place as an *equivalent*; if it is exalted above all price and so admits of no equivalent, then it has a dignity.

. . . .

. . . [M]orality, and humanity so far as it is capable of morality, is the only thing which has dignity.

IMMANUEL KANT, *GROUNDWORK OF THE METAPHYSIC OF MORALS* 102 (H.J. Paton trans., 1964).

218. *See* STEVEN B. SMITH, *HEGEL'S CRITIQUE OF LIBERALISM* 70-80 (1989).

219. Another 18th-century natural-rights-based property justification with elements of personhood is the concept of artists' moral rights. *See generally* DRATLER, *supra* note 25, § 6.01[6]; Karen M. Corr, Comment, *Protection of Art Work Through Artists' Rights: An Analysis of State Law and Proposal for Change*, 38 AM. U. L. REV. 855 (1989); Craig A. Wagner, Comment, *Motion Picture Colorization, Authenticity, and the Elusive Moral Right*, 64 N.Y.U. L. REV. 628 (1989). The moral rights of artists and authors have been especially important in French jurisprudence, where rights in works of art and literature have been divided into economic rights (*droits patrimoniaux*) and creative rights (*droit moral*). Corr, *supra*, at 863; Wagner, *supra*, at 687. The concept of personal, inalienable, moral rights of artists has much in common with the personhood interests of inventors discussed in this Comment. Personhood, as described here, however, seeks to protect different interests and is based on a different philosophic foundation than moral rights.

1. Hegelian Personhood

An alternative philosophy of property and its relationship to person-ality independent of natural rights or utilitarian justifications was developed by Hegel in the early nineteenth century, based on his conceptions of will, freedom, and personhood.²²⁰ Hegel believed that each person has both an internal and an external existence.²²¹ One's internal existence is her will, and one's external existence is her sphere of freedom.²²² Hegel stressed the importance of self-actualization, or the lack of dependence on an other.²²³ However, self-actualization and the extension of one's sphere of freedom are achieved, in Hegel's view, not by withdrawing from the external world but rather by "overcoming it,"²²⁴ or putting one's will into external objects—into property.

For Hegel, freedom meant relating to external objects so that they become integrated into one's personality. Personality is the reconciliation of the inner self and external world.²²⁵ Property—the relationship between persons and things²²⁶—is the means by which we achieve this reconciliation. Property, then, is central to Hegel's theory of the fully

220. G.W.F. HEGEL, *ELEMENTS OF THE PHILOSOPHY OF RIGHT* (Allen W. Wood ed. & H.B. Nisbet trans., 1991). The editor of this edition cautions that "Hegel is cited much more frequently than he is read, and discussed far oftener than he is understood." *Id.* at xxvii. I have quoted liberally from Hegel in these notes so as to address the former concern, if not the latter.

221. "As the *immediate* concept and hence also [as] essentially individual, a person has a *natural* existence [*Existenz*] partly within himself and partly as something to which he relates as to an external world." *Id.* § 43 (alterations in translation).

222. The person must give himself an external *sphere of freedom* in order to have being as Idea. The person is the infinite will, the will which has being in and for itself, in this first and as yet wholly abstract determination. Consequently, this sphere distinct from the will, which may constitute the sphere of its freedom, is likewise determined as *immediately different and separable* from it.

Id. § 41.

223. "Only in this freedom is the will completely *with itself* [*bei sich*], because it has reference to nothing but itself, so that every relationship of *dependence* on something *other* than itself is thereby eliminated." *Id.* § 23 (alteration in translation).

The *universality* of this will which is free for itself is formal universality, i.e. the will's self-conscious (but otherwise contentless) and *simple* reference to itself in its individuality [*Einzelheit*]; to this extent, the subject is a *person*. It is inherent in *personality* that, as *this* person, I am completely determined in all respects (in my inner arbitrary will, drive, and desire, as well as in relation to my immediate external existence [*Dasein*]), and that I am finite, yet totally pure self-reference, and thus know myself in my finitude as *infinite, universal, and free*.

Id. § 35 (alteration in translation).

224. G.W.F. HEGEL, *HEGEL'S PHILOSOPHY OF MIND* § 382 (William Wallace & A.V. Miller trans., 1971).

225. See *supra* notes 221, 223.

226. To have even external power over something constitutes *possession*, just as the particular circumstance that I make something my own out of natural need, drive, and arbitrary will is the particular interest of possession. But the circumstance that I, as free will, am an object [*gegenständlich*] to myself in what I possess and only become an actual will by this means constitutes the genuine and rightful element in possession, the determination of *property*.

HEGEL, *supra* note 220, § 45 (alteration in translation).

self-actualized free person; it is the essence of personality.²²⁷

The rules of Hegelian property law flow directly from the Hegelian conception of property. To make a thing one's property, one must be the first²²⁸ to take actual possession²²⁹ of the thing, or the first to mark the thing as one's own.²³⁰ Property, in the form of ordinary external things, is alienable,²³¹ but property which forms an essential element of personality must be inalienable.²³²

2. Radinian Personhood

In recent years, Professor Margaret Radin has used an essentially Hegelian framework to extensively examine the relationship between property and personhood.²³³ Property rights exist, Radin argues, be-

227. Or, in Hegel's terms, the "existence" [*Dasein*] of personality. See *id.* § 51 ("property . . . is the existence [*Dasein*] of personality") (alteration in translation); *id.* § 50 ("personality must have existence [*Dasein*] in property.") (alteration in translation). This concept has also been translated as saying that "property is the embodiment of personality." G.W.F. HEGEL, *HEGEL'S PHILOSOPHY OF RIGHT* § 51 (T.M. Knox trans., 1952) (alteration in translation).

228. That a thing [*Sache*] belongs to the person who happens to be the first to take possession of it is an immediately self-evident and superfluous determination, because a second party cannot take possession of what is already the property of someone else.

. . . The first is not the rightful owner because he is the first, but because he is a free will, for it is only the fact that another comes after him which makes him the first.

HEGEL, *supra* note 220, § 50 (alteration in translation).

229. "My inner idea [*Vorstellung*] and will that something should be mine is not enough to constitute property . . . on the contrary, this requires that I should take possession of it. The existence which my willing thereby attains includes its ability to be recognized by others." *Id.* § 51 (alteration in translation).

230. That mode of taking possession which is not actual in itself but merely represents my will occurs when I mark a thing [*Sache*] with a sign to indicate that I have placed my will in it

Taking possession by designation is the most complete mode of all If I seize a thing or give form to it, the ultimate significance is likewise a sign, a sign given to others in order to exclude them and to show that I have placed my will in the thing.

Id. § 58 (alteration in translation).

231. It is possible for me to alienate my property, for it is mine only in so far as I embody my will in it. Thus, I may abandon (*derelinquiere*) as ownerless anything belonging to me or make it over to the will of someone else as his possession—but only in so far as the thing [*Sache*] is external in nature.

Id. § 65 (alteration in translation).

232. "Those goods, or rather substantial determinations, which constitute my own distinct personality and the universal essence of my self-consciousness are therefore inalienable, and my right to them is imprescriptible. They include my personality in general, my universal freedom of will, ethical life, and religion." *Id.* § 66.

233. See Margaret J. Radin, *The Liberal Conception of Property: Cross Currents in the Jurisprudence of Takings*, 88 COLUM. L. REV. 1667 (1988); Margaret J. Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849 (1987) [hereinafter Radin, *Market-Inalienability*]; Margaret J. Radin, *Property and Personhood*, 34 STAN. L. REV. 957 (1982) [hereinafter Radin, *Property and Personhood*]; Margaret J. Radin, *Residential Rent Control*, 15 PHIL. & PUB. AFF. 350 (1986) [hereinafter Radin, *Residential Rent Control*]. It should be noted that personhood has been investigated as a basis for the Lockean labor justification of property as well. See BECKER, *supra* note 167, at 48-49. Compare the Hegelian justification (set forth *supra* Section IV.A.1), the Radinian justification (set forth *infra* notes 234-47 and accompanying text), and Becker's proposed (but ultimately rejected) explanation for a labor justification of property (set forth here):

[L]abor is (in some circumstances) psychological appropriation—appropriation in the sense

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cause people achieve self-identification (that is, they define their “selves” as people) through external objects.²³⁴ Certain objects become “bound up with personhood”²³⁵ because of the way we use those objects to define ourselves as people. Unlike more traditional theories which focus on the creation of the property, the personhood theory looks to the “subjective relationship between the holder and the thing.”²³⁶ Radin uses a wedding ring, a portrait, an heirloom, and a home²³⁷ as examples of objects which may be bound up with personhood for particular individuals.²³⁸ An indicium of a personality interest in property is a value to its owner that exceeds market value.²³⁹

At the opposite end of the property spectrum from personhood property²⁴⁰ is fungible property.²⁴¹

Property that is “personal” in this philosophical sense is bound up with one’s personhood, and is distinguishable from property that is held merely instrumentally or for investment and exchange and is therefore purely commercial or “fungible.” One way to look at this distinction is to say that fungible property is fully commodified, or represents the ideal of the commodity form, whereas personal property is at least partially noncommodified.²⁴²

By definition, the value of fungible property to its owner is its market value. Noncommodifiable property, by contrast, is property that is removed from the marketplace and is nonsalable.²⁴³ A fungible property market regime can be useful because it allows dissimilar property rights to be commensurable. Radin theorizes, however, that certain property rights are incommensurable. Property rights at the fungible end of the spectrum may be overridden, while property rights at the personhood

of a “felt incorporation” of the thing labored on ‘into’ one’s person. If it is true that I ‘am’ (psychologically) what I want to become as well as what I have become, then one can say with similar validity that I am what I have made. I am what I was, what I do, what I want to do, and what I produce. These are all greatly abbreviated locutions for complex facts about personality

BECKER, *supra* note 167, at 49.

234. Radin, *Property and Personhood*, *supra* note 233, at 959-61.

235. *Id.* at 959.

236. *Id.* at 987.

237. For judicial support of Radin’s theory of a personhood interest in one’s home, see *Silverman v. Barry*, 845 F.2d 1072, 1081 (D.C. Cir.) (noting that “[t]he law has long shown a special solicitude for the interest of a person in being secure in his or her home” (citing Radin, *Property and Personhood*, *supra* note 233), *cert. denied*, 488 U.S. 956 (1988)).

238. Radin, *Property and Personhood*, *supra* note 233, at 959.

239. *Id.* at 959-60.

240. This is an awkward linguistic construct, but the obvious alternative, “personal property,” carries too much legal baggage to use in this context.

241. Radin, *Property and Personhood*, *supra* note 233, at 960.

242. Radin, *Residential Rent Control*, *supra* note 233, at 362.

243. “When something is noncommodifiable, market trading is a disallowed form of social organization and allocation. We place that thing beyond supply and demand pricing, brokerage and arbitrage, advertising and marketing, stockpiling, speculation, and valuation in terms of the opportunity cost of production.” Radin, *Market-Inalienability*, *supra* note 233, at 1855.

end of the spectrum may not. Thus, Radin suggests, "The more closely connected with personhood, the stronger the entitlement."²⁴⁴

Radin does not propose that all property be inalienable and non-commodifiable. Rather, she stakes out a pluralist position somewhere on the broad continuum between Karl Marx and Richard Posner²⁴⁵ which she calls "market-inalienability," where some property is fully commodified, some is noncommodified, and some is partially or incompletely commodified.²⁴⁶ Incomplete commodification is designed to solve problems of "contested commodification"—property issues where there is active debate over the wisdom of either fully alienable or fully inalienable regimes. Radin identifies infants and children, fetal gestational services, blood, human organs, sexual services, and the services of college athletes as examples of contested commodification.²⁴⁷ Employee preinventions, it will be demonstrated, also represent a problem of contested commodification.

3. *Personhood and Inventorship*

If pork bellies are fungible and wedding rings are personal, where do patent rights belong? Courts have recognized the peculiarly personal nature of patent rights:

The reluctance of courts to imply or infer an agreement by the employee to assign his patent is due to a recognition of the peculiar nature of the act of invention It is the result of an inventive act, the birth of an idea and its reduction to practice; the product of original thought²⁴⁸

Commentators, too, have recognized the personality element of intellectual property.²⁴⁹ The identification of an inventor with her creation is similar to that of the writer or the painter with her creation.²⁵⁰ Personality in these latter forms of intellectual property has long been recognized.²⁵¹ This Section will show that inventors have significant personality stakes in their inventions as well.

244. Radin, *Property and Personhood*, *supra* note 233, at 986.

245. Radin, *Market-Inalienability*, *supra* note 233, at 1857.

246. *Id.* at 1955.

247. *Id.* at 1856.

248. *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 188 (1933).

249. For example, in tracing the history of patents, William Kingston remarks that the "[l]egal protection of disembodied information thenceforward reflected the view that the work of writers and inventors is an extension of their personalities, and consequently in some sense, 'theirs.'" KINGSTON, *supra* note 147, at 104.

250. See BROWN, *supra* note 42, at 236 (interviewing inventor Steven Wozniak: "I recognized that with every little key I had hit upon, I had done something in so few parts that it was outstanding in an artistic sense. To me, an artistic design meant very few components doing the maximum job.").

251. See, e.g., *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 250 (1903) (Holmes, J.) ("The copy [a lithograph] is the personal reaction of an individual upon nature. Personality always contains something unique. . . . That something he may copyright"). For a psychological

According to Radin, the identification of an element of personality in property is merely the first step in determining whether that property ought to be treated as legally personal. The next step is to determine if the personal identification is “justifiable.” Radin believes that person-thing relationships that facilitate an individual’s understanding of “freedom, identity, and contextuality”²⁵² are justifiable personhood interests because they contribute to “our conception of human flourishing.”²⁵³ There is no formula for determining if a particular property interest is justifiably personal. We are left to “rely instead on our best moral judgment in light of the best conception of personhood as we now understand it.”²⁵⁴

Work is an example of incomplete commodification. We expect nonmonetary returns from our work, even though we demand payment in return for our services.²⁵⁵ A person’s relationship with her work facilitates an understanding of the three elements mentioned above that contribute to human flourishing: freedom, identity, and contextuality.²⁵⁶ Preinventions are reified inventive work which implicate each of these three elements. “Freedom” refers to the autonomy aspect of personhood, the ability “to act for ourselves through free will in relation to

examination of the relationship between art and artist, see generally OTTO RANK, *ART AND ARTIST: CREATIVE URGE AND PERSONALITY DEVELOPMENT* (Charles F. Atkinson trans., 1932).

252. Radin, *Market-Inalienability*, *supra* note 233, at 1908. These terms are defined *infra* text accompanying notes 257, 258, and 259, respectively.

253. Radin, *Market-Inalienability*, *supra* note 233, at 1908.

254. *Id.* at 1909. Although Professor Radin does not address the question of whether inventions represent justifiable personal property, her treatment of a person’s identification with her work as a justifiable personhood interest provides a useful insight:

The view that personhood is involved with continuity of context need not be limited to the property or object relations [heirlooms, wedding rings, homes, and so on] I am discussing here. It could generate other categories of human interactions where continuity is involved with personhood, perhaps most notably in connection with work and the workplace.

Radin, *Residential Rent Control*, *supra* note 233, at 363.

255. See Radin, *Market-Inalienability*, *supra* note 233, at 1918. Highly routinized work will tend to be more commodified than creative work because it is reasonable to expect greater non-monetary returns from the latter than the former. Work is partially decommodified through such mechanisms as minimum wage requirements, health and safety requirements, and anti-discrimination requirements. *Id.* at 1919. Consider the following description of work on an automobile assembly line, work that is highly commodified (though highly regulated):

[T]he only meaning of the job is in the pay check, not in anything connected with the work or the product. Work appears as something unnatural, a disagreeable, meaningless and stultifying condition of getting the pay check, devoid of dignity as well as of importance. . . . No wonder that this results in an unhappy and discontented worker—because a pay check is not enough to base one’s self-respect on.

PETER F. DRUCKER, *CONCEPT OF THE CORPORATION* 179 (1946). On the other hand, Professor Williamson would reject the notion that highly commodified work is an “inferior” form of employment since some workers will actually prefer such jobs. See WILLIAMSON, *supra* note 84, at 268-69 (asserting that automobile assembly workers, for example, choose highly commodified work because they voluntarily sacrifice work satisfaction for greater pay). Professor Williamson acknowledges, however, that “capitalism is prone to undervalue dignity and that institutional safeguards can sometimes be forged that help to correct the condition.” *Id.* at 271.

256. Radin, *Market-Inalienability*, *supra* note 233, at 1920.

the environment of things and other people."²⁵⁷ "Identity" refers to individuation, which requires "the integrity and continuity of the self over time."²⁵⁸ Autonomy and individuation are, as mentioned earlier, common elements of any definition of personhood. "Contextuality," as that term is used by Professor Radin, combines elements of both autonomy and individuation. Contextuality refers to the development and constitution of the self through "relationships with the social and natural world."²⁵⁹

An inventor's autonomy over her own inventiveness is diminished when another entity, her employer, holds the exclusive right to make, use, or sell her creative output. Some degree of control over one's own inventions is required to make possible, and protect, the constituting of autonomous personhood in inventive work.²⁶⁰ An inventor's individuation is threatened when an employer can preclude an inventor from continuing to work with her creation even after she leaves the employment relationship. Some degree of inventive continuity is required to make possible, and protect, the constituting of individuating personhood in inventive work.²⁶¹ An inventor's self-development and self-conception through contextuality are impaired when her relationship with her inventions—her work—is determined not by her, but by her employer,²⁶² and when her work is monetized, alienated, and detached from her self²⁶³ and from the "particulars" integral to her self.²⁶⁴ Thus Professor Radin's personhood theory can provide useful insights for resolving preinvention assignment disputes.

One might ask why inventors should receive special treatment under personhood theory that other laborers do not enjoy. For example, as Professor James Boyle has noted in a somewhat different context, "We do not think it is necessary to give car workers residual property rights in the cars that they produce—wage labor is thought to work perfectly well."²⁶⁵ The rebuttal, of course, is that the important distinction is not between "car workers" and inventors, but rather between the making of

257. *Id.* at 1904.

258. *Id.*

259. *Id.* "[C]ontextuality implies that self-development in accordance with one's own will requires one to will certain interactions with the physical and social context because context can be integral to self-development." *Id.* at 1905.

260. *See id.* at 1920 (equating control over work with the freedom aspect of personhood).

261. *See id.* (equating continuity of work with the identity aspect of personhood).

262. *See id.* (equating "self-conception inseparable from one's work" with the contextuality aspect of personhood).

263. *See id.* at 1905-06.

264. Among the "particulars" integral to the self are "politics, work, religion, family, love, sexuality, friendship, altruism, experiences, wisdom, moral commitments, character, and personal attributes." *Id.* at 1906.

265. James Boyle, *A Theory of Law and Information: Copyright, Spleens, Blackmail, and Insider Trading*, 80 CALIF. L. REV. 1416, 1463 (1992) (questioning the special status of authorship generally).

cars and the making of inventions. Cars are assembled according to precise specifications by the repetitious performance of assigned tasks. Inventions are “the fugitive fermentation of an individual brain.”²⁶⁶ It is justifiable and consistent with our notions of human flourishing for an inventor to embody her personality in her invention (or at least in certain of her inventions), even when she receives wages in return for her efforts. It is not justifiable for an autoworker to embody her personality in any one of the many identical automobiles upon which she labors.²⁶⁷

The notion that patent rights are bound up with personhood is a familiar one to patent law. For example, under the Patent Code, applications must be made by human inventors, not their corporate assignees.²⁶⁸ Furthermore, the application must include an oath by the human inventor.²⁶⁹ Similarly, the remedies available in patent disputes indicate that the law views patents as a form of property imbued with a strong element of personality. In disputes over fungible property, damages are considered an adequate remedy; in patent disputes, however, equitable relief is the norm.²⁷⁰ More to the point, contracts for the assignment of patent rights are specifically enforceable, even though traditionally only contracts with strong personality elements have been specifically enforceable.²⁷¹

266. Letter from Thomas Jefferson to Isaac McPherson, *supra* note 166, at 334.

267. See DRUCKER, *supra* note 255, at 179 (noting the lack of personhood associated with the product of an autoworker).

268. 35 U.S.C. § 111 (1988). For exceptions to this rule, see *id.* §§ 117-118 (dealing with the death or incapacity of an inventor or her refusal to assign).

269. *Id.* § 115.

270. For example, although damages are by no means unheard of, injunctive relief is virtually automatic upon a finding of patent infringement. Injunctive relief is authorized by 35 U.S.C. § 283 (1988). Once final judgment has been entered as to validity and infringement, the general rule is that an injunction will issue, absent a sufficient reason for denying it. See *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1247 (Fed. Cir.), *cert. denied*, 493 U.S. 853 (1989); see also PAUL GOLDSTEIN, COPYRIGHT, PATENT, TRADEMARK AND RELATED STATE DOCTRINES 503 (3d ed. 1990) (“Courts will grant a prevailing patent owner an injunction for the remainder of the patent’s life almost as a matter of course . . .”). The injunctive remedy is thought to be required in order to achieve the goals sought by the patent system. See, e.g., *Smith Int’l, Inc. v. Hughes Tool Co.*, 718 F.2d 1573, 1578, (Fed. Cir.) (noting that “[w]ithout the right to obtain an injunction, the right to exclude granted to the patentee would have only a fraction of the value it was intended to have, and would no longer be as great an incentive to engage in the toils of scientific and technological research.”), *cert. denied* 464 U.S. 996 (1983).

271. Comment 2 to U.C.C. § 2-716 speaks of contracts for the sale of “heirlooms or priceless works of art” as those which have been specifically enforced, though the comment goes on to state that “uniqueness is not the sole basis” of remedy under the section. U.C.C. § 2-716 cmt. 2 (1990). The examples sound remarkably like those Radin says exemplify personhood property. Professor Dan-Cohen has noted the relationship between personhood property and specific enforcement:

The view that “property is but the periphery of my person extended to things” endows our property (or in any event, some parts of it) with the special worth that calls for specific enforcement. This, of course, does not deny our right to alienate our property for a price, if we so choose. But as long as we have not freely elected to do so, our property (or whatever part of it that is thought to fit the perspective under consideration) remains infused with our will and bound up, through it, with our moral personality. As such, it should not be forcefully priced away from us.

It should be noted that at least one commentator, Justin Hughes, has cautioned against the application of personhood theory to inventions.²⁷² Hughes articulates three specific concerns. First, it is difficult to determine reliable indicia of who does and does not have a personality stake in any particular invention.²⁷³ Second, personality will be manifested to different degrees in particular inventions, and it is unclear whether different levels of personality call for different levels of protection.²⁷⁴ Finally, different categories of inventions embody different levels of personality, which may (or may not) justify different levels of protection.²⁷⁵ When each of these concerns is examined in terms of preinventions, however, none appears particularly problematic.²⁷⁶

Patent law has a distinct advantage over many other forms of property law when identifying reliable indicia of personality: the inventor-entity must be identified on the patent application. The inventor as defined by current patent law is an underinclusive indicium of personality, however, because other entities, such as an assistant, may also have a personality stake in an invention.²⁷⁷ This situation is a criticism of personality theory generally, however, rather than as applied to intellectual property. After all, any indicium of a personality stake in property can be underinclusive. For example, a mother may have a personality stake in her child's rental apartment if she visits regularly. The law recognizes the renter's interest,²⁷⁸ just as the law should recognize the inventor's interest. In both cases, the indicia of personality (such as having one's name on the rental agreement or patent application, respectively) are reliable. The law generally does not recognize the mother's or the assis-

DAN-COHEN, *supra* note 55, at 97 (quoting RUDOLPH VON JHERING, *THE STRUGGLE FOR LAW* 59 (1915)).

272. Hughes, *supra* note 149, at 339-54. Hughes notes that "[p]oems, stories, novels, and musical works are clearly receptacles for personality"; in contrast, Hughes argues that patents are not thought of "as manifesting the personality of an individual, but rather as manifesting a raw, almost generic insight." *Id.* at 340-41.

273. *See id.* at 339.

274. *See id.* at 339-44.

275. *See id.* at 339, 344-50.

276. It should be noted as a threshold matter that personhood will ultimately be used in this Comment not as a *justification* for patent rights, but, to the contrary, as a *trump* of patent rights, as the basis of a defense to patent infringement. *See infra* Sections IV.C.3.b-c. Nevertheless, it is useful to examine Hughes' objections to personhood theory as a justification for patent protection, as these objections are relevant to the discussion that follows. *See, e.g., infra* Section IV.C.1. (discussing non-appropriability of invention rights); *infra* Section IV.C.2. (discussing a cancelling or balancing approach to invention rights).

277. *See, e.g.,* BURLINGAME, *supra* note 41, at 6 (noting that "[inventor-heroes] had valuable assistants who, sometimes, were greater inventors than they").

278. For a discussion of personhood interests in rental housing, see generally Radin, *Market-Inalienability*, *supra* note 233, at 1918-21; Radin, *Residential Rent Control*, *supra* note 233. For a criticism of the view that personhood interests in rental property should be recognized, see Timothy J. Brennan, *Rights, Market Failure, and Rent Control: A Comment on Radin*, 17 PHIL. & PUB. AFF. 66 (1988).

tant's personality stakes because those indicia are less reliable.²⁷⁹

As to Hughes' second objection, different inventions will indeed have different levels of personality invested in them, but this need not be reflected by different levels of protection under an intellectual property regime. Indeed, under current patent law, inventions that are more useful or that require more labor or more investment to create do *not* receive more protection. All inventions are treated alike once they meet the statutory thresholds of utility, novelty, and non-obviousness.²⁸⁰

Hughes' last objection, in essence, asserts that inventions are simply not the repository for personality as are other forms of intellectual property, such as literature and music.²⁸¹ Few would dispute that Edison's light bulb expresses a lower quantum of personality than Tolstoy's *Anna Karenina*, and it is certainly the rare patent application that expresses the personality evident in an e.e. cummings poem. But this is not a valid comparison. First, inventions *do* reflect the personality of their inventor. The personality may not be apparent to those without expertise in the art, but practitioners can often identify the source of an invention merely by examining the engineering designs.²⁸² Engineers do not design by rote; some design decisions are made just because they "feel" right to the designer. Second, the inventor's personality is reflected in the *process* that led to the invention as much as in the invention itself.²⁸³ Third and most importantly, the personality stake that should be protected is the extent to which both the process and the physical embodiment of the invention are constitutive of the inventor's personhood.²⁸⁴ Thus, the important issue is how the inventor defines herself, not how society defines the inventor.²⁸⁵ This need not be a wholly subjective test. As discussed

279. Reliable indicia identify those personhood interests most likely to be essential to freedom, identity, and contextuality; less reliable indicia are likely to identify nonessential (though potentially justifiably constitutive) interests. Professor Radin's market-inalienability approach adopts the pluralist approach referred to earlier, *see supra* text accompanying note 245, by recognizing only the reliable indicia.

280. *But see* Oddi, *supra* note 15 (proposing greater patent protection for "revolutionary" inventions).

281. *See supra* note 272.

282. A particularly striking example can be found in Edward J. Pershey, *Drawing as a Means to Inventing: Edison and the Invention of the Phonograph*, in *WORKING AT INVENTING*, *supra* note 41, at 101 (showing some of Edison's Matisse-like engineering line drawings and discussing the relationship between the drawings, the creative process of invention, and the invention itself).

283. *See, e.g., id.*

284. For examples of how the inventive process can be constitutive of personhood, see VAUGHAN, *supra* note 74, at 4 ("[T]he biographies of inventors give abundant illustrations of the state of inward happiness which comes from the exercise of the contriving bent.") (quoting FRANK W. TAUSSIG, *INVENTORS AND MONEY-MAKERS* 15 (1930)). *See also* BENNETT, *supra* note 20, at 26 (paraphrasing Thorstein Veblen: inventors create as a means of self-expression).

285. Hughes approaches this point but, I think, misses it. He does note the popular identification of the inventor with the invention—Edison with the light bulb and Bell with the telephone—but fails to elaborate on the internal identification of inventor with invention. *See* Hughes, *supra* note 149, at 344. This popular identification is, in fact, an inalienable interest. The

above, reliable indicia can be established so that only reasonable, objectively justifiable personhood interests are protected.

A central premise of this Comment is that inventors have a strong personhood stake in their inventions and in the inventive process, or in the terminology used here, in inventions and preinventions. However, the identification of a personhood interest does not necessitate a rule of total inalienability for inventions and preinventions.²⁸⁶ Furthermore, a given rule of market inalienability need not apply to both inventions and preinventions, nor for that matter to all inventions or all preinventions. Rather, I propose here to protect certain personhood interests only in employee preinventions.²⁸⁷

I distinguish employee preinventions from other inventions and preinventions because the employee-inventor's "decision" to alienate her preinventions is particularly suspect.²⁸⁸ First, the employee-inventor must decide to alienate her interests before she even conceives of the invention and before she has invested any personality. Second, the employee-inventor has no meaningful choice but to accept the terms offered by the employer if she wishes to develop her personhood by participating

original inventor remains identified on the patent even when the patent is assigned or transferred. In addition, this popular identification of an individual is typically lacking under the team-as-hero paradigm. Today, inventions are identified with firms, not with inventors:

Who invented the dial on your telephone and the machine switching behind it? Who invented the fluid drive or cellophane or Flit or the oil burner or florescent lights or nylon?

...

The best you can say is that General Motors invented this, or that another came out of the Bell Laboratories, but where is the hero?

BURLINGAME, *supra* note 41, at 4.

286. See Radin, *Market Inalienability*, *supra* note 233, at 1855 ("[W]e may decide that some things should be market-inalienable only to a degree, or only in some aspects.").

287. By "employee inventions," I refer to those inventions that are not controlled by preinvention assignment agreements. This might include inventions conceived and reduced to practice during the employment relationship but before the preinvention assignment agreement became operative. Such inventions are increasingly rare, since most employees must now sign preinvention assignment agreements at the onset of the employment relationship. "Employee inventions" does not refer here to assigned preinventions that mature into inventions—that is, inventions that were conceived and reduced to practice during an employment relationship that was controlled by a preinvention assignment agreement. I refer here to such inventions as "preinventions," since I believe that the conditions under which they come into existence—preassigned to the employer—continue to characterize their nature after conception and reduction to practice.

288. There are reasons for distinguishing preinventions from inventions other than the suspect nature of the decision to alienate. First, the preinvention could be conceived as still within the personality of the inventor while the invention is fully externalized in the patent claims and the embodiment. One is tempted to make comparisons to arguments calling for inalienability of gestational services (that is, payments for surrogate mothers). See, e.g., Radin, *Market-Inalienability*, *supra* note 233, at 1928-36. However, this comparison fails since the embodiment—the resulting baby—would normally be thought of as even more inalienable than the surrogacy. Second, it might be the inventive process that is personal rather than the invention itself. If so, preinvention assignment agreements can be thought of as commodifying the process by usurping control from the employee-inventor in exchange for her wages. See, e.g., *supra* note 255 (describing the highly commodified work on an automobile assembly line).

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in the inventive process, given that large firms dominate access to necessary resources and opportunities.²⁸⁹ Alienation of other inventions²⁹⁰ and preinventions²⁹¹ shares at most one of these concerns and thus are not as suspect. Given the suspect nature of the decision to alienate preinventions, the remainder of this Comment will focus on identification of the personhood interests to be protected in the preinvention context and on how this protection might be implemented.

B. Non-Personal Inventions: Corporate Inventorship as a Consequence of Personhood Theory

As discussed above, patent law already recognizes the personhood interests of inventors in two ways: by requiring the identification of the human creators responsible for the invention on the patent application, and by notation of the inventor on the issued patent. This non-transferable, non-assignable, market-inalienable inventorship identification is a form of protection for a personhood interest—the association of the person with her invention.

This limited form of protection is both overbroad and underprotective, however. Inventorship identification is an overbroad form of personhood protection because it creates an irrebuttable presumption of justifiable investment of personhood. While this presumption is often ac-

289. See Radin, *Market-Inalienability*, *supra* note 233, at 1909-10. A prophylactic ban on total alienation of inventors' interests in their future invention is then the "best possible coercion-avoidance mechanism under conditions of uncertainty." *Id.* at 1910.

290. Agreements to assign non-employee inventions not only are non-coercive for the same reasons that non-employee preinventions are, but are also knowingly made, for the inventor can identify precisely what it is that she is assigning.

Assignment of employee inventions are made knowingly for the same reasons that non-employee assignment of inventions are made knowingly. It is debatable whether employee assignment of inventions is coercive. The employee, of course, is free to end the employment relationship if the employer demands assignment; however, there is a coercive element to such a demand. On the other hand, the employee has the invention which the employer presumably wants, and thus may have some leverage to retain some personhood interest in the invention.

291. Non-employee preinventions are rarely alienated, but presumably could be; that is, an independent inventor could agree with a firm that in return for specified consideration, any inventions conceived during a specified period would be assigned to the firm. Such "pre-creation" assignment is more familiar in other areas of intellectual property than in the area of inventions. For example, interests in books, films, and records are frequently assigned prior to creation. These types of deals differ from preinvention assignment in numerous respects. First, authors, film-makers, actors, and recording artists usually make such agreements as independent artists rather than as employees. Second, such artists typically retain significant interests in their creations. Third, such artists typically have the leverage to craft individualized agreements and thus the resulting contracts are not adhesive. Fourth, unlike with inventors, the artists' works are strongly identified with the artists.

A "pre-creation" assignment agreement would not be as suspect outside the employment context as it would be within, because the element of adhesion is lacking. This would be the case even if the inventor was under some form of general economic duress. The agreement likely would be crafted individually, and the inventor presumably would be able to negotiate the retention of some interest in the inventions with a prospective assignee. Moreover, in such a case, the personhood of the independent inventor would not have been diminished during the inventive process.

curate, there are instances where the corporate contribution so exceeds any individual contribution that investment of personhood in the invention or the inventive process is simply not justifiable. Inventorship identification is underprotective of personhood because, in instances where personality is implicated, inventorship identification alone leaves important personhood interests open to appropriation.

The remainder of this Comment proposes changes in the patent law designed to overcome its current shortcomings in protecting the personhood interests of employee-inventors. The overinclusiveness objection is addressed by arguing that there are really two classes of employee preinventions: those with and those without justifiable personhood interests. This Section will consider preinventions without justifiable personhood interests and will advocate recognition of corporate inventorship in those cases. The following Section will look at preinventions that do have justifiable personhood interests.

Although inventorship has become increasingly organizational and less independent during the twentieth century, patent law has largely ignored this shift.²⁹² Admittedly, some changes in the Patent Code have made it easier to obtain patents for team inventions. The Patent Act of 1952, for example, abolished the judicially imposed requirement that a patentable invention result from a flash of "inventive genius"²⁹³ and replaced it with the current novelty, utility, and non-obviousness standards.²⁹⁴ These standards allow the results of methodical and organized corporate research to be patentable.²⁹⁵ Similarly, the Patent Law Amendments of 1984²⁹⁶ provided for an expanded concept of joint inventorship that is more in line with team invention in a corporate environment.²⁹⁷ The 1984 amendments modified the non-obviousness requirement²⁹⁸ to reduce the risk that team inventions would be unpat-

292. See, e.g., GOLDSTEIN, *supra* note 270, at 359 ("To the chagrin of many observers today, the 1836 Act continues to provide the basic structure and principles of United States patent law.").

293. *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941).

294. 35 U.S.C. §§ 101-103 (1988).

295. See Gamon, *supra* note 6, at 499-500.

296. Pub. L. No. 98-622, 98 Stat. 3383.

297. Section 116 provides in pertinent part:

Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.

35 U.S.C. § 116 (1988). The legislative history of the amendment "recognizes the realities of modern team research. A research project may include many inventions. Some inventions may have contributions made by individuals who are not involved in other, related inventions." 1984 U.S.C.C.A.N. 5827, 5834.

298. The amendment added the last sentence to 35 U.S.C. § 103 (1988):

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention

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entable due to the prior research efforts of team members.²⁹⁹

These statutory changes and the gradual acknowledgment of team invention in the case law,³⁰⁰ however, have been of only limited effect. At its core, patent law still clings to the concept of the "hero-inventor" and rejects the modern paradigm of "team-as-hero." Despite the deficiencies of the "team-as-hero" paradigm, the recognition of corporate inventorship would be a significant step toward modernizing patent law to reflect contemporary inventorship paradigms.³⁰¹

Corporate inventorship need not be a particularly radical step for patent law.³⁰² First, recognition of corporate inventorship would merely parallel developments in other areas of American intellectual property law, such as copyright³⁰³ and mask work protection,³⁰⁴ where "author-

was made, owned by the same person or subject to an obligation of assignment to the same person.

Pub. L. No. 98-622, § 103, 98 Stat. 3383, 3384 (1984).

299. See DRATLER, *supra* note 25, § 2.04[3], at 2-103 to 2-104 (discussing the purpose of the 1984 amendments).

300. See Gamon, *supra* note 6, at 502-10 and cases cited therein (discussing case developments in patent law).

301. It is important to note that corporate patents have been advocated before. See, e.g., *id.* at 512-13.

302. The wisdom of a corporate patent has been debated in the literature. See Sears, *supra* note 89 (arguing against corporate patents, largely on constitutional grounds); Gamon, *supra* note 6, at 512-13, 519-21 (advocating corporate patents). Sears' usage of the term "corporate patents" differs from that advocated here. She refers to a series of proposed reforms favoring team invention. Since Sears' article was written, some of the proposed reforms have been enacted. See *supra* notes 296-98 and accompanying text.

303. The 1976 Copyright Act recognizes an economic basis of authorship that defines an author as the entity that finances the creation of the work. This basis is embodied in the Copyright Act as the "work made for hire" doctrine. According to the Act,

A "work made for hire" is —

- (1) a work prepared by an employee within the scope of his or her employment; or
- (2) a work specially ordered or commissioned for use as a contribution to a collective work . . . if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire.

17 U.S.C. § 101 (1988). The Act proceeds to state that

[i]n the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for the purposes of his title, and, unless the parties have expressly agreed otherwise in a written instrument signed by them, owns all of the rights comprised in a copyright.

Id. § 201 (b). Thus, copyright law recognizes by statute that corporations may be considered the authors of the works they finance. However, the scope of copyright protection is not precisely the same in all respects as for human authors. For example, due to the theoretically infinite corporate lifetime, copyright protection for works made for hire "endures for a term of seventy-five years from the year of its first publication, or a term of one hundred years from the year of its creation, whichever expires first," as opposed to the "life of the author and fifty years" duration of protection for works of human authorship. *Id.* § 302(a), (c).

304. The Semiconductor Chip Protection Act of 1984 (SCPA), *id.* § 901-914, is a *sui generis* form of intellectual property protection for mask works fixed in semiconductor chip products. Under the SCPA, mask works created by employed designers are the property of the employer:

[T]he "owner" of a mask work is the person who created the mask work, the legal representative of that person if that person is deceased or under a legal incapacity, or a party to whom all rights under this chapter of such person or representative are transferred in accordance with section 903(b); except that, in the case of a work made within the scope

ship" can be based on economic grounds as well as on the more traditional creation grounds. Furthermore, most foreign countries already recognize corporate inventors.³⁰⁵

Second, the availability of corporate inventorship would not harm employee-inventors, since nearly all employee-inventors are already required to assign their patent rights to their employer. In fact, the availability of corporate inventorship could significantly help employee-inventors. Courts generally enforce questionable preinvention assignment agreements as a matter of policy. If corporate inventorship were available and a corporation did not qualify for inventor status, courts might be less likely to enforce adhesive contracts purporting to assign a patent to the corporation.³⁰⁶

The question remains, however, as to when a corporation should qualify as an inventor. One model is provided by the "work for hire" doctrine of section 101 of the Copyright Act of 1976.³⁰⁷ Section 101 defines two classes of works made for hire: works prepared by employee-inventors within the scope of their employment, and works specially ordered or commissioned for use as a contribution to a collective work. Another potential model, prescribed by the state statutes discussed earlier in Section II.D, would describe those employee-inventions that are *not* eligible for corporate inventorship. Thus, under a model suggested by the California statute, corporate inventions would be limited to those invented by employee-inventors during corporation time, or using corporation resources, or relating to present or anticipated areas of corporate business or research or development.³⁰⁸

These models would probably provide too broad a scope for corporate inventorship, however, for both definitions of inventors would include virtually all employee inventions conceived at work. Many of these inventions would represent windfalls to the corporate employer if insignificant corporate resources had been expended and the corporation had not directed the activity leading to the invention. In other words, an invention that owes more to the initiative of the employee-inventor than to the resources and direction of the corporate employer should not qualify as a corporate invention. A better definition of corporate inventions would combine aspects of both of the models *by limiting a corporate invention to an anticipated result of corporate direction*³⁰⁹ *that was conceived*

of a person's employment, the owner is the employer for whom the person created the mask work or a party to whom all the rights under this chapter of the employer are transferred in accordance with section 903(b).

Id. § 901(a)(6).

305. See Gamon, *supra* note 6, at 522-23.

306. Though, admittedly, courts appear unlikely to do this *sua sponte*, without legislative prodding.

307. 17 U.S.C. § 101 (1988). This section is reproduced in pertinent part *supra* note 303.

308. See CAL. LAB. CODE § 2870 (West 1992).

309. By "anticipated result of corporate direction," I refer to specific management supervision

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and reduced to practice using significant corporate resources. All other patent applications would still require named human inventors.

This model of corporate inventorship should include a rebuttable presumption of individual inventorship by natural persons. If, for example, a corporation files a patent application claiming corporate inventorship, and one or more employee-inventors feel that the invention resulted primarily from their personal efforts, they could file an interference action with the Patent Office to determine inventorship.³¹⁰

If corporate inventorship were the only patent law modification made, however, little change would be reflected in the actual allocation of patent rights. Corporations would, of course, hold title to those patents for which the corporation was given inventorship credit, and through preinvention assignment agreements, corporations would obtain title to their employee-inventors' patents. What is needed to supplement this modification is a means to deal with bona fide personal inventions of employee-inventors.

C. Personal Preinventions: The Employee-Inventor and the Personhood Defense

Thus far, this Comment has argued that employee preinventions are a form of partially noncommodifiable property. How should this idea affect the allocation of rights between employee-inventors and employers in inventions with justifiable personhood interests? This Section explores three possible methods of applying personhood theory to employee preinventions.

First, the law could recognize the justifiable personhood interests of employee-inventors in their preinventions and make these interests inalienable. This will be referred to as a "non-appropriability approach."

Second, the law could recognize corporate proprietary interests in the preinventions of employee-inventors analogous to human personhood interests. The corporate interest could either cancel the employee-inven-

of the inventive process. For example, if a manager (or any corporate agent) tells an engineer that a component is needed with specified characteristics and the engineer proceeds to develop such a component, *and* that component turns out to be a patentable device or employs a patentable process, *and* the engineer would qualify as an "inventor" under the present Patent Code, *then* I would designate such an invention a corporate invention. On the other hand, if while fulfilling the manager's request, the engineer conceives of an idea for an unrelated or peripherally related patentable invention, the invention would not be the anticipated result of corporate direction and would not qualify as a corporate invention. Note that "anticipated" as used here would not present a bar to patentability under the novelty or non-obviousness requirements of 35 U.S.C. §§ 102-103 (1988).

310. See *id.* § 135 (section authorizing interference actions). Interferences are ordinarily initiated to determine priority of invention, see *id.*, but could be used or easily adapted to determine questions of corporate versus individual inventorship. The presumption of individual inventorship would be analogous to the current rebuttable presumption that the chronological order of filing dates is the order of actual invention. See 37 C.F.R. § 1.657 (1991).

tor's personhood interest in the same property—thus making the property alienable—or be balanced against the interests of the employee-inventor on a case-by-case basis. This will be referred to as a “cancelling or balancing approach.”

Finally, the law could reject corporate “personhood” interests and disaggregate the rights incidental to employee preinventions. Those interests that are justifiably constitutive of the personality of the employee-inventor could be identified and made market-inalienable. All other rights incidental to employee preinventions would then be freely alienable. This will be referred to as a “disaggregation approach.”

1. *A Non-Appropriability Approach*

The non-appropriability approach suggests that employee preinventions should be non-assignable because they embody the personality of their inventor. Inventions, however, have both personal and non-personal attributes. A regime of complete inalienability of invention rights would be overprotective of personhood, since it would remove non-personhood interests from the market. Non-appropriability can be overinclusive, as well, if non-personal inventions are protected. Thus, a regime of total inalienability is difficult to imagine, let alone advocate, absent corporate inventorship for a significant percentage of the inventions of the employee-inventor.

Under a regime of total inalienability, employee preinventions could only be exploited by their original, human inventor, unless the employers obtained rights to the inventions via costly *ex post* negotiations. Such a regime would be far worse for corporations than a regime with no intellectual property protection at all, since corporations could be forbidden from exploiting the output of their own laboratories. Investment in organized research and development would likely be curtailed significantly. This negative consequence could be ameliorated, however, by permitting the gift-giving or sharing of the noncommodifiable property.³¹¹ Thus, it might be possible under an inalienability regime for a group of researchers to work together, placing all patents received by any member into a common pool.³¹² Such an approach, of course, would be more a cooperative arrangement than an employer-employee relationship. Moreover, if an invention were particularly valuable, the inventor would presumably be free of compulsion to place it in the pool, for such compulsion would alienate her personality. For this reason, the system would be unlikely to work in a corporate environment.

Another variation on the inalienability regime would be to make

311. See Radin, *Market-Inalienability*, *supra* note 233, at 1854-55 (noting that inalienability can co-exist with encouragement of gift-giving).

312. Patent pools are a means of linking the rights to use the patents issued to more than one patentee. See, e.g., *United States v. Line Material Co.*, 333 U.S. 287, 313 n.24 (1948).

employee inventions inalienable but to grant employers non-transferable, non-exclusive shop-rights³¹³ to exploit the employee-inventor's preinvention. This would to some extent represent a return to the common law allocation scheme; however, the restrictions on alienability would preclude, at least for employee inventions, the patent licensing and transfer agreements that allow inventions to realize their optimal utility. Many firms might reduce expenditures on innovation under such a scheme.

Thus, it would seem that a regime of complete inalienability is not a desirable solution to the problem of the employee-inventor, even where schemes of gift-giving, corporate inventorship, and employer shop-rights are available to soften its impact. This conclusion, however, does not totally devalue the contribution personhood theory can make to solving the preinvention problem, if approaches can be developed that protect personhood interests without imposing complete inalienability.

2. *A Cancelling or Balancing Approach*

One alternative to the non-appropriability approach is a cancelling or balancing approach. This approach requires recognition that the corporation may have a justifiable personhood (or, analogously, proprietary) interest in the preinventions of employee-inventors. This interest would then either cancel the employee-inventor's personhood interest or be balanced against it.³¹⁴ A cancelling or balancing approach would juxtapose the individual personhood interests against corporate interests of a similar nature, and either the corporate interest could cancel the individual interest³¹⁵ or the two interests could somehow be balanced against each other.³¹⁶

Unfortunately, a cancelling or balancing approach that compares the personhood interests of humans and corporations has serious flaws. The assignment of a personhood interest to a corporate entity is incongruous with Professor Radin's conception of personhood, notwithstanding the status of legal personhood enjoyed by corporations.³¹⁷ Corporate personhood is generally acknowledged to be a mere legal fiction, utilized for reasons of economic efficiency³¹⁸ or convenient terminology.³¹⁹ Per-

313. See *supra* note 96 and accompanying text for a discussion of common law shop-rights.

314. Professor Radin uses the example of certain noncommercial claims of landlords, such as those of landlords who live on the premises, that can offset or defeat a tenant's personhood interest in continuing to live in an apartment that she has made her home. See Radin, *Residential Rent Control*, *supra* note 233, at 359-60.

315. In this case some other interest would have to be asserted by either the individual, the corporation, or both in order to justify the awarding of the property right.

316. In this case the entity offering the more compelling interest would prevail.

317. See ROBERT C. CLARK, *CORPORATE LAW* 675-76 (1986) (discussing the "meaning of corporate personality").

318. See *id.* at 15-21 (discussing the economic efficiency of legal personhood).

319. See LON L. FULLER, *LEGAL FICTIONS* 12-14 (1967) (discussing the possibility that legal personhood is merely a convenient metaphor). Furthermore, Professor Dan-Cohen argues that

sonhood theories of property seek to protect the moral status or *dignity* of personhood,³²⁰ rather than mere legal status. Legal corporate personhood is thus insufficient to bring corporate property into a regime of market-inalienability.

As noted earlier,³²¹ one indicium of a personhood interest in property is that its owner places a greater-than-market value on the property. While this is often a reliable indicium when applied to natural persons, it is entirely unreliable when applied to corporations. Corporate willingness to pay more than market value is simply an indication that the corporation is able to realize greater than market returns from the property. Such willingness is not a measure of the corporation's personhood or proprietary interest in the property, but rather an indication that market pricing may be flawed by such factors as imperfect information.

In the kingdom of corporate ends, everything has a price and nothing has a dignity.³²² Unlike some personhood interests of natural persons, it is difficult to come up with *any* examples of interests that are inalienable to corporations.³²³ A person cannot sell her body parts, but a corporation can sell its divisions, or even the entire corporation. Corporations can even sell what might be argued is analogous to personality—the corporate “good will”—though in practice this might require the sale of the entire corporation. In the end, the concept of protecting the inalienable or noncommodifiable interests of firms is not supportable. Thus, the cancelling or balancing approach is unsatisfactory as a means of allocating rights in employee inventions.

3. *A Disaggregation Approach*

a. *The Fungible/Personal Dichotomy*

If corporations cannot have protectable personhood interests in property, can personhood theory provide a means of resolving preinvention disputes? I believe that it can—precisely because it distinguishes

corporations are merely “intelligent machines” that cannot enjoy the moral status and privileges of human persons. DAN-COHEN, *supra* note 55, at 49-51. For discussions on the personhood of another type of “intelligent machine,” see Pamela Samuelson, *Allocating Ownership Rights in Computer-Generated Works*, 47 U. PITT. L. REV. 1185, 1199-200 (1986) (arguing computers should not be treated as the authors of computer-generated code). See generally Lawrence B. Solum, *Legal Personhood for Artificial Intelligences*, 70 N.C. L. REV. 1231 (1992) (discussing the issues surrounding the possible treatment of an artificial intelligence as a legal person).

320. See DAN-COHEN, *supra* note 55, at 96.

321. See *supra* text accompanying note 239.

322. See *supra* note 217.

323. Courts sometimes confuse the legal fiction of the corporate person with personhood in the Hegelian sense. For example, early ecclesiastical courts sometimes punished corporate misbehavior with excommunication; the practice was banned by Pope Innocent IV in the 13th century on the grounds that a corporation, having no soul, could not lose one. See John C. Coffee, Jr., “No Soul to Damn: No Body to Kick”: An Unscandalized Inquiry into the Problem of Corporate Punishment, 79 MICH. L. REV. 386, 386 n.2 (1981).

between corporations and individuals. The traditional property theories, discussed in Section III.B., failed to resolve preinvention assignment disputes because they could not distinguish between the employee-inventor and employer. The first approach discussed in this Section, the non-appropriability approach and its several variations, distinguishes employee-inventor from employer but seems to protect too much. The cancelling or balancing approach, like traditional property models, fails because it equates corporate and individual interests and does so imperfectly. The solution proposed here is to disaggregate the rights attaching to an invention, identifying and protecting those rights that have the most important personality consequences, while treating the others as alienable.

Disaggregation is a familiar—if not essential—concept in any scheme of intellectual property. In copyright, for example, books are conceptually disaggregated into the physical thing and the idea. The buyer gets the physical object when she purchases the book, but the author keeps the form of expression which embodies her personality. This aspect of the work—the author’s expression—is protected by copyright.³²⁴ The idea/expression dichotomy is codified in the Copyright Code.³²⁵ Similar idea/embodiment and idea/layout dichotomies are familiar to patent law³²⁶ and mask work protection,³²⁷ respectively.

The key to allocating rights in employee preinventions under a personhood theory, then, is the establishment of a “fungible/personal” dichotomy.³²⁸ This is both consistent with personhood theory, which accommodates partially commodifiable goods,³²⁹ and with intellectual property theory, which accommodates disaggregation of property rights in things. In fact, patent law already recognizes a fungible/personal dichotomy: credit for inventorship is seen as personal and therefore inalienable, while all other rights attaching to inventions are seen as fungible and therefore alienable.

Why aren’t rights other than inventorship credit treated as per-

324. See, e.g., Boyle, *supra* note 265, at 1466.

325. 17 U.S.C. § 102(b) (1988) provides as follows: “In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.” For a general discussion of the idea/expression dichotomy, see DRATLER, *supra* note 25, § 5.01[2]. For the common law origin of the doctrine, see *Baker v. Selden*, 101 U.S. 99 (1880).

326. The scientific principles and mathematical formulas and algorithms that underlie an invention are not patentable, even if newly “discovered” by the inventor. See generally DRATLER, *supra* note 25, § 2.02[2] (“These things may be *discovered* by man, but they are not made by man.”).

327. 17 U.S.C. § 902(c) (1988) provides as follows: “In no case does protection under this chapter for a mask work extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.” For a general discussion of the idea/layout dichotomy, see DRATLER, *supra* note 25, § 8.03[4].

328. See Radin, *Property and Personhood*, *supra* note 233, at 986-88 & n.102, 1005-06.

329. See *supra* notes 246-47 and accompanying text.

sonal? One possibility is that the rights are viewed from an external rather than internal perspective. At times, society identifies an inventor with her creation. Thus, creative credit is noncommodifiable. But as was stressed previously,³³⁰ it is how the inventor identifies *herself* that is more significant.³³¹ For an inventor, this self-identification is done largely through the inventive process—through her *work* with the invention.

b. The Personhood or Inventor's Defense

Professor Radin's treatment of work provides guidance as to which of the inventor's interests should be protected: those that contribute to the inventor's self-conception in ways inseparable from the inventive process, those that contribute to her continuity in the inventive process, and those that contribute to her control over the inventive process.³³² Each of these interests can be protected by granting the inventor continued access to her invention independent of her employment relationship with the assignee. "Access" is used here in a fairly broad sense: the continuing ability to make use of the invention.

If an employee created an invention during the course of employment that was patented in the employee's name and assigned to the employer under a preinvention assignment agreement, the inventor could enjoy continuing access to the invention through the availability of an affirmative "personhood" or "inventor's" defense to patent infringement actions. The defense would be personal to the inventor and would protect only uses that were justifiably bound up with personhood. The personhood defense would have the effect of granting inventors a personal "reverse shop-right" in their inventions.³³³ This reverse shop-right would permit employee-inventors to make, use, and sell their invention outside the employment relationship. This right would be inalienable. Thus, if an employee-inventor found that her employment relationship was not constitutive of personality *vis-à-vis* her invention, she would be free to leave the employer while continuing to exploit the invention on her own.

330. See *supra* notes 284-85 and accompanying text.

331. Again, a purely subjective approach is not suggested here. Reliable indicia of reasonable, justifiable personhood interests must be present for the personhood interest to be protected.

332. See *supra* notes 256-59 and accompanying text.

333. The reverse shop-right has been proposed before, but as an instrumental tool rather than a normative protection of personal interests. See Hovell, *supra* note 6, at 887-88. At least one court has refused to award an employee a reverse shop-right in an employer-owned invention. See *Mainland Indus., Inc. v. Timberland Mach. and Eng'g Corp.*, 649 P.2d 613 (Or. Ct. App.), *review denied*, 653 P.2d 999 (Or. 1982), *cert. denied*, 460 U.S. 1051 (1983). The *Mainland* court reasoned that while equity favored awarding employers a shop-right in employee-owned inventions, there were no such arguments in favor of the employee, as the employer rather than the employee had made the investment. This view has been disputed throughout this Comment, see, e.g., *supra* notes 72-80 and accompanying text, and elsewhere, see, e.g., Dratler, *supra* note 6, at 132-33. For commentary supporting the *Mainland* reasoning, see Mislow, *supra* note 6, at 76-77.

The employer, for its part, would also be free to exploit the invention. Furthermore, the employer would be free to treat its interest in the invention as fungible—that is, it could assign, transfer, or license the invention to another—while the employee-inventor could not. Thus, the employer would not “lose” its investment in research under this proposal. Rather, the employer would get nearly the same rights as under current preinvention assignment agreement schemes, the only distinction being that the formerly exclusive rights would now not exclude the inventor herself.

Two additional elements would be needed to support the personhood defense. First, there must be some means of protecting ex-employee-inventors from the threat of vexatious litigation on the part of employers. By their very nature, personhood defense cases will tend to pit individuals and small entrepreneurial corporations against large established corporations. The threat of costly litigation would deter many individuals and small corporations, even those confident that their use was protected, from exploiting personal inventions. A rebuttable presumption of personal use, combined with a reduced threshold for imposing sanctions for frivolous or vexatious litigation on the part of employers, may help to reduce these potential problems.³³⁴

Second, employers might try to contract around the personhood defense by requiring technical employees to sign long-term employment contracts or by utilizing noncompetition clauses in employment contracts. The personhood defense should be applied to breach-of-contract actions that attempt to prevent employee-inventors from using their inventions in ways that are constitutive of personhood, or that attempt to recover employee-inventor profits or employer losses from such uses.

c. Some Applications of the Personhood Defense and Comparisons to Current Doctrines

There are, of course, many uses for inventions. These cover the spectrum from the fully commodified to the fully personal. In order to be sufficiently protective of personhood, the defense would apply to those uses that contained a significant element of personality. The following examples indicate some of the activities to which the defense might apply. Each is compared with a current patent doctrine that does not adequately protect the personhood interests of inventors.

i. Private Personal Use

An inventor’s private personal use of her invention for experimental purposes would be a protected use under the scheme outlined above.

334. The sanctions might have to be quite large and be imposed on the parties as well as their attorneys, since corporations could otherwise find it very profitable to squelch potential competitors through expensive litigation.

Such a use clearly contributes to the inventor's continuity and control over the inventive process and thus is constitutive of personhood. Thus, for example, the inventor would be free to use the invention for the purposes of developing a new invention. The inventor would be free to make any commercial use of the new invention and be immune to infringement charges for her commercially motivated use of the assigned invention. The use of the assigned invention can be deemed personal because it contributed to the continuity of the inventive process.

ii. As Compared to the Experimental Use Doctrine

Current patent law provides for an experimental use defense to infringement actions.³³⁵ This judicially created defense is not limited to inventors and is unavailable if the experimental use is related to business or commercial purposes.³³⁶ The experimental use defense is an overbroad form of personhood protection because even non-inventors may invoke it.³³⁷ It is underprotective of personhood interests because it does not protect commercial uses that may be constitutive of an inventor's personhood. The personhood defense would expand the experimental use doctrine to allow *any* experimental use of the invention by the former employee-inventor, even if commercially motivated.

iii. Personal or Professional Commercial Exploitation

Even the inventor's direct commercial exploitation of the invention could be sufficiently personal to be immune from infringement under the personhood defense.³³⁸ A direct commercial exploitation would be sufficiently personal if it were justifiably constitutive of the inventor's personhood, either personally or professionally. An example of a protected personal use would be the creation of a new invention dependent upon the original invention. An example of a protected professional use would be the commercial development of the invention. Thus, if the inventor were to found and manage a company for the purpose of exploiting the invention, this activity might be immune from charges of infringement. The founding of a company based upon one's inventive product can be justifiably constitutive of personhood.³³⁹ However, not every profes-

335. See *Roche Prods. v. Bolar Pharmaceutical Co.*, 733 F.2d 858, 863 (Fed. Cir.), *cert. denied*, 469 U.S. 856 (1984). This defense is narrowly construed and limited to philosophical inquiry, satisfaction of curiosity, or amusement. *Id.*

336. *Id.*

337. Of course, there may be valid policy rationales for extending experimental use protection to non-inventors.

338. See, e.g., Radin, *Property and Personhood*, *supra* note 233, at 987 ("Perhaps the entrepreneur factory owner has ownership of a particular factory and its machines bound up with her being to some degree.").

339. One commentator has discussed how such firms can be constitutive of personhood, even though commercial in nature, and why, in fact, the personhood interests contribute to their commercial success:

sional involvement with the invention would be protected. For example, the mere subsequent employment of an inventor by someone other than the patentee would not ordinarily immunize the subsequent employer from liability for infringement.

iv. As Compared to the Assignor Estoppel Doctrine

The protection of personal or professional commercial exploitation as described above would help the courts resolve the particularly difficult problems they have had over the years with the doctrine of assignor estoppel. The judicially created doctrine of assignor estoppel precludes patent assignors, typically employee-inventors, from contesting the validity of patents that they have assigned, typically in infringement actions brought by their former employers.³⁴⁰ Assignor estoppel has proved particularly problematic for the courts³⁴¹ because it represents a clash between the principles of contract and patent law. Justice Harlan expressed this conflict as follows:

On the one hand, the law of contracts forbids a purchaser to repudiate his promises simply because he later becomes dissatisfied with the bargain he has made. On the other hand, federal law requires that all ideas in general circulation be dedicated to the common good unless they are protected by a valid patent.³⁴²

Inventor-entrepreneurs can foresee tangible personal rewards if they are successful. Individuals often want to achieve a technical contribution, recognition, power, or sheer independence, as much as money. For the original, driven personalities who create significant innovations, few other paths offer such clear opportunities to fulfill all their economic, psychological, and career goals at once. Consequently, they do not panic or quit when others with solely monetary goals might.

James B. Quinn, *Managing Innovation: Controlled Chaos*, HARV. BUS. REV., May-June 1985, at 73.

340. See generally Ubell, *supra* note 117; Hatfield, *supra* note 174.

341. Judicial support of the doctrine has waxed and waned over the years. Assignor estoppel and the related doctrine of licensee estoppel were established in American patent jurisprudence in the mid-19th century. See *Kinsman v. Parkhurst*, 59 U.S. (18 How.) 289 (1855); see also *Lear v. Adkins*, 395 U.S. 653, 663-64 (1969) (discussing early applications of licensee estoppel); Rochelle C. Dreyfuss, *Dethroning Lear: Licensee Estoppel and the Incentive to Innovate*, 72 VA. L. REV. 677, 684-85 (1986) (same); Hatfield, *supra* note 174, at 260 (discussing early applications of assignor estoppel). The doctrine was still alive in the mid-20th century, see *Scott Paper Co. v. Marcalus Co.*, 326 U.S. 249 (1945), though by that time numerous exceptions had nearly swallowed the rule. See, e.g., *Lear*, 395 U.S. at 664-68 (discussing exceptions to rule); Hatfield, *supra* note 174, at 264-67 (same). The Court in *Scott Paper*, for example, declined to estop the defendant from claiming that the patent he had allegedly infringed was invalid as it was anticipated by prior art. *Scott Paper*, 326 U.S. at 257. The decision was not uncontroversial, however. Justice Frankfurter wrote a vigorous dissent, noting that assignor estoppel "has been part of the fabric of our law throughout the life of this nation. It has been undeviatingly enforced by English speaking courts in this country, in England, in Canada, and Australia." *Id.* at 260 (Frankfurter, J., dissenting). Assignor estoppel was generally thought to have been abolished soon thereafter in *Lear*, 395 U.S. at 653 (abolishing licensee estoppel and criticizing "patent estoppel" generally), but was resurrected by the Federal Circuit in two recent cases: *Diamond Scientific C. v. Ambico, Inc.*, 848 F.2d 1220 (Fed. Cir.), cert. dismissed, 487 U.S. 1265 (1988) and *Shamrock Technologies v. Medical Sterilization*, 903 F.2d 789 (Fed. Cir. 1990).

342. *Lear*, 395 U.S. at 668.

Proponents of assignor estoppel feel that the doctrine is necessary to protect employers' investment in research and development.³⁴³ Opponents counter that the realities inherent in the bargaining process and the patent application procedure belie the assumption, implicit in the doctrine, that the employee-inventor has previously attested to the validity of the patent.³⁴⁴

The debate over the question of assignor estoppel has been so heated because the stakes are so high and the options so poor. The employee-inventor has no good alternatives, particularly when her personhood interests are considered. Under assignor estoppel, she cannot develop her freedom, identity, and contextuality through continued access to her invention. Even if assignor estoppel is held inapplicable, she must either relinquish access (and thus, development of personhood) or diminish her personhood by asserting that her invention was not patentable. If the employee-inventor chooses the latter route and prevails, the invention enters the public domain and anyone, not just employer and employee-inventor, may practice it. In this case the employer indeed has little to show for its research and development investment.

Courts are asking the wrong questions in these cases. Rather than inquiring whether employee-inventors ought to be allowed to attack the patentability of their inventions, courts should consider whether employee-inventors can be divested of all interests in an invention through a preinvention assignment agreement. The personhood defense answers this question through a careful examination of the employee-inventor's relationship to the invention, rather than divorcing the invention from the creator by precluding the employee-inventor from even addressing the work's patentability. The personhood defense approach is preferable to the assignor estoppel approach because it is constitutive rather than destructive of an employee-inventor's personality.³⁴⁵

V

CONCLUSION

This Comment has attempted to resolve a problem recognized for years but resistant to reform efforts: the allocation of rights to future

343. See, e.g., Hatfield, *supra* note 174, at 273.

344. See, e.g., Ubell, *supra* note 117, at 27-30. Ubell emphasizes that the employee-inventor is in no position to vouch for the *patentability* of any inventions she assigns to her employer—this is a question of law to be determined by the employer's patent attorney. Thus, the employee-inventor's oath and signature ought not to preclude her from later asserting that the patent is invalid. *Id.*

345. Furthermore, even employers are arguably better off under the personhood defense. The assignor estoppel doctrine is subject to numerous exceptions. See *supra* note 341. If an exception applies to the facts of a particular case, the employer's patent may be found invalid. The employer has less to lose under the personhood defense approach. Even in those cases where the defense is operative, employer-patentees retain the right to exclude all but the employee-inventor from making, using, and selling the invention in question.

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inventions between employee-inventors and their corporate employers. It suggests the basis for a workable solution to this age-old problem: to treat the justifiable personhood interests of employee-inventors as market-inalienable and to make all other interests fully commodifiable. This proposed framework focuses on the nature of the property in dispute rather than on the relationship between the parties. It is based on a "hybrid" conception of invention that recognizes the contributions of both individuals and firms, rather than only the "hero-inventor" or "team-as-hero." It thus provides a more flexible means of protecting the interests of both employee-inventors and their corporate employers.

The proposed personhood approach has two primary policy implications. First, it recognizes the contributions of corporate employers where appropriate by allowing corporations to claim inventorship under the Patent Code when an invention is the anticipated result of corporate direction. Second, this approach protects the justifiable personality interests of employee-inventors in their inventions by providing a personhood defense to infringement actions. These two recommendations are complementary: some employee-inventors will reap increased rights in their inventions, but many inventions will remain in the corporate name, beyond exploitation by employee-inventors.

The personhood approach suggested here is consistent with the distinctive nature of intellectual property discussed earlier. Intellectual property has both "free good" and "public good" attributes.³⁴⁶ The "free good" attribute allows the employee-inventor and employer to exploit the invention simultaneously without depriving either party of its use or enjoyment; the "public good" attribute necessitates that the personhood defense be personal to the inventor and non-transferable. This circumscribed exception to the employer-inventor's exclusive patent rights will continue to exclude free-riders who do not contribute significantly to the production of the invention.

Intellectual property rights are also of limited scope and duration.³⁴⁷ They protect only certain of the "bundle of rights" associated with tangible property. Consequently, the disaggregation of interests in inventions and the reduction in the scope of the employer's right to exclude personal and commercial uses by the employee-inventor do not undercut the integrity of the intellectual property protection.

Finally, intellectual property has traditionally been thought of as a "democratic" form of property.³⁴⁸ The retention of residual rights by individual employee-inventors will tend to be wealth-redistributive. It will cause some—though, in all likelihood, relatively little—shift of

346. See *supra* note 147 and accompanying text.

347. See *supra* note 148 and accompanying text.

348. See *supra* note 149 and accompanying text.

wealth from corporations to individuals. It will to some extent empower individual employee-inventors to compete against large corporations.

The personhood approach supplements the traditional theoretical property justifications discussed earlier in Section III.B. Under traditional theories, both employee-inventors and employers can articulate persuasive arguments for intellectual property protection. These theories cannot, however, adequately distinguish between the claims of employee-inventors and employers, and personhood theory provides a useful tool for allocating rights in a reasoned, justifiable manner.

Ultimately, of course, employee-inventors are perfectly capable of acting to protect their personhood interests themselves, either by becoming independent inventors or by becoming non-inventors. They may move to other fields of work where their personhood interests are less likely to be appropriated by firms or where individual activity is more practicable.³⁴⁹ However, their departure can turn into a serious resource allocation problem for society. In a perverse way, then, current patent and contract doctrine may be reducing rather than enhancing social welfare.

Because the control of ideas confers substantial benefits on inventors, intellectual property structures are likely to arise in *any* social system containing self-interested actors. Even without governmental assistance, individual innovators will do their utmost to create a regime that rewards creativity; the only question is whether the results will be better or worse than the governmental alternative.³⁵⁰

Although this Comment has emphasized normative rather than instrumental concerns, the normative problems with preinvention assignments do not exist in an instrumental vacuum. America's declining productivity growth,³⁵¹ rate of innovation,³⁵² and supply of engineers and scientists³⁵³ have been the cause of great concern in recent years.³⁵⁴

349. Law, for example.

350. Mark C. Suchman, *Invention and Ritual: Notes on the Interrelation of Magic and Intellectual Property in Preiterate Societies*, 89 COLUM. L. REV. 1264, 1290-91 (1989).

351. See Steven Greenhouse, *Attention America! Snap out of It!*, N.Y. TIMES, Feb. 9, 1992, § 3, at 1 (detailing America's lack of productivity growth relative to that of Japan and Germany).

352. See, e.g., Hatfield, *supra* note 174, at 251-55.

353. See, e.g., William R. Greer, *Foreign Students: Boon or a Threat?*, N.Y. TIMES, Mar. 27, 1983, § 12, at 72; Barbara Vobejda, *Foreign Students Proliferate in Graduate Science Programs: Shortage of American Expertise Foreseen*, WASH. POST, Sept. 2, 1987, at A1; Amy S. Wells, *More Foreigners Are Seeking Ph.D.'s in U.S.*, N.Y. TIMES, July 20, 1988, at B6.

354. The rate of private investment in research and development has also been of increasing concern. See, e.g., Stuart Auerbach, *U.S. Firms Lag Japanese in Spending: Study Fuels Debate on Competitiveness*, WASH. POST, June 29, 1990, at G2; William J. Broad, *Japan Seen Passing U.S. in Research by Industry*, N.Y. TIMES, Feb. 25, 1992, at B5. If, as has been discussed earlier, *see supra* note 201 and accompanying text, the efficacy of patent law generally in stimulating investment is debatable, then the effect of the retention of a non-exclusive, non-transferable right of an inventor to exploit her own invention would be minuscule. As has been noted in another context, "acceptance

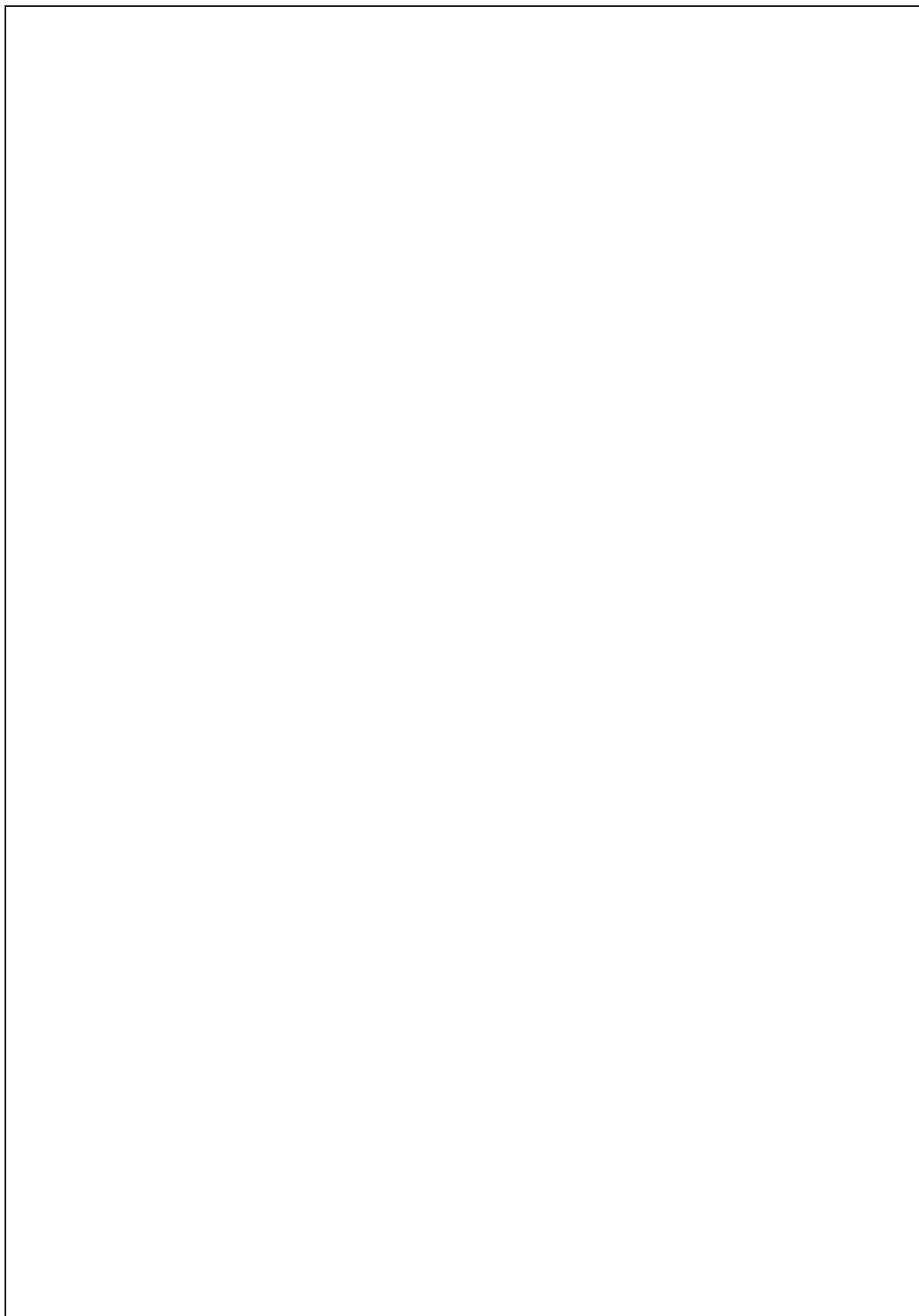
1993]

PREINVENTIONS AND PERSONHOOD

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Perhaps the alienation (in every sense) of the American technologist is, in some part, to blame.

of a patent system by no means compels the conclusion that any subtraction from the bundle of patentee's rights is necessarily bad public policy." Donald F. Turner, *The Patent System and Competitive Policy*, 44 N.Y.U. L. REV. 450, 458 (1969) (arguing for antitrust limitations on a patentee's licensing rights).



Chapter 18

**403 F. Supp. 2D 968 (2005),
ENREACH TECHNOLOGY,
INC., a Delaware corporation,
Plaintiff, v. EMBEDDED
INTERNET SOLUTIONS, INC.
et al.**

Enreach Technology, Inc.
v.
Embedded Internet Solutions, 403 F. Supp. 2d 968 (N.D. Cal. 2005)
District Court, N.D. California

Filed: September 22nd, 2005
Precedential Status: Precedential
Citations: 403 F. Supp. 2d 968
Docket Number: C 04-1255 CW
Author: Claudia Ann Wilken

403 F. Supp. 2D 968 (2005)

ENREACH TECHNOLOGY, INC., a Delaware corporation, Plaintiff,
v.
EMBEDDED INTERNET SOLUTIONS, INC.; ShenZhen ZhuoZhuang Network Technology, Inc.;
Guohong Xu; Jing Wu; Embedded Internet Solutions Holdings Ltd.; Zhaocheng Holdings Ltd.;
Guosheng Xu; AlphaSmart, Inc.; Changhong Electronics, Ltd.; Cirrus Logic, Inc.; Inventec
Corporation; Kyocera Wireless Corporation; Opentv Corporation; Philips Semiconductor Inc.; and
Xoceco Ltd., Defendants.

No. C 04-1255 CW.
United States District Court, N.D. California.

September 22, 2005.

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Mitchell C. Lowe, Lead Attorney, Michael Eric Molland, Morgan Lewis & Bockius LLP, San Francisco, CA, for Philips Semiconductor Inc.

**ORDER DENYING PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT, GRANTING IN
PART AND DENYING IN PART THE EIS DEFENDANTS' MOTION FOR SUMMARY
JUDGMENT, AND GRANTING IN PART AND STAYING IN PART THE CUSTOMER
DEFENDANTS' MOTIONS FOR SUMMARY JUDGMENT**

WILKEN, District Judge.

Plaintiff Enreach Technology, Inc., has moved for summary adjudication of the first, second, sixth, seventh, eighth and tenth causes of action in its fourth amended complaint (FAC) against Defendants Embedded Internet Solutions, Inc. (EIS), ShenZhen ZhuoZhuang Network Technology, Inc., GuoHong Xu and Jing Wu (EIS Defendants). The EIS Defendants oppose the motion and cross-move for summary adjudication of the second, third, seventh, eighth, ninth and tenth causes of action in the FAC. [1] In addition, Defendants Cirrus *971 Logic, Inc. and AlphaSmart, Inc. jointly move for summary adjudication of the second, seventh, eighth and tenth causes of action in the FAC, and Cirrus Logic moves separately for summary adjudication of the seventh, eighth and tenth causes of action. Enreach opposes these motions. The matters were heard on August 12, 2005. Having considered the parties' papers, the evidence cited therein and oral argument on the motions, the Court DENIES Enreach's motion for summary judgment, GRANTS in part and DENIES in part the EIS Defendants' cross-motion for summary judgment, GRANTS in part and STAYS in part the motion for summary judgment filed jointly by Cirrus and AlphaSmart, and GRANTS in part and STAYS in part the motion for summary judgment filed by Cirrus.

BACKGROUND

Enreach develops and markets embedded software products, including interactive television services. Embedded software is a software program for microprocessors that are embedded in a variety of electronic products such as televisions and cellular telephones. Enreach's products are built around a common software platform called the MicroBrowser, or eBrowser. In late 1997, Xu and Wu began full-time employment at Enreach as software engineers. In 1998, Xu was promoted to chief software architect. It is not disputed that at the time Xu and Wu began working for Enreach they signed an employee confidentiality and proprietary information agreement. That agreement stated, among other things, as follows:

I agree at all times during the term of my employment and during the two year period thereafter to hold in strictest confidence, and not to use, except for the benefit of the Company, or to divulge or disclose, directly or indirectly, to any person, corporation or other entity without written authorization of the Board of Directors of the Company, any non-published trade secrets, confidential knowledge, data or other proprietary information (collectively referred to as "Confidential Information") obtained by me during my employment with the Company relating to products, processes, know-how, designs, formulas, developmental or experimental work, computer programs, data bases, other original works of authorship, customer lists, business plans, financial information or other subject matter pertaining to any business of the Company. . . . I agree that I will promptly make full written disclosure to the Company, will hold in trust for the sole right and benefit of the Company, and will assign to the Company all my right, title, and interest in and to any and all inventions, discoveries, developments, improvements, technology, trade secrets, computer programs, know-how, designs, formulas, original works of authorship, or any other confidential materials, data, information or instructions, technical or otherwise and whether or not patentable or copyrightable and whether or not reduced to practice relating to the Company's business (collectively referred to as "Inventions") which I may solely or jointly conceive or develop or reduce to practice, or cause to be conceived or reduced to practice, during the period of time I am in the employ of the Company.

The agreement also incorporated California Labor Code section 2870, which states as follows:

*Any provision in an employment agreement which provides that an employee shall assign, or offer to assign, any of his or her rights in an invention to his or her employer shall not apply to an invention *972 that the employee developed entirely on his or her own without using the employer's equipment, supplies, facilities, or trade secret information except for those inventions that either: (1) Relate at the time of conception or reduction to practice of the invention to the employer's business, or actual or demonstrably anticipated research or development of the employer. (2) Result from any work performed by the employee for the employer.*

The parties do not dispute that, in late 1998 or early 1999, Xu began working on Enreach's MicroBrowser project. The EIS Defendants submit evidence which Enreach does not dispute that Xu was never involved in the core design of the MicroBrowser source code.

It is not disputed that, in January, 1999, Xu and Wu formed an Internet-based company called CyberAnts. It is also not disputed that shortly after Xu and Wu formed CyberAnts, and while Xu was still employed by Enreach, they began to develop and write source code for Internet browser applications. In his sworn declaration, Xu states that these browser applications were related to a web-based fitting room that would allow customers to order custom-tailored clothes online. Enreach does not dispute that it did not at the time develop any similar web-based applications. Also in his sworn declaration, Xu states that he initially developed the source code for these applications by downloading and then experimenting with public domain source code relating to the basic functionality of web-based applications and utility functions. He further states that he did not use the MicroBrowser source code in writing the generic source code for CyberAnts. The EIS Defendants submit evidence, which Enreach does not dispute, that Xu developed this source code during his personal time and using his personal computer equipment.

Enreach proffers undisputed evidence that, on August 1, 1999, Xu and Wu changed the name of CyberAnts to EIS. Enreach also submits undisputed evidence that, on September 4, 1999, EIS completed an investment brochure which stated, among other things, that the company planned to become a leader in the market for embedded Internet browser products. The brochure also described in general terms several functions and features of EIS's browser; it is not disputed that MicroBrowser contained functions and features similar to those described in EIS's brochure.

On September 17, 1999, Xu left Enreach. It is not disputed that, when he left Enreach, Xu had a copy of the MicroBrowser source code on his personal laptop. The EIS Defendants submit undisputed evidence that Xu had copied the source code onto his laptop with Enreach's knowledge before he took a business trip to Germany on behalf of the company. On November 11, 1999, Wu left Enreach.

According to Xu's declaration, he began to write source code for the EIS embedded Internet browser, called iPanel, only after he left Enreach, and EIS did not complete a working model of iPanel until June, 2000. It is not disputed that EIS received copyright registrations for nine modules of source code relating to iPanel in July, 2000. The EIS Defendants acknowledge that Xu had begun to write the source code contained in six of those modules prior to leaving Enreach, but Xu states that this source code was "extremely basic and performed only standard, utility functions found in any Internet program."

Enreach submits evidence of similarities between iPanel and MicroBrowser; its expert, Yan Feng, states that iPanel has, among other things, similar modular structure, *973 a similar method of flow control, and uses the same freeware vendors as does MicroBrowser. The EIS Defendants submit evidence through their expert Robert Wedig that only three files in the current EIS source code are "questionably similar" to files in the Enreach code, and this represents less than one-one hundredth of one percent of the number of files in the EIS code and less than one-tenth of one percent of the number of files in the Enreach code.

In early 2001, Enreach contacted the Santa Clara County District Attorney's Office seeking a criminal investigation of EIS and Xu. In June, 2001, an investigator from the District Attorney's Office interviewed Xu and several other EIS employees. During his interview, Xu stated that he had not used Enreach source code in creating source code for EIS and that he did not begin writing source code specifically for iPanel until after he left Enreach. The District Attorney's Office did not pursue criminal charges against Xu or EIS.

It is not disputed that, in September, 2001, EIS released iPanel. Along with the nine copyright registrations, the iPanel core code is also the subject of several pending patent applications. Defendant ShenZhen ZhuoZhuang makes and sells iPanel products. AlphaSmart and Cirrus have licensed iPanel from EIS.

Enreach filed its initial complaint against the EIS Defendants on March 30, 2004. In the FAC, which it filed on January 28, 2005, Enreach added AlphaSmart, Cirrus and several other Defendants which it alleges have licensed iPanel source code. The FAC alleges the following causes of action: (1) breach of contract (against Xu and Wu), (2) declaratory judgment that Enreach is the owner of the iPanel registrations (against all Defendants), (3) declaratory judgment that Enreach is the owner of the pending iPanel patent applications (against the EIS Defendants), (4) fraudulent concealment of inventions (against Xu and Wu), (5) breach of covenant of good faith and fair dealing (against Xu and Wu), (6) breach of fiduciary duty (against Xu and Wu), (7) unjust enrichment (against all Defendants), (8) copyright infringement (against all Defendants), (9) unfair competition (against the EIS Defendants), and (10) unfair competition (against all Defendants).

On February 18, 2005, Enreach filed its motion for summary judgment. On March 8, 2005, the Court granted a motion to continue the summary judgment hearing filed by the EIS Defendants and denied without prejudice as premature Enreach's summary judgment motion. At a case management conference on April 8, 2005, the Court reinstated Enreach's summary judgment motion and scheduled briefing. The Court also set November 18, 2005 as the fact discovery cut-off for the Defendants, including Cirrus and AlphaSmart, that were added in the FAC. On June 17, 2005, Cirrus and AlphaSmart filed their joint motion for summary judgment, and Cirrus filed its summary judgment motion.

LEGAL STANDARD

Summary judgment is properly granted when no genuine and disputed issues of material fact remain, and when, viewing the evidence most favorably to the nonmoving party, the movant is clearly entitled to prevail as a matter of law. Fed. R.Civ.P. 56; Celotex Corp. v. Catrett, 477 U.S. 317, 322-23, 106 S. Ct. 2548, 91 L. Ed. 2d 265 (1986); Eisenberg v. Ins. Co. of N. Am., 815 F.2d 1285, 1288-89 (9th Cir.1987).

The moving party bears the burden of showing that there is no material factual dispute. Therefore, the court must regard as true the opposing party's evidence, if supported by affidavits or other evidentiary *974 material. *Celotex*, 477 U.S. at 324, 106 S. Ct. 2548; *Eisenberg*, 815 F.2d at 1289. The court must draw all reasonable inferences in favor of the party against whom summary judgment is sought. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587, 106 S. Ct. 1348, 89 L. Ed. 2d 538 (1986); *Intel Corp. v. Hartford Accident & Indem. Co.*, 952 F.2d 1551, 1558 (9th Cir.1991).

Material facts which would preclude entry of summary judgment are those which, under applicable substantive law, may affect the outcome of the case. The substantive law will identify which facts are material. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248, 106 S. Ct. 2505, 91 L. Ed. 2d 202 (1986).

Where the moving party does not bear the burden of proof on an issue at trial, the moving party may discharge its burden of showing that no genuine issue of material fact remains by demonstrating that "there is an absence of evidence to support the nonmoving party's case." *Celotex*, 477 U.S. at 325, 106 S. Ct. 2548. The moving party is not required to produce evidence showing the absence of a material fact on such issues, nor must the moving party support its motion with evidence negating the non-moving party's claim. *Id.*; see also *Lujan v. Nat'l Wildlife Fed'n*, 497 U.S. 871, 885, 110 S. Ct. 3177, 111 L. Ed. 2d 695 (1990); *Bhan v. NME Hosps., Inc.*, 929 F.2d 1404, 1409 (9th Cir.1991); cert. denied, 502 U.S. 994, 112 S. Ct. 617, 116 L. Ed. 2d 639 (1991). If the moving party shows an absence of evidence to support the non-moving party's case, the burden then shifts to the opposing party to produce "specific evidence, through affidavits or admissible discovery material, to show that the dispute exists." *Bhan*, 929 F.2d at 1409. A complete failure of proof concerning an essential element of the nonmoving party's case necessarily renders all other facts immaterial. *Celotex*, 477 U.S. at 323, 106 S. Ct. 2548.

Where the moving party bears the burden of proof on an issue at trial, it must, in order to discharge its burden of showing that no genuine issue of material fact remains, make a prima facie showing in support of its position on that issue. See *UA Local 343 v. Nor-Cal Plumbing, Inc.*, 48 F.3d 1465, 1471 (9th Cir.1994). That is, the moving party must present evidence that, if uncontroverted at trial, would entitle it to prevail on that issue. See *id.*; see also *Int'l Shortstop, Inc. v. Rally's, Inc.*, 939 F.2d 1257, 1264-65 (5th Cir.1991). Once it has done so, the non-moving party must set forth specific facts controverting the moving party's prima facie case. See *UA Local 343*, 48 F.3d at 1471. The nonmoving party's "burden of contradicting [the moving party's] evidence is not negligible." *Id.* This standard does not change merely because resolution of the relevant issue is "highly fact specific." See *id.*

DISCUSSION

I. EIS Defendants

A. Breach of Contract Claim

Enreach argues that there is undisputed evidence that Xu and Wu conceived iPanel and reduced it to practice while they were employed at Enreach, thereby breaching the confidentiality and assignment provisions of the employment agreement that they each signed when they began working for the company. As evidence, Enreach cites (1) the brochure that EIS had completed by September 4, 1999 which described in general terms the planned embedded browser that would become iPanel, and (2) the source code contained in six of the nine modules for which EIS has copyright registrations that the EIS Defendants acknowledge Xu worked on while still employed at Enreach. Enreach also *975 cites the similarities between the MicroBrowser and iPanel source code that were identified by its expert.

Opposing Enreach's motion for summary adjudication of this claim, the EIS Defendants argue that the iPanel source code was not subject to the Enreach employment agreements. Xu states in his declaration that the source code he developed while still employed at Enreach related to low-level utilities and the basic functionality necessary for any web-based application, and that he derived it from public domain source code. Xu also states that he originally developed this initial source code for the purpose of using it for an online clothes-shopping and custom-fitting web site, and that he wrote the code on his personal time and using his own computer equipment. He states that he did not begin writing source code specifically for iPanel until after he left Enreach and that he did not use any MicroBrowser code in doing so; the EIS Defendants note that it is not disputed that EIS did not have a working model of iPanel until June, 2000, nine months after Xu left Enreach, and seven months after Wu left.

Thus, there is a material factual dispute whether the iPanel source code identified by Enreach falls within the exception described in California Labor Code section 2870. Enreach's motion for summary adjudication of its first cause of action for breach of contract is denied.

B. Claims for Declaratory Judgment that Enreach is Owner of EIS's Intellectual Property

The parties cross-move for summary adjudication of Enreach's second and third causes of action for declaratory judgment that it has ownership rights in the nine copyright registrations of iPanel source code and the pending iPanel-related patent applications. These claims arise out of Enreach's allegations and evidence that Xu and Wu conceived of and created iPanel while still employed at Enreach, and thus were contractually obliged to assign to Enreach the iPanel copyrights and patent applications. Enreach again cites the September, 1999 brochure, which described an EIS embedded browser, and the undisputed evidence that Xu developed part of six of the nine copyrighted modules while still employed at Enreach.

However, as discussed above, there is a material dispute (1) whether Xu and Wu breached their employment contracts with Enreach and (2) regarding the extent to which Xu developed iPanel-specific source code while still employed at Enreach.

The EIS Defendants argue that they are entitled to summary judgment on these claims because even if Enreach could prove that Xu and Wu did breach their employment contracts, Enreach would not have an ownership interest in EIS's intellectual property. The EIS Defendants cite *Arachnid, Inc. v. Merit Indus., Inc.*, 939 F.2d 1574, 1580-81 (Fed.Cir.1991), in which the court ruled that an agreement to assign future inventions not yet developed could not serve as the basis for transfer of legal title to those inventions. However, the *Arachnid* court held that such promises to assign "may vest the promisee in equitable rights in those inventions once made." *Id.* (emphasis in original). In its second and third causes of action, Enreach alleges that EIS's registrations are the intellectual property of Enreach that Xu and Wu hold in trust for the sole right and benefit of Enreach. Thus, Enreach is seeking equitable remedies under these claims, which the *Arachnid* court held it may do.

For the foregoing reasons, the parties' cross-motions for summary adjudication of *976 the second and third causes of action for declaratory judgment are denied.

C. Breach of Fiduciary Duty Claim

Enreach moves for summary adjudication of the FAC's sixth cause of action, against Xu and Wu, for breach of fiduciary duty. In California, a fiduciary of a corporation is defined as "an officer who

participates in management of the corporation, exercising some discretionary authority." *GAB Bus. Servs., Inc. v. Lindsey & Newsom Claim Servs., Inc.*, 83 Cal. App. 4th 409, 420-21, 99 Cal. Rptr. 2d 665 (2000), overruled on other grounds by *Reeves v. Hanlon*, 33 Cal. 4th 1140, 17 Cal. Rptr. 3d 289, 95 P.3d 513 (2004).

Here, Enreach submits no argument or evidence that Wu was ever an officer with any discretionary authority at Enreach. Enreach does argue that Xu, as chief software architect, meets the standard for a fiduciary; it submits evidence in the form of a declaration by its chief executive officer Bo Wu that Xu managed a team of twenty software engineers. However, this does not amount to evidence that Xu was an officer at Enreach or that he participated in the management of the corporation. And, in opposition to Enreach's motion for summary adjudication of this claim, the EIS Defendants submit undisputed evidence that, while Xu did manage the projects and schedules of the software engineers, they reported directly to Bo Wu and not to Xu.

For the foregoing reasons, Enreach's motion for summary adjudication of its sixth cause of action for breach of fiduciary duty is denied.

D. Unjust Enrichment Claim

The parties cross-move for summary adjudication of the FAC's seventh cause of action for unjust enrichment. As the EIS Defendants note, unjust enrichment is not a valid cause of action in California. See *McBride v. Boughton*, 123 Cal. App. 4th 379, 387, 20 Cal. Rptr. 3d 115 (2004) ("Unjust enrichment is not a cause of action, or even a remedy, but rather a general principle, underlying various legal doctrines and remedies.").

Enreach cites no case law holding that a party may plead a cause of action for unjust enrichment. Instead, Enreach appears to argue that its unjust enrichment claim is based upon a theory of constructive trust: if Wu and Xu breached the employment contract, a constructive trust should be imposed upon EIS covering the iPanel source code. Enreach does request in its second and third causes of action that the Court impose a constructive trust on the iPanel-related intellectual property.

The Court has denied the parties' cross-motions for summary adjudication of the second and third causes of action, and Enreach may pursue a constructive trust remedy on those claims. However, because unjust enrichment is not a valid cause of action in California, the EIS Defendants are entitled to summary adjudication of the FAC's seventh cause of action for unjust enrichment.

E. Copyright Infringement Claim

The parties cross-move for summary adjudication of the FAC's eighth cause of action for copyright infringement. "In order to establish infringement, two elements must be proven: (1) ownership of a valid copyright, and (2) copying of constituent elements of the work that are original." *Rice v. Fox Broadcasting Co.*, 330 F.3d 1170, 1174 (9th Cir.2003). However, "even where the fact of copying is conceded, no legal consequences will follow from that fact unless the copying is substantial. . . . In addition to copying, it must be shown that this has been done to *977 an unfair extent." *Newton v. Diamond*, 388 F.3d 1189, 1193 (9th Cir.2004) (internal citations omitted). Where there is no evidence of direct copying, a plaintiff may establish copying by showing that the defendant had access to the work in question and that the two works are "substantially similar" in idea and expression. *Smith v. Jackson*, 84 F.3d 1213, 1218 (9th Cir.1996).

Enreach argues first that it is the rightful owner of the nine EIS copyright registrations relating to iPanel. Second, Enreach argues that EIS directly copied Enreach's MicroBrowser source code, and it submits evidence through its expert Mr. Feng of several similarities in the source code of iPanel and MicroBrowser, including between the browsers' modular structures, methods of flow control, and free-ware vendors. And, Enreach argues that the direct copying is not de minimis.

With respect to Enreach's first theory, as discussed above, there is a material factual dispute whether Enreach has any equitable rights to EIS's copyright registrations.

With respect to Enreach's second theory, the EIS Defendants' expert Dr. Wedig states that there is minimal evidence of direct code copying; the similar code amounts to a fraction of a percent of the source code comprising the two companies' browsers. Dr. Wedig also states that the similarities between the source codes in the companies' browsers encompass only unprotectable expression because they involve basic and standard methods used by those versed in the arts of computer programming and code writing.

The parties have submitted competing evidence through their experts relating to whether there is sufficient evidence of direct copying and whether the iPanel code is substantially similar in idea and expression to the MicroBrowser code. Thus, the parties' cross-motions for summary adjudication of the FAC's eighth cause of action for copyright infringement are denied.

F. Unfair Competition Law Claims

The parties cross-move for summary adjudication of the FAC's ninth and tenth causes of action for unfair competition. The ninth cause of action, asserted against only the EIS Defendants, is based in part upon Enreach's allegations of copyright infringement and in part upon Xu and Wu's alleged failure to assign their work relating to iPanel in accordance with their employment agreements. The tenth cause of action, against all Defendants, is based upon Enreach's remaining allegations of, among other things, copyright infringement and breach of the covenant of good faith and fair dealing.

The unfair competition law "embraces anything that can properly be called a business practice and that at the same time is forbidden by law." *Korea Supply Co. v. Lockheed Martin Corp.*, 29 Cal. 4th 1134, 1135, 131 Cal. Rptr. 2d 29, 63 P.3d 937 (Cal.2003). In other words, section 17200 et seq. "borrows" violations from other laws and makes them independently actionable as unfair business practices. *Id.*

To the extent that the ninth cause of action for unfair competition is based upon allegations of copyright infringement, it is preempted by federal law. The Copyright Act states that it exclusively governs "all legal or equitable rights that are equivalent to any of the exclusive rights within the general scope" of the Act and states further that "no person is entitled to any such right or equivalent right in any such work under the common law or statutes of any State." 17 U.S.C. § 301(a). In *Kodadek v. MTV Networks, Inc.*, 152 F.3d 1209, 1212 (9th Cir.1998), the Ninth Circuit ruled that the plaintiff's unfair *978 competition law claim, which was based solely upon its claim for copyright infringement, was preempted.

As the EIS Defendants note, the FAC's first cause of action for breach of contract, the only other allegation upon which the ninth cause of action is based, is asserted against only Xu and Wu. Thus, the Court grants the EIS Defendants' motion for summary adjudication of the ninth cause of action against EIS and ShenZhen ZhuoZhuang, but denies it with respect to the ninth cause of action against Xu and Wu arising out of Enreach's breach of contract claim.

The FAC's tenth cause of action for unfair competition is based upon "misappropriation of trade secrets, fraud, breach of contract, breach of fiduciary duty, breach of covenant of good faith and fair dealing, unjust enrichment, and/or copyright infringement." Enreach's claims for fraud and trade secret misappropriation were dismissed as time-barred, without leave to amend, by the State court. Moreover, a common law cause of action based upon allegations of trade secret misappropriation is preempted by the Uniform Trade Secrets Act. See *Digital Envoy, Inc. v. Google, Inc.*, 370 F. Supp. 2d 1025, 1035 (N.D.Cal.2005). And, the Court has granted the EIS Defendants' motion for summary adjudication of Enreach's claims for unjust enrichment and has ruled that an unfair competition law claim based upon alleged copyright infringement is preempted. Enreach's remaining causes of action upon which this claim is based — breach of contract, breach of covenant of good faith and fair dealing and breach of fiduciary duty — are asserted against only Xu and Wu.

The Court denies Enreach's motion for summary adjudication of its tenth cause of action, and grants the EIS Defendants' motion with respect to EIS and ShenZhen ZhuoZhuang. The Court denies the EIS Defendants' motion for summary adjudication of the tenth cause of action against Xu and Wu arising out of the FAC's claims for breach of contract, breach of the covenant of good faith and fair dealing and breach of fiduciary duty.

II. Customer Defendants

Cirrus and AlphaSmart move jointly for summary adjudication of the second, seventh, eighth and tenth causes of action in the FAC, and Cirrus moves separately for summary adjudication of the seventh, eighth and tenth causes of action.

A. Claims for Declaratory Judgment that Enreach has Ownership Rights in EIS's Copyright Registrations

Cirrus and AlphaSmart argue that there is no actual controversy to support Enreach's second cause of action as against them. A copyright action for declaratory judgment "presents a justiciable case or controversy if the defendant's actions have caused the declaratory judgment plaintiff to harbor a real and reasonable apprehension that he will be subject to liability if he continues to manufacture his product." *Xerox Corp. v. Apple Computer, Inc.*, 734 F. Supp. 1542, 1546 (N.D.Cal.1990), citing *Hal Roach Studios v. Richard Feiner & Co.*, 883 F.2d 1429 (9th Cir.1989).

Here, Cirrus and AlphaSmart submit evidence that they have claimed no ownership interest in the iPanel copyright registrations, and that they have taken no action that would cause Enreach to harbor a reasonable apprehension that it would be subject to liability for copyright infringement. They submit further evidence, which Enreach does not dispute, that Enreach has acknowledged that Cirrus has made no claim of ownership in the EIS copyrights. And Enreach states in its opposition *979 brief that it does not contend that "that AlphaSmart or Cirrus is claiming ownership of the EIS registrations."

Enreach argues that a controversy with respect to AlphaSmart and Cirrus exists because, if Enreach is found to have equitable rights to the EIS copyrights, AlphaSmart and Cirrus may be liable for copyright infringement. However, that does not satisfy the test for declaratory judgment justiciability set forth in *Xerox*. 734 F.Supp. at 1546. Thus, Cirrus and AlphaSmart's motion for summary adjudication of the second cause of action for declaratory judgment of ownership of the EIS copyright registrations is granted.

B. Unjust Enrichment Claim

As discussed above, Enreach may not pursue a cause of action for unjust enrichment. Thus, the motions for summary adjudication of the FAC's seventh cause of action are granted.

C. Copyright Infringement Claim

Cirrus and AlphaSmart argue in both summary judgment motions that the Court lacks subject matter jurisdiction over Enreach's claim for copyright infringement (eighth cause of action) because the gravamen of the FAC is that EIS's copyright registrations are invalid. If those registrations are invalid, argue Cirrus and AlphaSmart, they cannot form the basis of an infringement claim.

However, Enreach does not allege that the copyright registrations for the nine iPanel source code modules are invalid, but rather that it holds equitable rights to those registrations because Xu and Wu breached their employment contracts and failed to assign the iPanel copyrights to Enreach. Thus, these Defendants' argument is not well-taken.

Cirrus and AlphaSmart also argue that there is no evidence to support Enreach's claim for unjust enrichment based on copyright infringement because there is no evidence to support Enreach's allegations that AlphaSmart or Cirrus knew or should have known that the code they licensed from EIS was misappropriated. Enreach responds that it has not yet conducted discovery with respect to its claim that Cirrus and AlphaSmart knew or had reason to know that iPanel had been misappropriated when they licensed the product from EIS and contends that without discovery it cannot adequately oppose the motion on these grounds.

Cirrus argues in its separate motion for summary judgment that it cannot be liable for copyright infringement because (1) it has never sold any product containing the accused iPanel software to any of its customers, and (2) it manufactured only a single development board containing the accused iPanel software, and thus its alleged infringement was *de minimis* and not actionable as a matter of law. Enreach again submits evidence that it has not yet had the opportunity to conduct discovery relating to whether Cirrus has sold products containing iPanel code or the extent to which it used iPanel in its demonstration boards. Enreach contends that without discovery it cannot adequately oppose the motion on these grounds.

Enreach's opposition to Cirrus' and AlphaSmart's motions for summary adjudication of this claim is, in effect, a request pursuant to Federal Rule of Civil Procedure 56(f) to stay summary adjudication of this claim pending further discovery. The district court should deny or continue a motion for summary judgment if the opposing party makes a good faith showing by affidavit that the continuance is necessary to obtain facts essential to oppose the motion. *State of California v. *980 Campbell*, 138 F.3d 772, 779 (9th Cir.1998) (citing *McCormick v. Fund American Cos., Inc.*, 26 F.3d 869, 885 (9th Cir.1994)). Parties seeking a continuance must show: "(1) that they have set forth in affidavit form the specific facts that they hope to elicit from further discovery, (2) that the facts sought exist, and (3) that these sought-after facts are 'essential' to resist the summary judgment motion." *Campbell*, 138 F.3d at 779.

Enreach's affidavit is sufficient to meet the Rule 56(f) standard. Enreach may, within sixty days of the date of this order, file a supplemental brief of not longer than ten pages opposing Cirrus' and AlphaSmart's motion for summary adjudication of Enreach's eighth cause of action for copyright infringement. Cirrus and AlphaSmart may file a supplemental reply brief on their joint motion of not

longer than five pages one week later. Cirrus may file a supplemental reply brief on its separate motion of not longer than five pages one week later as well. The matter will be decided on the papers.

D. Unfair Competition Claim

As discussed above, Enreach may pursue its tenth cause of action for unfair competition based only upon its allegations of breach of contract, breach of the covenant of good faith and fair dealing and breach of fiduciary duty, which it asserts against only Xu and Wu. As discussed above, Enreach's claims for unfair competition based upon its allegations of copyright infringement and trade secret misappropriation are preempted, and it has not asserted against Cirrus or AlphaSmart the remaining claims upon which it bases its tenth cause of action. Thus, Cirrus and AlphaSmart's motions for summary adjudication of the FAC's tenth cause of action are granted.

CONCLUSION

For the foregoing reasons, the Court DENIES Enreach's motion for summary judgment (Docket No. 78), GRANTS in part and DENIES in part the EIS Defendants' cross-motion for summary judgment (Docket No. 143), GRANTS in part and STAYS in part the motion for summary judgment filed jointly by Cirrus and AlphaSmart (Docket No. 137), and GRANTS in part and STAYS in part the motion for summary judgment filed by Cirrus (Docket No. 140). The EIS Defendants' motion for summary adjudication of the second, third and eighth causes of action is denied; its motion for summary adjudication of the ninth and tenth causes of action against Xu and Wu is also denied. The EIS Defendants' motion for summary adjudication of the seventh cause of action is granted; their motion for summary adjudication of the ninth and tenth causes of action against EIS and ShenZhen ZhuoZhuang is also granted. The motion for summary adjudication filed jointly by Cirrus and AlphaSmart is granted with respect to the second, seventh and tenth causes of action and stayed with respect to the eighth cause of action. Cirrus' motion for summary adjudication of the seventh and tenth causes of action is granted. Cirrus' motion for summary adjudication of the eighth claim is stayed. The parties may brief this issue further as set forth above.

The Court GRANTS the EIS Defendants' motion for leave to file their amended cross-motion for summary judgment (Docket No. 195). The Court DENIES as moot Enreach's motion to strike new arguments it alleges were made in the EIS Defendants' reply brief (Docket No. 214); the Court did not consider any new arguments. The Court also DENIES as moot the parties' joint stipulation staying discovery and scheduling order deadlines pending *981 summary judgment orders (Docket No. 267).

IT IS SO ORDERED.

NOTES

[1] The EIS Defendants' motion for leave to file an amended cross-motion for summary judgment (Docket No. 195) is GRANTED.

Chapter 19

A New Era for Free Software Non-Profits (Eben Moglen)



Software Freedom Law Center

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Blog

A New Era for Free Software Non-Profits

By Eben Moglen | September 21, 2017

The US Internal Revenue Service has ushered in a new and much more favorable treatment for free software projects seeking to have 501c3 tax exempt non-profit organizations of their own. After years of suffering from a specially prejudicial environment at IRS, free software projects—particularly new projects starting out and seeking organizational identity and the ability to solicit and receive tax-deductible contributions for the first time—can now do so much more easily, and with confident expectation of fast, favorable review. For lawyers and others counseling free software projects, this is without question “game-changing.”

At SFLC, we have ridden all the ups and downs of the US tax law’s interaction with free software non-profits. When I formed SFLC—which in addition to being a 501c3 tax-deductible organization under US federal tax law is also a non-profit educational corporation under NY State law—in 2005, we acquired our federal 501c3 determination in less than 70 days. Over our first several years of operation, we shepherded several of our clients through the so-called “1023 process,” named after the form on which one applies for 501c3 determination, as well as creating several 501c3-determined “condominium” or “conservancy” arrangements, to allow multiple free software projects to share one tax-deductible legal identity.

But by the middle of the Obama Administration’s first term, our ability to get new 501c3 determinations from the IRS largely ceased. The Service’s Exempt Organizations Division began scrutinizing certain classes of 1023’s particularly closely, forming task forces to centralize review of—and, seemingly, to prevent success of—these classes of application. In our practice on behalf of free software projects seeking legal organization and tax exemption, we began to deal with unremitting Service pushback against our clients’ applications. Sometimes, the determination to refuse our clients’ applications seemed to indicate a fixed political prejudice against their work; more than once we were asked by IRS examiners “What if your software is used by terrorists?”

In this hostile climate, the condominium organizations—both the ones we formed and/or represented, and the ones we made for our own clients to join up with—were indispensable. Unable to provide projects with self-governing tax-deductible organizations of their own, we used the existing condominiums to house as many projects as possible. We also created new forms of organization, like the Free Software Support Network, to provide services from non-profit to non-profit, aiding the work of projects that wanted their own legal identity but could not successfully apply for treatment as a tax-deductible charity.

All this has now changed. The Exempt Organizations Division also applied the discriminatory hard-look approach it was applying to FOSS applications (for whatever reason) to applications by organizations linked to the “Tea Party” political movement. The resulting political furore against the Obama Administration’s IRS in the Republican Congress led to the resignations of senior IRS officials and the adoption of new practices by the Service for initial review of applications by fledgling and small-budget non-profits. FOSS organizations benefitted both from the new rules for small-scale organizations, and from the abandonment of the particular procedural burdens under which our clients had been laboring.

At SFLC, we have been more than watching these developments. By careful repeated experimentation with the new procedures, we have built confidence in our ability to interact favorably and reliably with the Service’s new application types and review procedures. We can now confidently take a free software project from scratch through state incorporation, governance formation, application for federal tax deductibility, to complete legal and fiscal independent self-governance, with the right to receive tax-deductible contributions, in 90 to 120 days, or even less.

This transformation gives us and our clients the best of both worlds. We can give every community of free software developers its own independent free-standing tax-deductible charity. That means complete self-government and independence. But our experience in building “collaboration organizations” such as the Free Software Support Network—non-profits that exist to help other non-profits perform tasks like fiscal administration, tax filings, etc.—means that we can help these fledgling non-profits administer their affairs appropriately and meet all their legal and regulatory compliance obligations inexpensively, by providing those services semi-centrally, in collaborator-organizations that enjoy economies of scale, but do not limit the governmental independence of the non-profits with which they work.

This arrangement is a clear advantage over the compromises between tax-deductibility and true organizational independence that we had to strike in the era of “condominiums” and “conservancies.” Such organizations will continue to serve good purposes for the software projects whose special conditions require them. But from now on, for the foreseeable future, every free software project that wants to govern itself in a secure, independent, tax-deductible federal charity can do so, while working with other organizations to get the asset management, fiscal administration, tax filing and regulatory compliance services that it needs from fiduciaries who are legally required to put its interests first. Legal independence, fiduciary duty for service providers, and tax-deductibility no longer need to be traded off or compromised. If you are part of a FOSS development community that wants to form a new legal organization, or which is dissatisfied with your present arrangements, contact SFLC. We can now help you achieve your goals faster, better, and with more independence than ever before.

Please email any comments on this entry to press@softwarefreedom.org.

Tags: [IRS](#), [Eben Moglen](#), [non-profits](#), [Tax](#)

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Chapter 20

Instructions 1023EZ

Instructions for Form 1023-EZ

(Rev. January 2017)

Streamlined Application for Recognition of Exemption Under Section 501(c)(3) of the Internal Revenue Code



Department of the Treasury
Internal Revenue Service

Section references are to the Internal Revenue Code unless otherwise noted.

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Future Developments

For the latest information about developments related to Form 1023-EZ and its instructions, such as legislation enacted after they were published, go to IRS.gov/form1023.

Reminder

Do not include social security numbers on publicly disclosed forms. Because the IRS is required to disclose approved exemption applications and information returns, exempt organizations should not include social security numbers on these forms. Documents subject to disclosure include correspondence with the IRS about the filing.

Photographs of Missing Children

The Internal Revenue Service is a proud partner with the [National Center for Missing & Exploited Children® \(NCMEC\)](http://NationalCenterforMissing&ExploitedChildren.org). Photographs of missing children selected by the Center may appear in instructions on pages that would otherwise be blank. You can help bring these children home by looking at the photographs and calling 1-800-THE-LOST (1-800-843-5678) if you recognize a child.

Email Subscription

The IRS has established a subscription-based email service for tax professionals and representatives of tax-exempt organizations. Subscribers will receive periodic updates from the IRS regarding exempt organization tax law and regulations, available services, and other information. To subscribe, visit IRS.gov/charities.

General Instructions

“You” and “Us”. Throughout these instructions and Form 1023-EZ, the terms “you” and “your” refer to the organization that is applying for tax-exempt status. The terms “us” and “we” refer to the Internal Revenue Service.

Purpose of Form

Form 1023-EZ is the streamlined version of Form 1023, Application for Recognition of Exemption Under Section 501(c)(3) of the Internal Revenue Code. Any organization may file Form 1023 to apply for recognition of exemption from federal income tax under section 501(c)(3). Only certain organizations are eligible to file Form 1023-EZ (see *Who Can File This Form* below).

Note. Most organizations seeking exemption from federal income tax under section 501(c)(3) are required to complete and submit an application. However, the following types of organizations may be considered tax exempt under section 501(c)(3) even if they do not file Form 1023 or Form 1023-EZ.

- Churches, including synagogues, temples, and mosques.
- Integrated auxiliaries of churches and conventions or associations of churches.
- Any organization that has gross receipts in each taxable year of normally not more than \$5,000.

Who Can File This Form

Only certain organizations are eligible to apply for exemption under section 501(c)(3) using Form 1023-EZ. To determine if you are eligible to file Form 1023-EZ, you must complete the [Form 1023-EZ Eligibility Worksheet](http://Form1023-EZEligibilityWorksheet).



CAUTION If you answer “Yes” to **any** of the worksheet questions, you are not eligible to apply for exemption under section 501(c)(3) using Form 1023-EZ. You must apply on Form 1023. If you answer “No” to **all** of the worksheet questions, you may apply using Form 1023-EZ.



TIP Before completing either Form 1023 or Form 1023-EZ, we recommend reading “Life Cycle of an Exempt Organization” at IRS.gov/charities.

How To File

The Form 1023-EZ can only be filed electronically by going to IRS.gov/form1023 or Pay.gov (enter the term “Form 1023-EZ” in the search box). We will not accept printed copy submissions of the application.



We recommend you preview and print a copy of your application for your records before submitting it electronically.

User Fee

A user fee of \$275 is required to process your application. This fee must be paid through [Pay.gov](https://www.pay.gov) when you file your application. Payments can be made directly from your bank account or by credit/debit card.

When To File (Effective Date of Exemption)

Generally, if you file Form 1023-EZ within 27 months after the end of the month in which you were legally formed, and we approve the application, the legal date of formation will be the effective date of your exempt status.

If you do not file Form 1023-EZ within 27 months of formation, the effective date of your exempt status will be the date you filed Form 1023-EZ (submission date).

If you do not file Form 1023-EZ within 27 months of formation, and you believe you qualify for an earlier effective date than the submission date, you can request the earlier date by sending correspondence to the address below. The correspondence should include your name, employer identification number (EIN), the effective date you are requesting, an explanation of why the earlier date is warranted, and any supporting documents. This correspondence should be sent after you receive your Determination Letter. Alternatively, you may complete Form 1023 in its entirety instead of completing Form 1023-EZ.

Note. If you have been automatically revoked and are seeking retroactive reinstatement, see [Part V. Reinstatement After Automatic Revocation](#) of these instructions.

Send effective date correspondence to:

Internal Revenue Service
Exempt Organizations Determinations
Room 4024
P.O. Box 2508
Cincinnati, OH 45201

Application process

Submitting this application does not guarantee exemption will be recognized. If your application is incomplete or not completed correctly, it may be rejected. In addition, you may be contacted for additional information. Also, the IRS will select a statistically valid random sample of applications for pre-determination reviews, which may also result in requests for additional information.

Filing Assistance

For help in completing this form or general questions relating to an exempt organization, call Exempt Organization Customer Account Services toll free at 1-877-829-5500. You may also access information on our website at [IRS.gov/charities](https://www.irs.gov/charities).

The following publications are available to you for further information.

- [Publication 517, Social Security and Other Information for Members of the Clergy and Religious Workers](#)
- [Publication 526, Charitable Contributions](#)
- [Publication 557, Tax-Exempt Status for Your Organization](#)
- [Publication 598, Tax on Unrelated Business Income of Exempt Organizations](#)
- [Publication 1771, Charitable Contributions—Substantiation and Disclosure Requirements](#)

- [Publication 1828, Tax Guide for Churches and Religious Organizations](#)
- [Publication 3079, Tax-Exempt Organizations and Gaming](#)
- [Publication 3833, Disaster Relief: Providing Assistance Through Charitable Organizations](#)
- [Publication 4220, Applying for 501\(c\)\(3\) Tax-Exempt Status](#)
- [Publication 4221, Compliance Guide for 501\(c\)\(3\) Tax-Exempt Organizations](#)

Signature Requirements

An officer, director, or trustee listed in Part I, line 8, who is authorized to sign for the organization must sign Form 1023-EZ. The signature must be accompanied by the title or authority of the signer and the date.

Annual Filing Requirements

Generally, an organization that qualifies for exemption under section 501(c)(3) is required to file an annual return in accordance with section 6033(a). However, an eligible organization, other than a private foundation, that normally has gross receipts of less than \$50,000 is not required to file an annual return, but must furnish notice on Form 990-N (e-Postcard) providing the information required by section 6033(j). See Rev. Proc. 2011-15, 2011-3 I.R.B. 322.

An organization that is required to file a Form 990-series annual information return or submit an annual electronic notice, Form 990-N, must do so even if its application for recognition of exemption has not been filed or has been filed but not yet approved.

If an annual information return or tax return is due while the Form 1023-EZ is pending, complete the return, check the "Application pending" box in the heading, and send the return to the address indicated in the instructions.

If an annual electronic notice, Form 990-N, is due while the Form 1023-EZ is pending, the organization may need to contact the IRS at 1-877-829-5500 and ask for an account to be established for the organization so that it may file the notice.

Information on annual information return and electronic notice filing requirements and exceptions to the filing requirements may be found in Publication 557 and at [IRS.gov/charities](https://www.irs.gov/charities).

If you believe you meet an exception to filing Form 990, Return of Organization Exempt From Income Tax; Form 990-EZ, Short Form Return of Organization Exempt From Income Tax; or Form 990-N, then you may request IRS recognition of this exception by filing Form 8940, Request for Miscellaneous Determination. A user fee must accompany the form. Alternatively, you may complete Form 1023 in its entirety instead of completing Form 1023-EZ.

Note. You do not need to notify the IRS that you are excepted from the annual filing requirement under section 6033(a) if your basis for the exception is that you are not a private foundation, your gross receipts are normally less than \$50,000, and you are filing Form 990-N.

Public Inspection

Information available for public inspection. If we approve exempt status under section 501(c)(3), both you and the IRS must make your application and related documents available for public inspection. For more information, please go to [IRS.gov/Charities-&-Non-Profits/Exempt-Organization-Public-Disclosure-and-Availability-Requirements](https://www.irs.gov/Charities-&-Non-Profits/Exempt-Organization-Public-Disclosure-and-Availability-Requirements).

State Registration Requirements

Tax exemption under section 501(c)(3) is a matter of federal law. After receiving federal tax exemption, you may also be required

to register with one or more states to solicit contributions or to obtain exemption from state taxes. The National Association of State Charity Officials (NASCO) maintains a website that provides informational links to the various states for these purposes. It can be accessed at nasconet.org.

Donor Reliance on a Favorable Determination

Generally, donors and contributors may rely on an organization's favorable Determination Letter under section 501(c)(3) until the IRS publishes notice of a change in status, unless the donor or contributor was responsible for or aware of the act or failure to act that results in the revocation of the organization's Determination Letter. See Rev. Proc. 2011-33, 2011-25 I.R.B. 887.

Specific Instructions

Before completing the Form 1023-EZ, you must complete the [Form 1023-EZ Eligibility Worksheet](#). If you meet the eligibility requirements, you must check the box at the top of Form 1023-EZ to attest that you are eligible to file the form. By checking the box, you are also attesting that you have read and understand the requirements to be exempt under section 501(c)(3). You are not required to submit the eligibility worksheet with your form. However, you should retain the worksheet for your records.

Part I. Identification of Applicant

Line 1a. Full name of organization. Enter your complete name exactly as it appears in your organizing document, including amendments.

Line 1b – 1e. Mailing address. Enter your complete address where all correspondence will be sent. If mail is not delivered to the street address and you have a P.O. box, enter your box number instead of the street address.

Line 2. Employer identification number (EIN). Enter the nine-digit EIN assigned to you.



You will not be able to submit this application until you have obtained an EIN.

An EIN is required regardless of whether you have employees. If you need an EIN, you may apply online at [IRS.gov/Businesses/Small-Businesses-&Self-Employed/Apply-for-an-Employer-Identification-Number-\(EIN\)-Online](http://IRS.gov/Businesses/Small-Businesses-&Self-Employed/Apply-for-an-Employer-Identification-Number-(EIN)-Online), or you can apply for one by:

1. Mailing Form SS-4 to the IRS at the address provided in the Instructions for Form SS-4.
2. Faxing Form SS-4 to the fax number provided in the Instructions for Form SS-4.

You can access Form SS-4 online at IRS.gov, or to order IRS tax forms and publications go to IRS.gov/orderforms. If you previously applied for an EIN and have not yet received it, or you are unsure whether you have an EIN, please call our toll-free customer account services number, 1-877-829-5500, for assistance.

Line 3. Month tax year ends (01-12). Enter the month that your tax year (annual accounting period) ends, using a two-digit number format. For example, if your annual accounting period ends December 31, enter "12." Your annual accounting period is the 12-month period on which your annual financial records are based. Your first tax year could be less than 12 months. Check your bylaws or other rules of operation for consistency with the annual accounting period entered on line 3.

Line 4. Person to contact if more information is needed.

Enter the name and title of the person to contact if more information is needed. The person to contact may be an officer, director, trustee, or other individual who is permitted to speak with us according to your bylaws or other rules of operation. Your person to contact may also be an "authorized representative," such as an attorney, certified public accountant (CPA), or enrolled agent (EA).

Note. We will request a Form 2848, Power of Attorney and Declaration of Representative, if we need to contact an authorized representative for additional information.

Line 5. Contact telephone number. Provide a daytime telephone number for the contact listed on line 4.

Line 6. Fax number. Provide a fax number for the contact listed on line 4.

Line 7. User fee submitted. Enter the user fee amount paid. (The current user fee is \$275.)

Line 8. List the names, titles, and mailing addresses of your officers, directors, and/or trustees. Enter the full names, titles, and mailing addresses of your officers, directors, and/or trustees. You may use the organization's address for mailing. If you have more than five, list only five in the order below.

1. President or chief executive officer or chief operating officer.
2. Treasurer or chief financial officer.
3. Chairperson of the governing body.
4. Any officers, directors, and trustees who are substantial contributors (not already listed above).
5. Any other officers, directors, and trustees who are related to a substantial contributor (not already listed above).
6. Voting members of the governing body (not already listed above).
7. Officers (not already listed above).

If an individual serves in more than one office (for example, as both an officer and director), list this individual on only one line and list all offices held.

An officer is a person elected or appointed to manage the organization's daily operations, such as president, vice president, secretary, treasurer, and, in some cases, board chair. The officers of an organization are determined by reference to its organizing document, bylaws, or resolutions of its governing body, or otherwise designated consistent with state law.

A director or trustee is a member of the organization's governing body, but only if the member has voting rights.

Line 9a. Organization's website. Enter your current website address, as of the date of filing this application. If you do not maintain a website, enter "N/A" (not applicable).

Line 9b. Organization's email. Enter your email address to receive educational information from us in the future. Because of security concerns, we cannot send confidential information via email.

Part II. Organizational Structure

Line 1. Entity type. Only certain corporations, unincorporated associations, and trusts are eligible for tax-exempt status under section 501(c)(3) of the Code. Sole proprietorships, partnerships, and loosely affiliated groups of individuals are not eligible. Check the appropriate box to indicate whether you are a corporation, an association, or a trust.

Note. Even though certain limited liability companies (LLCs) are eligible to receive exemption under section 501(c)(3), they are not eligible to apply for exemption using this form.

Corporation. A "corporation" is an entity organized under a federal or state statute, or a statute of a federally recognized Indian tribal or Alaskan native government. A corporation's organizing document is generally referred to as its "articles of incorporation." A corporation must be incorporated under the non-profit or non-stock laws of the jurisdiction in which it incorporates.

Unincorporated association. An "unincorporated association" formed under state law must have at least two members who have signed a written document for a specifically defined purpose.

Trust. A trust may be formed by a trust agreement or a declaration of trust. A trust may also be formed through a will.

Line 2. Necessary organizing document. See below for your organization type.

Corporation. If incorporated under a federal, state, or federally recognized Indian tribal or Alaskan native government statute, you have a "necessary organizing document" if your organizing document shows certification of filing. This means your organizing document shows evidence that on a specific date it was filed with and approved by an appropriate state authority.

Unincorporated association. In order to be a "necessary organizing document," your articles of organization must include your name, your purpose(s), the date the document was adopted, and the signatures of at least two individuals.

Bylaws may be considered an organizing document only if they are properly structured to include your name, purpose(s), signatures, and intent to form an organization.

Trust. In order for your trust agreement or declaration of trust to be a "necessary organizing document," it must contain appropriate signature(s) and show the exact date it was formed.

Line 3. Formation date. See below for your organization type.

Corporation. If you are a corporation, you should enter the date that the appropriate authority filed your articles of incorporation or other organizing document.

Unincorporated association. If you are an unincorporated association, you should enter the date that your organizing document was adopted by the signatures of at least two individuals.

Trust. If your trust was formed by a trust agreement or a declaration of trust and does not provide for distributions to non-charitable interests, enter the date the trust was funded. Generally, a trust must be funded with property, such as money, real estate, or personal property, to be legally created.

If your trust document provides for distributions for non-charitable interests, enter the date on which these interests expired. If your trust agreement continues to provide for non-charitable interests, you will not qualify for tax-exempt status.

If you were formed by a will, enter the date of death of the testator or the date any non-charitable interests expired, whichever is later.

Note. If you amended your organizational documents to comply with the requirements of section 501(c)(3), enter the date of amendment, unless the amendment was nonsubstantive within the meaning of Rev. Proc. 2015-5.

Line 4. State of formation. Enter the jurisdiction (for instance, the state or the federally recognized tribal government) under the laws of which you were incorporated or otherwise formed. If you are a corporation, this may not be the place in which you are physically located. For example, if you are physically located in

New York, but incorporated under Massachusetts law, enter Massachusetts.

Line 5. Purpose(s) clause. Your organizing document must limit your purposes to those described in section 501(c)(3). Those purposes are: charitable, religious, educational, scientific, literary, testing for public safety, fostering national or international amateur sports competition, and preventing cruelty to children or animals. See discussion of these purposes under Part III, line 2 of these instructions.

If your purposes are limited by referring to section 501(c)(3), your organizing document also properly limits your purposes. For example, the phrase "relief of the elderly within the meaning of section 501(c)(3)" in your organizing document also properly limits your purposes.

However, if the purposes listed in your organizing document are broader than those listed in section 501(c)(3), you should amend your organizing document before applying for recognition of exemption. A reference to section 501(c)(3) will not ensure that your purposes are limited to those described in section 501(c)(3). All of the language in your organizing document must be considered. The following is an example of an acceptable purpose clause:

The organization is organized exclusively for charitable, religious, educational, and scientific purposes under section 501(c)(3) of the Internal Revenue Code, or corresponding section of any future federal tax code.

See Publication 557 for further information and examples of how to limit your purposes.

Line 6. Activities not in furtherance of exempt purposes.

Your organizing document must not expressly empower you to engage, otherwise than as an insubstantial part of your activities, in activities that in themselves are not in furtherance of one or more exempt purposes described in section 501(c)(3). In other words, you are not organized exclusively for one or more exempt purposes if your organizing documents expressly empower you to carry on activities that further purposes outside the scope of section 501(c)(3), such as "to engage in the operation of a social club" or "to engage in a manufacturing business," regardless of the fact that your organizing document may state that you are created for "charitable purposes within the meaning of section 501(c)(3) of the Code."

Further, your net earnings must not inure to the benefit of private shareholders or individuals. You must establish that you will not be organized or operated for the benefit of private interests, such as the creator or the creator's family, shareholders of the organization, other designated individuals, or persons controlled directly or indirectly by such private interests. Also, you must not, as a substantial part of your activities, attempt to influence legislation (however, eligible organizations may elect an expenditure limit instead of the "no substantial part" limit), and you are prohibited from participating to any extent in a political campaign for or against any candidate for public office.

The following is an example of an acceptable clause:

No part of the net earnings of the corporation shall inure to the benefit of, or be distributable to its members, trustees, officers, or other private persons, except that the corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes described in section 501(c)(3). No substantial part of the activities of the corporation shall be the carrying on of propaganda, or otherwise attempting to influence legislation, and the corporation shall not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of or in opposition to any candidate for public office. Notwithstanding any other provision of these articles, the corporation shall not carry on any

other activities not permitted to be carried on (a) by a corporation exempt from federal income tax under section 501(c)(3) of the Internal Revenue Code, or the corresponding section of any future federal tax code, or (b) by a corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code, or the corresponding section of any future federal tax code.

See Publication 557 for further information and examples of acceptable language that expressly limits you to engage in activities in furtherance of one or more exempt purposes described in section 501(c)(3).



See the instructions for Part III, later, for more information on activities that exclusively further one or more exempt purposes, and certain activities that are prohibited or restricted for organizations exempt from federal income tax under section 501(c)(3).

Line 7. Dissolution clause. Your organizing document must permanently dedicate your assets for a section 501(c)(3) purpose. This means that if you dissolve your organization in the future, your assets must be distributed for an exempt purpose described in section 501(c)(3), or to the federal government, or to a state or local government, for a public purpose.

If your organizing document states that your assets would be distributed to members or private individuals or for any purpose other than those provided in section 501(c)(3), you must amend your organizing document to remove such statements before you apply for recognition of exemption.

The following is an example of an acceptable dissolution clause:

Upon the dissolution of this organization, assets shall be distributed for one or more exempt purposes within the meaning of section 501(c)(3) of the Internal Revenue Code, or corresponding section of any future federal tax code, or shall be distributed to the federal government, or to a state or local government, for a public purpose.

Naming a specific organization or organizations to receive your assets upon dissolution will be acceptable only if your articles state that the specific organization(s) must be exempt under section 501(c)(3) at the time your dissolution takes place and your organizing document provides for distribution for one or more exempt purposes within the meaning of section 501(c)(3) if the specific organization(s) are not exempt.

See Publication 557 for further information and examples of acceptable language for dedication of assets upon dissolution in your organizing document.

Operation of state law. The laws of certain states provide for the distribution of assets upon dissolution. Therefore, specific written language regarding distribution of assets upon dissolution may not be needed in the organizing documents of exempt organizations organized in those states. Organizations that are organized in these *cy pres* states should be aware of their specific state requirements. Operation of state law is based on Rev. Proc. 82-2, 1982-1 C.B. 367.



State law does not override an inappropriate dissolution clause. If you are organized in a *cy pres* state and do not have a dissolution clause, state law is sufficient to meet the dissolution clause. However, if you have an inappropriate dissolution clause (for example, a clause specifying that assets will or may be distributed to officers and/or directors upon dissolution), state law will not override this inappropriate clause, and you will need to amend your organizing document to remove the inappropriate clause before you apply for recognition of exemption.

Part III. Your Specific Activities

Consider your past, present, and planned activities when responding to these questions.

Line 1. National Taxonomy of Exempt Entities (NTEE)

code. An NTEE code is a three-character series of letters and numbers that generally summarize an organization's purpose. Enter the code that best describes your organization from the [list of NTEE codes](#), later, in these instructions. For more information and more detailed definitions of these codes developed by the National Center for Charitable Statistics (NCCS), visit the Urban Institute, NCCS website at nccsdataweb.urban.org.

Note. NTEE codes are also used for purposes other than identification of organizations described in section 501(c)(3). Therefore, all codes in the list do not necessarily describe a 501(c)(3) purpose. Selecting the appropriate NTEE code is important as some donors use the codes to identify potential recipients of grants.

Line 2. Exempt purposes. In order to qualify for exemption as an organization described in section 501(c)(3), you must be organized and operated exclusively for one or more of the following purposes: charitable, religious, educational, scientific, literary, testing for public safety, fostering national or international amateur sports competition, or preventing cruelty to children or animals. An organization is not regarded as being organized and operated exclusively for exempt purposes if more than an insubstantial part of its activities is not in furtherance of an exempt purpose. For more information, see Publication 557.

Note. An organization does not qualify for exemption as an organization described in section 501(c)(3) if its purposes are illegal or contrary to public policy. See Rev. Rul. 71-447, 1971-2 C.B. 230 (a private school that does not have a racially nondiscriminatory policy as to students does not qualify for exemption). Furthermore, an organization operated for the primary purpose of carrying on a trade or business for profit shall not be exempt from taxation under section 501(c)(3), even if all of its profits are payable to one or more organizations exempt from taxation under section 501.

Charitable. The generally accepted legal definition of "charitable" includes relief of the poor, the distressed, or the underprivileged; advancement of religion; advancement of education or science; erecting or maintaining public buildings, monuments, or works; lessening the burdens of government; lessening neighborhood tensions; eliminating prejudice and discrimination; defending human and civil rights secured by law; and combating community deterioration and juvenile delinquency.

Religious. To determine whether an organization meets the religious purposes test of section 501(c)(3), the IRS maintains two basic guidelines.

1. That the particular religious beliefs of the organization are truly and sincerely held. If there is a clear showing that the beliefs (or doctrines) are sincerely held by those professing them, the IRS will not question the religious nature of those beliefs.
2. That the practices and rituals associated with the organization's religious belief or creed are not illegal or contrary to clearly defined public policy. Therefore, an organization may not qualify for treatment as an exempt religious organization for tax purposes if its actions are contrary to well established and clearly defined public policy.

Educational. The term "educational," as used in section 501(c)(3), relates to:

- The instruction or training of the individual for the purpose of improving or developing his or her capabilities, or
- The instruction of the public on subjects useful to the individual and beneficial to the community.

An organization may be educational even though it advocates a particular position or viewpoint so long as it presents a sufficiently full and fair exposition of the pertinent facts as to permit an individual or the public to form an independent opinion or conclusion. On the other hand, an organization is not educational if its principal function is the mere presentation of unsupported opinion.

The term "educational" includes the provision of childcare away from the home if:

1. Substantially all of the care provided by the organization is to enable individuals (parents) to be gainfully employed, and
2. The services provided by the organization are available to the general public.

The following are examples of organizations which, if they otherwise meet the requirements of this section, are educational.

Example 1. An organization, such as a primary or secondary school, a college, or a professional or trade school, which has a regularly scheduled curriculum, a regular faculty, and a regularly enrolled body of students in attendance at a place where the educational activities are regularly carried on.

Example 2. An organization whose activities consist of presenting public discussion groups, forums, panels, lectures, or other similar programs. Such programs may be on radio or television.

Example 3. An organization which presents a course of instruction by means of correspondence or through the utilization of television or radio.

Example 4. Museums, zoos, planetariums, symphony orchestras, and other similar organizations.

Scientific. To be a scientific organization under section 501(c)(3), an organization must be organized and operated in the public interest. Therefore, the term "scientific," as used in section 501(c)(3), includes the carrying on of scientific research in the public interest. Scientific research does not include activities of a type ordinarily carried on as an incident to commercial or industrial operations, as, for example, the ordinary testing or inspection of materials or products, or the designing or construction of equipment or buildings.

Scientific research will be regarded as carried on in the public interest if:

1. The results of such research (including any patents, copyrights, processes, or formulae resulting from such research) are made available to the public on a nondiscriminatory basis;
2. Such research is performed for the United States, or any of its agencies or instrumentalities, or for a State or political subdivision thereof; or
3. Such research is directed toward benefiting the public.

Testing for public safety. The term "testing for public safety," as used in section 501(c)(3), includes the testing of consumer products, such as electrical products, to determine whether they are safe for use by the general public.

To foster national or international amateur sports competition. There are two types of amateur athletic organizations that can qualify for tax-exempt status. The first type is an organization that fosters national or international

amateur sports competition, but only if none of its activities involve providing athletic facilities or equipment. The second type is a qualified amateur sports organization under section 501(j) (discussed below). The primary difference between the two is that a qualified amateur sports organization can provide athletic facilities and equipment.

An organization will be a qualified amateur sports organization under section 501(j) if it is organized and operated:

1. Exclusively to foster national or international amateur sports competition, and
2. Primarily to conduct national or international competition in sports or to support and develop amateur athletes for that competition.

The organization's membership can be local or regional in nature.

Prevention of cruelty to children or animals. Examples of activities that may qualify this type of organization for exempt status are:

1. Preventing children from working in hazardous trades or occupations,
2. Promoting high standards of care for laboratory animals, and
3. Providing funds to pet owners to have their pets spayed or neutered to prevent over-breeding.

Line 3. Prohibited or restricted activities. Certain activities are prohibited or restricted for organizations exempt from federal income tax under section 501(c)(3). Along with conducting activities that exclusively further one or more of the purposes listed in Part III, line 2, earlier, organizations exempt under section 501(c)(3) must:

a) Refrain from supporting or opposing candidates in political campaigns in any way.

An organization exempt under section 501(c)(3) is prohibited from directly or indirectly participating in, or intervening in, any political campaign on behalf of (or in opposition to) any candidate for elective public office. The prohibition applies to all campaigns, including campaigns at the federal, state, and local level.

Political campaign intervention includes any and all activities that favor or oppose one or more candidates for public office. The prohibition extends beyond candidate endorsements. Contributions to political campaign funds or public statements of position (verbal or written) made by or on behalf of an organization in favor of or in opposition to any candidate for public office clearly violate the prohibition on political campaign intervention. Distributing statements prepared by others that favor or oppose any candidate for public office will also violate the prohibition. Allowing a candidate to use an organization's assets or facilities will also violate the prohibition if other candidates are not given an equivalent opportunity.

Certain activities will require an evaluation of all the facts and circumstances to determine whether they result in political campaign intervention. For example, section 501(c)(3) organizations are permitted to conduct certain voter education activities (including the presentation of public forums and the publication of voter education guides) if they are carried out in a non-partisan manner. In addition, section 501(c)(3) organizations may encourage people to participate in the electoral process through voter registration and get-out-the-vote drives conducted in a non-partisan manner. On the other hand, voter education or registration activities conducted in a biased manner that favors (or opposes) one or more candidates is prohibited.

For examples of relevant facts and circumstances, see Rev. Rul. 2007-41, 2007-1 C.B. 1421.

b) Ensure that net earnings do not inure in whole or in part to the benefit of private shareholders or individuals (that is, board members, officers, key management employees, or other insiders).

An organization is not operated exclusively for one or more exempt purposes if its net earnings inure in whole or in part to the benefit of private shareholders or individuals. The term "private shareholder or individual" refers to persons who have a personal and private interest in the organization, such as an officer, director, or a key employee. Any amount of inurement may be grounds for loss of tax-exempt status.

Note. Examples of inurement include the payment of dividends and the payment of unreasonable compensation to private shareholders or individuals.

c) Not further non-exempt purposes (such as purposes that benefit private interests) more than insubstantially.

An organization cannot conduct activities that further any purposes other than those described in Part III, line 2 of these instructions more than insubstantially, including benefitting private interests rather than the public as a whole. For example, an organization whose sole activity is the operation of a scholarship program for making payments to pre-selected, specifically named individuals is serving private interests rather than public interests. See Rev. Rul. 67-367, 1967-2 C.B. 188.

d) Not be organized or operated for the primary purpose of conducting a trade or business that is unrelated to exempt purpose(s).

An activity is an unrelated trade or business (and subject to unrelated business income tax) if it meets three requirements.

1. It is a trade or business.
2. It is regularly carried on.
3. It is not substantially related to furthering the exempt purpose(s) of the organization.

Trade or business. The term "trade or business" generally includes any activity conducted for the production of income from selling goods or performing services. An activity does not lose its identity as a trade or business merely because it is conducted within a larger group of similar activities that may or may not be related to the exempt purposes of the organization.

Regularly carried on. Business activities of an exempt organization ordinarily are considered regularly conducted if they show a frequency and continuity similar to, and are pursued in a manner similar to, comparable commercial activities of nonexempt organizations.

Not substantially related. A business activity is not substantially related to an organization's exempt purpose if it does not contribute importantly to accomplishing that purpose (other than through the production of funds). Whether an activity contributes importantly depends in each case on the facts involved.

For more information, see Publication 598.

e) Not devote more than an insubstantial part of activities to attempting to influence legislation.

In general, if a substantial part of an organization's activities consists of carrying on propaganda or otherwise attempting to influence legislation, it does not qualify for exemption under section 501(c)(3).

Legislation includes action by Congress, any state legislature, any local council, or similar governing body, with respect to acts, bills, resolutions, or similar items (such as legislative confirmation of appointive office), or by the public in referendum,

ballot initiative, constitutional amendment, or similar procedure. It does not include actions by executive, judicial, or administrative bodies.

An organization will be regarded as attempting to influence legislation if it contacts, or urges the public to contact, members or employees of a legislative body for the purpose of proposing, supporting, or opposing legislation, or if the organization advocates the adoption or rejection of legislation.



Most public charities are eligible to elect under section 501(h) to have their legislative activities measured solely by an expenditure limit rather than by the "no substantial amount" limit. An election is made by filing Form 5768, Election/Revocation of Election by an Eligible Section 501(c)(3) Organization To Make Expenditures To Influence Legislation. If you are eligible and would like to make the election, file Form 5768. Private foundations cannot make this election.

For additional information on the expenditure limit or the no substantial amount limit, see [IRS.gov/Charities-&-Non-Profits/Lobbying](https://www.irs.gov/Charities-&-Non-Profits/Lobbying).

f) Not provide commercial-type insurance as a substantial part of activities.

An organization described in section 501(c)(3) shall be exempt from tax only if no substantial part of its activities consists of providing commercial-type insurance. The term "commercial-type insurance" does not include:

- Insurance provided at substantially below cost to a class of charitable recipients,
- Incidental health insurance provided by a health maintenance organization of a kind customarily provided by such organizations,
- Property or casualty insurance provided (directly or through an organization described in section 414(e)(3)(B)(ii)) by a church or convention or association of churches for such church or convention or association of churches,
- Providing retirement or welfare benefits (or both) by a church or a convention or association of churches (directly or through an organization described in section 414(e)(3)(A) or 414(e)(3)(B)(ii)) for the employees (including employees described in section 414(e)(3)(B)) of such church or convention or association of churches or the beneficiaries of such employees, and
- Charitable gift annuities.

Line 4. Attempting to influence legislation. Check "Yes" if you have attempted, or plan to attempt, to influence legislation. See the instructions for Part III, line 3, earlier, for a description of "attempting to influence legislation."

Line 5. Compensation to officers, directors, or trustees. Check "Yes" if you pay or plan to pay compensation to any of your officers, directors, or trustees.

Compensation includes salary or wages, deferred compensation, retirement benefits whether in the form of a qualified or non-qualified employee plan (pensions or annuities), fringe benefits (personal vehicle, meals, lodging, personal and family educational benefits, low interest loans, payment of personal travel, entertainment, or other expenses, athletic or country club membership, personal use of your property), and bonuses.

Line 6. Donation of funds or payment of expenses to individuals. Check "Yes" if you have donated funds to or paid expenses for individual(s), or plan to donate funds to or pay expenses for individual(s) (other than paying for or reimbursing employees' business expenses).



An organization is not organized or operated exclusively for one or more exempt purposes unless it serves a public rather than a private interest. You do not qualify

as tax-exempt if you are organized or operated for the benefit of private interests such as designated individuals, the creator or his or her family, or shareholders of the organization. For example, you may not set up a scholarship program to pay for the education expenses of a designated individual, such as a contributor's family member. See Rev. Rul. 67-367, 1967-2 C.B. 188.

Line 7. Conducting activities or providing grants outside the United States. Check "Yes" if you have conducted or plan to conduct activities outside the United States, or have provided or plan to provide grants or other assistance to individual(s) or organization(s) outside the United States. For purposes of this question, "outside the United States" means those locations other than the United States, its territories, and possessions.

Line 8. Financial transactions with officers, directors, or trustees. Check "Yes" if you have engaged in or plan to engage in financial transactions (for example, loans, grants, or other assistance, payments for goods or services, rents, etc.) with any of your officers, directors, or trustees, or any entities they own or control. (See the glossary in the Form 990 instructions for a definition of "control.")

Line 9. Unrelated business gross income. Check "Yes" if you have received or plan to receive unrelated business gross income of \$1,000 or more during a tax year. Exempt organizations that receive unrelated business gross income of \$1,000 or more during a tax year must file Form 990-T, Exempt Organization Business Income Tax Return. For more information, see Publication 598.

Line 10. Gaming activities. Check "Yes" if you have conducted or plan to conduct bingo or other gaming activities. For more information, see Publication 3079, Tax-Exempt Organizations and Gaming.

Line 11. Disaster relief assistance. Check "Yes" if you have provided or plan to provide disaster relief. For more information, see Publication 3833, Disaster Relief: Providing Assistance Through Charitable Organizations.



Because of the requirement that exempt organizations must serve a charitable class, you do not qualify as a tax-exempt disaster relief or emergency hardship organization if you provide assistance only to specific individuals, such as a few persons injured in a particular natural disaster. Similarly, donors cannot earmark contributions to a charitable organization for a particular individual or family.

Part IV. Foundation Classification

Organizations that are described in section 501(c)(3) are classified as either public charities or private foundations. A public charity generally has a broad base of support, while a private foundation generally receives its support from a small number of donors. This classification is important because different tax rules apply to the operations of each entity. Deductibility of contributions to a private foundation is more limited than contributions to a public charity. See Publication 526, Charitable Contributions, for more information on the deductibility of contributions. In addition, as described below, private foundations are subject to excise taxes that are not imposed on public charities.

To be classified as a public charity, a section 501(c)(3) organization must meet one of the exceptions to private foundation status described in section 509(a)(1), 509(a)(2), 509(a)(3), or 509(a)(4). For a description of the categories of public charities, see Publication 557.

All other section 501(c)(3) organizations are classified as private foundations. Some private foundations are private

operating foundations. Additional information about private foundations and private operating foundations is available in Publication 4221-PF, Compliance Guide for 501(c)(3) Private Foundations, and at [IRS.gov/Charities-&-Non-Profits/Private-Foundations/Private-Operating-Foundations](https://www.irs.gov/Charities-&-Non-Profits/Private-Foundations/Private-Operating-Foundations).

Note. Many organizations described in section 501(c)(3) meet one of the exceptions described above and are classified as public charities, which are subject to more favorable treatment under tax law than are private foundations.

Private operating foundations and certain categories of public charities, such as churches, schools, and hospitals, are not eligible to apply for exemption under section 501(c)(3) using Form 1023-EZ. To determine if you are eligible to file Form 1023-EZ, complete the [Form 1023-EZ Eligibility Worksheet](#), later.

Organizations that are eligible to apply for exemption using Form 1023-EZ and meet the requirements of section 501(c)(3) are private foundations *unless* they:

- Have broad financial support from the general public (as described in the instructions for **Lines 1a** and **1b** below), or
- Are operated for the benefit of a college or university that is owned or operated by a governmental unit (as described in the instructions for **Line 1c** below).

Unless you meet one of these exceptions, you are a private foundation and must complete **Line 2**.

If you meet one of the exceptions above, you must select your public charity status in **Line 1**. **You may only check one box in Line 1.**

Line 1a. Check this box if you either:

- Normally receive 33⅓% or more of your total support from governmental agencies, contributions from the general public, and contributions or grants from other public charities (the "33⅓% public support test"); or
- Satisfy the following three-part "facts and circumstances test": (1) you normally receive 10% or more of your total support from governmental agencies, contributions from the general public, and contributions or grants from other public charities (the "10% public support requirement"); (2) you are organized and operated to attract new and additional public or governmental support on a continuous basis (the attraction of public support requirement); and (3) you have other characteristics of a publicly supported organization (see other factors below).

Facts and circumstances test: other factors. The following factors are taken into account in determining whether an organization that meets the 10% public support requirement and the attraction of public support requirement qualifies as publicly supported: (i) the percentage of financial support the organization receives from the general public, governmental units, or public charities (the higher the percentage, the lower the burden of meeting the other factors); (ii) whether the organization receives support from a representative number of persons; and (iii) all other facts and circumstances, including the public nature of the organization's governing body, the extent to which its facilities or programs are publicly available, the extent to which its dues encourage membership, and whether its activities are likely to appeal to persons having a broad common interest or purpose. For additional information about the facts and circumstances test, see Publication 557, and Regulations section 1.170A-9(f)(3).

The following definitions apply for purposes of both the 33⅓% public support test and the 10% public support requirement.

Normally. Whether an organization "normally" receives the required level of public support generally is measured using a five-year computation period that includes the current tax year and four prior tax years. For a newly formed organization, the

test is whether the organization can reasonably be expected to meet the requirements of the 33 $\frac{1}{3}$ % public support test or the 10% public support plus facts and circumstances test during its first five taxable years as a section 501(c)(3) organization. The basic consideration is whether its organizational structure, current or proposed programs or activities, and actual or intended method of operation can reasonably be expected to attract the type of broadly based support from the general public, public charities, and governmental units that is necessary to meet the public support requirements described above. For more information about the public support requirements, see Publication 557.

Total support. "Total support" includes contributions, membership fees, net income from unrelated business activities, and gross investment income, but does not include income from activities directly related to your exempt function.

Public support. "Public support" does not include contributions from any individual, corporation, or trust that exceed 2% of the organization's total support during the five-year computation period. In applying the 2% limit, all contributions made by a donor and by any persons in a special relationship to the donor (for example, family members of the donor and entities controlled by the donor) are considered made by one person.

Note. You do not meet either of these public support tests if you receive almost all of your support from gross receipts from related activities and an insignificant amount of your support from governmental units and contributions made directly or indirectly by the general public.

Line 1b. Check this box if you normally receive (1) more than 33 $\frac{1}{3}$ % of your support from contributions, membership fees, and gross receipts (from permitted sources, see below) from admissions, sales of merchandise, performance of services, or furnishing of facilities in an activity that is not an unrelated trade or business, subject to certain limits described below; and (2) not more than 33 $\frac{1}{3}$ % of your support from gross investment income and net unrelated business income (less the amount of tax on unrelated business taxable income under section 511).

For this purpose, "permitted sources" are governmental units, public charities described in section 509(a)(1), and persons other than disqualified persons. For additional information, see Publication 557.

Gross receipts from permitted sources. Gross receipts from related activities received from a person or from any government agency are includible in any tax year only to the extent the gross receipts are not more than the greater of \$5,000 or 1% of the organization's total support in that year.

Normally. Whether an organization "normally" meets these support tests generally is measured using a five-year computation period that includes the current tax year and four prior tax years. For a newly formed organization, the test is whether it can reasonably be expected to meet the 33 $\frac{1}{3}$ % support test and the not-more-than 33 $\frac{1}{3}$ % support test during its first five taxable years as a section 501(c)(3) organization. For factors considered in determining whether an organization can reasonably be expected to meet these tests, see Publication 557.



For help determining if you meet one of the two public support tests described above, complete Schedule A (Form 990 or 990-EZ), Public Charity Status and Public Support, Parts II and III.

Line 1c. Check this box if you both (1) are organized and operated exclusively to receive, hold, invest, and administer property for and make expenditures to or for the benefit of a state or municipal college or university (see below); and (2) normally receive a substantial part of your support from a

governmental unit or from direct or indirect contributions from the general public, or from a combination of these sources.

The college or university you benefit must be:

- An agency or instrumentality of a state or political subdivision,
- Owned and operated by a state or political subdivision, or
- Owned and operated by an agency or instrumentality of one or more states or political subdivisions.

For this purpose, "support" does not include income received in the exercise or performance by the organization of its charitable, educational, or other purpose or function constituting the basis for exemption. See Publication 557 for additional information.

Line 2. If you checked one of the boxes in **Line 1** because you meet one of the public charity exceptions, do not complete the rest of this section. If you are organized and operated exclusively for tax-exempt purposes under section 501(c)(3) but do not meet one of the public charity tests listed in **Lines 1a – 1c**, you are a private foundation and must complete **Line 2**.

As a private foundation you are not tax exempt unless your organizing document contains specific provisions required by section 508(e). These specific provisions require that you operate to avoid liability for excise taxes under sections 4941(d) (acts of self-dealing), 4942 (undistributed income), 4943(c) (excess business holdings), 4944 (jeopardizing investments), and 4945(d) (taxable expenditures). Additional information regarding these private foundation excise taxes is available in Publication 4221-PF, Compliance Guide for 501(c)(3) Private Foundations, and at [IRS.gov/Charities-&-Non-Profits/Private-Foundations/Private-Foundation-Excise-Taxes](https://www.irs.gov/Charities-&-Non-Profits/Private-Foundations/Private-Foundation-Excise-Taxes).

For samples of provisions that will meet the section 508(e) requirements, see Publication 557, Chapter 3, Section 501(c)(3) Organizations: Private Foundations.

Operation of state law. Some states have enacted statutory provisions that satisfy the requirements of section 508(e), subject to notations. Organizations that are organized in a state that has a statutory provision addressing the requirements of section 508(e) should be aware of their specific state requirements. Operation of state law is based on Rev. Rul. 75-38, 1975-1 C.B. 161.

Check **Line 2** to attest that either your organizing document contains the appropriate provisions or that the provisions are met by operation of state law.

Note. Private foundations are required to obtain advance approval from the IRS before making grants to individuals for travel, study, or similar purposes. Failure to do so will result in excise taxes under section 4945. Under section 4945, the excise tax does not apply to an individual grant awarded on an objective and nondiscriminatory basis pursuant to a procedure approved by the IRS in advance. Additional information regarding these rules is available at [IRS.gov/Charities-&-Non-Profits/Private-Foundations/Grants-to-Individuals](https://www.irs.gov/Charities-&-Non-Profits/Private-Foundations/Grants-to-Individuals).

To request advance approval of grantmaking procedures under section 4945(g) you must complete and submit Form 8940. A user fee must accompany the form. The advance approval request should be sent to the address indicated on Form 8940. It cannot be submitted with Form 1023-EZ. Additional information about advance approval of individual grant procedures is available at [IRS.gov/Charities-&-Non-Profits/Private-Foundations/Advance-Approval-of-Grant-Making-Procedures](https://www.irs.gov/Charities-&-Non-Profits/Private-Foundations/Advance-Approval-of-Grant-Making-Procedures). Alternatively, if you do not wish to submit a Form 1023-EZ and a Form 8940, private foundations required to obtain advance approval may complete the full Form 1023 instead.

Part V. Reinstatement After Automatic Revocation

You should complete this section only if you have had your exempt status automatically revoked under section 6033(j)(1) of the Code for failure to file required annual returns or notices for three consecutive years, and you are applying for reinstatement under section 4 or 7 of Rev. Proc. 2014-11, 2014-3 I.R.B. 411.

Rev. Proc. 2014-11 establishes several different procedures for reinstating organizations depending upon their size, number of times they have been automatically revoked, and the timeliness of filing for reinstatement. Therefore, you should review the revenue procedure and determine which section applies to you.

Note. You can apply using this form only if you are requesting reinstatement under section 4 or 7 of the revenue procedure. If you are applying for retroactive reinstatement under section 5 or 6 of Rev. Proc. 2014-11, you must submit the full Form 1023 along with the appropriate reasonable cause statement and a statement confirming you have filed the required annual returns as described in the revenue procedure.

Line 1. Section 4 of Rev. Proc. 2014-11. Check this box if:

- You were eligible to file either Form 990-EZ or Form 990-N for each of the three consecutive years that you failed to file,
- This is the first time you have been automatically revoked pursuant to section 6033(j), and
- You are submitting this application not later than 15 months after the later of the date of your Revocation Letter or the date on which the IRS posted your name on the Revocation List at IRS.gov/Charities-&-Non-Profits/Exempt-Organizations-Select-Check.

By checking this box, you are also attesting that your failure to file was not intentional and you have put in place procedures to file required returns or notices in the future.

Line 2. Section 7 of Rev. Proc. 2014-11. Check this box if you are seeking reinstatement under section 7 of Rev. Proc.

2014-11. By checking this box, you are agreeing to accept an effective date of reinstatement as of the date of filing this application.

Part VI. Signature

An officer, director, or trustee listed in Part I, line 8, who is authorized to sign for the organization must electronically sign Form 1023-EZ. To electronically sign Form 1023-EZ, the signer must check the "penalties of perjury" box in Part VI and type his or her name on the line provided. The signature must be accompanied by the title or authority of the signer and the date.

Paperwork Reduction Act Notice. The time needed to complete and file this form will vary depending on individual circumstances. The estimated average time is:

Recordkeeping	10 hr., 02 min.
Learning about the law or the form	2 hr., 30 min.
Preparing the form	5 hr., 33 min.
Copying, assembling, and sending the form to the IRS	48 min.

If you have comments concerning the accuracy of these time estimates or suggestions for making this form simpler, we would be happy to hear from you. You can send your comments to Internal Revenue Service, Tax Forms and Publications Division, 1111 Constitution Ave. NW, IR-6526, Washington, DC 20224. Do not send the tax form to this address. Instead, see [How To File](#), earlier.

Form 1023-EZ Eligibility Worksheet
(Must be completed prior to completing Form 1023-EZ)

If you answer "Yes" to any of the worksheet questions, you are not eligible to apply for exemption under section 501(c)(3) using Form 1023-EZ. You must apply on Form 1023. If you answer "No" to all of the worksheet questions, you may apply using Form 1023-EZ.

1.	<p>Do you project that your annual gross receipts will exceed \$50,000 in any of the next 3 years?</p> <p>Gross receipts are the total amounts the organization received from all sources during its annual accounting period, without subtracting any costs or expenses. You should consider this year and the next two years.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2.	<p>Have your annual gross receipts exceeded \$50,000 in any of the past 3 years?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3.	<p>Do you have total assets the fair market value of which is in excess of \$250,000?</p> <p>Total assets includes cash, accounts receivable, inventories, bonds and notes receivable, corporate stocks, loans receivable, other investments, depreciable and depletable assets, land, buildings, equipment, and any other assets.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4.	<p>Were you formed under the laws of a foreign country (United States territories and possessions are not considered foreign countries)?</p> <p>You are formed under the laws of a foreign country if you are not formed under the laws of (1) the United States, its states, territories, or possessions; (2) federally recognized Indian tribal or Alaskan native governments; or (3) the District of Columbia.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5.	<p>Is your mailing address in a foreign country (United States territories and possessions are not considered foreign countries)?</p> <p>Your mailing address is the address where all correspondence will be sent.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6.	<p>Are you a successor to, or controlled by, an entity suspended under section 501(p) (suspension of tax-exempt status of terrorist organizations)?</p> <p>Section 501(p)(1) suspends the exemption from tax under section 501(a) of any organization described in section 501(p)(2). An organization is described in section 501(p)(2) if the organization is designated or otherwise individually identified (1) under certain provisions of the Immigration and Nationality Act as a terrorist organization or foreign terrorist organization; (2) in or pursuant to an Executive Order which is related to terrorism and issued under the authority of the International Emergency Economic Powers Act or section 5 of the United Nations Participation Act of 1945 for the purpose of imposing on such organization an economic or other sanction; or (3) in or pursuant to an Executive Order issued under the authority of any federal law, if the organization is designated or otherwise individually identified in or pursuant to the Executive Order as supporting or engaging in terrorist activity (as defined in the Immigration and Nationality Act) or supporting terrorism (as defined in the Foreign Relations Authorization Act) and the Executive Order refers to section 501(p)(2).</p> <p>Under section 501(p)(3) of the Code, suspension of an organization's tax exemption begins on the date of the first publication of a designation or identification with respect to the organization, as described above, or the date on which section 501(p) was enacted, whichever is later. This suspension continues until all designations and identifications of the organization are rescinded under the law or Executive Order under which such designation or identification was made.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

7.	Are you organized as an entity other than a corporation, unincorporated association, or trust? Answer "Yes" if you are organized as an LLC under the laws of the state in which you were formed.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8.	Are you formed as a for-profit entity?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
9.	Are you a successor to a for-profit entity? You are a successor if you have: 1. Substantially taken over all of the assets or activities of a for-profit entity; 2. Been converted or merged from a for-profit entity; or 3. Installed the same officers, directors, or trustees as a for-profit entity that no longer exists.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
10.	Were you previously revoked or are you a successor to a previously revoked organization (other than an organization the tax-exempt status of which was automatically revoked for failure to file a Form 990-series return for three consecutive years)? Do not check "Yes" if your previous revocation, or your predecessor's revocation, was an automatic revocation (pursuant to section 6033(j)) for failing to satisfy Form 990-series filing requirements for three consecutive years.	<input type="checkbox"/> Yes	<input type="checkbox"/> No
11.	Are you currently recognized as tax-exempt under another section of IRC 501(a) or were you previously exempt under another section of IRC 501(a)? Do not check "Yes" if your previous exemption was revoked (pursuant to section 6033(j)) for failing to satisfy Form 990-series filing requirements for three consecutive years.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

<p>12. Are you a church or a convention or association of churches described in section 170(b)(1)(A)(i)?</p> <p>There is no single definition of the word “church” for tax purposes; however, the characteristics generally attributed to churches include:</p> <ul style="list-style-type: none"> • A distinct legal existence, • A recognized creed and form of worship, • A definite and distinct ecclesiastical government, • A formal code of doctrine and discipline, • A distinct religious history, • A membership not associated with any other church or denomination, • Ordained ministers ministering to the congregation, • Ordained ministers selected after completing prescribed courses of study, • A literature of its own, • Established places of worship, • Regular congregations, • Regular religious services, • Sunday schools for the religious instruction of the young, and • Schools for the preparation of ministers. <p>Although it is not necessary that each of the above characteristics be present, a congregation or other religious membership group that meets regularly for religious worship is generally required. A church includes mosques, temples, synagogues, and other forms of religious organizations. For more information, see Publication 1828.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>13. Are you a school, college, or university described in section 170(b)(1)(A)(ii)?</p> <p>An organization is a school if it:</p> <ol style="list-style-type: none"> 1. Presents formal instruction as its primary function, 2. Has a regularly scheduled curriculum, 3. Has a regular faculty of qualified teachers, 4. Has a regularly enrolled student body, and 5. Has a place where educational activities are regularly carried on. <p>The term “school” includes primary, secondary, preparatory, high schools, colleges, and universities. It does not include organizations engaged in both educational and non-educational activities, unless the latter are merely incidental to the educational activities.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

14.	<p>Are you a hospital or medical research organization described in section 170(b)(1)(A)(iii) or a hospital organization described in section 501(r)(2)(A)(i)?</p> <p>An organization is a hospital described in section 170(b)(1)(A)(iii) if its principal purpose or function is providing medical or hospital care, or medical education or research. Medical care includes treatment of any physical or mental disability or condition, on an inpatient or outpatient basis. Thus, if an organization is a rehabilitation institution, outpatient clinic, or community mental health or drug treatment center, it is a hospital if its principal function is providing treatment services as described above.</p> <p>A hospital does not include convalescent homes, homes for children or the aged, or institutions whose principal purpose or function is to train handicapped individuals to pursue a vocation.</p> <p>An organization is a medical research organization described in section 170(b)(1)(A)(iii) if its principal purpose or function is the direct, continuous, and active conduct of medical research in conjunction with a hospital. The hospital with which the organization is affiliated must be described in section 501(c)(3), a federal hospital, or an instrumentality of a governmental unit, such as a municipal hospital.</p> <p>An organization is a hospital organization described in section 501(r)(2)(A)(i) if the organization operates a facility which is required by a state to be licensed, registered, or similarly recognized as a hospital.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
15.	<p>Are you an agricultural research organization described in section 170(b)(1)(A)(ix)?</p> <p>An organization is an agricultural research organization described in section 170(b)(1)(A)(ix) if it is an agricultural research organization directly engaged in the continuous active conduct of agricultural research (as defined in section 1404 of the Agricultural Research, Extension, and Teaching Policy Act of 1977) in conjunction with a land grant college or university (as defined in such section) or a non-land grant college of agriculture (as defined in such section), and during the calendar year in which the contribution is made such organization is committed to spend such contribution for such research before January 1 of the fifth calendar year which begins after the date such contribution is made.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

<p>16. Are you applying for exemption as a cooperative hospital service organization under section 501(e)?</p>	<p>A cooperative hospital service organization described in section 501(e) is organized and operated on a cooperative basis to provide its section 501(c)(3) hospital members one or more of the following activities.</p> <ul style="list-style-type: none"> • Data processing. • Purchasing (including purchasing insurance on a group basis). • Warehousing. • Billing and collection (including purchasing patron accounts receivable on a recourse basis). • Food. • Clinical. • Industrial engineering. • Laboratory. • Printing. • Communications. • Record center. • Personnel (including selecting, testing, training, and educating personnel) services. <p>A cooperative hospital service organization must also meet certain other requirements specified in section 501(e).</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>17. Are you applying for exemption as a cooperative service organization of operating educational organizations under section 501(f)?</p>	<p>An organization is a cooperative service organization of operating educational organizations if it is organized and operated solely to provide investment services to its members. Those members must be organizations described in section 170(b)(1)(A)(ii) or (iv) that are tax exempt under section 501(a) or whose income is excluded from taxation under section 115.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

<p>18. Are you applying for exemption as a qualified charitable risk pool under section 501(n)?</p> <p>A qualified charitable risk pool is treated as organized and operated exclusively for charitable purposes. Check the appropriate box to indicate whether you are a charitable risk pool. A qualified charitable risk pool is an organization that:</p> <ol style="list-style-type: none"> 1. Is organized and operated only to pool insurable risks of its members (not including risks related to medical malpractice) and to provide information to its members about loss control and risk management, 2. Consists only of members that are section 501(c)(3) organizations exempt from tax under section 501(a), 3. Is organized under state law authorizing this type of risk pooling, 4. Is exempt from state income tax (or will be after qualifying as a section 501(c)(3) organization), 5. Has obtained at least \$1,000,000 in startup capital from nonmember charitable organizations, 6. Is controlled by a board of directors elected by its members, and 7. Is organized under documents requiring that: <ol style="list-style-type: none"> a. Each member be a section 501(c)(3) organization exempt from tax under section 501(a), b. Each member that receives a final determination that it no longer qualifies under section 501(c)(3) notify the pool immediately, and c. Each insurance policy issued by the pool provide that it will not cover events occurring after a final determination described in (b). 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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<p>19. Are you requesting classification as a supporting organization under section 509(a)(3)?</p> <p>A supporting organization (as defined in section 509(a)(3)) differs from the other types of public charities described in section 509. Instead of describing an organization that conducts a particular kind of activity or that receives financial support from the general public, section 509(a)(3) describes organizations that have established certain relationships in support of public charities described in section 509(a)(1) or 509(a)(2). Thus, an organization can qualify as a supporting organization (and not be classified as a private foundation) even though it may be funded by a single donor, family, or corporation. This kind of funding ordinarily would indicate private foundation status, but a section 509(a)(3) organization has limited purposes and activities, and gives up a significant degree of independence. A supporting organization is an organization that:</p> <ol style="list-style-type: none"> 1. Is organized and operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more specified organizations as described in section 509(a)(1) or 509(a)(2). These section 509(a)(1) and 509(a)(2) organizations are commonly called publicly supported organizations. 2. Has one of three types of relationships with one or more organizations described in section 509(a)(1) or 509(a)(2). It must be: <ol style="list-style-type: none"> a. Operated, supervised, or controlled by one or more section 509(a)(1) or 509(a)(2) organizations (Type I supporting organization); b. Supervised or controlled in connection with one or more section 509(a)(1) or 509(a)(2) organizations (Type II supporting organization); or c. Operated in connection with one or more section 509(a)(1) or 509(a)(2) organizations (Type III supporting organization). 3. Is not controlled directly or indirectly by disqualified persons (as defined in section 4946) other than foundation managers and other than one or more organizations described in section 509(a)(1) or 509(a)(2). <p>See Publication 557 for more information.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>20. Is a substantial purpose of your activities to provide assistance to individuals through credit counseling activities such as budgeting, personal finance, financial literacy, mortgage foreclosure assistance, or other consumer credit areas?</p> <p>These activities involve the education of the consumer on budgeting, personal finance, financial literacy, mortgage foreclosure assistance, or other consumer credit areas. It may also involve assisting the consumer in consolidating debt and negotiating between debtors and creditors to lower interest rates and waive late and over-limit fees.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>21. Do you or will you invest 5% or more of your total assets in securities or funds that are not publicly traded?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>22. Do you participate, or intend to participate, in partnerships (including entities or arrangements treated as partnerships for federal tax purposes) in which you share losses with partners other than section 501(c)(3) organizations?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>23. Do you sell, or intend to sell carbon credits or carbon offsets?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>24. Are you a Health Maintenance Organization (HMO)?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

<p>25. Are you an Accountable Care Organization (ACO), or an organization that engages in, or intends to engage in, ACO activities (such as participation in the Medicare Shared Savings Program (MSSP) or in activities unrelated to the MSSP described in Notice 2011-20, 2011-16 I.R.B. 652)?</p> <p>ACOs are entities formed by groups of physicians, hospitals, and other health care service providers and suppliers to manage and coordinate the care provided to patients. For a discussion of tax law issues relating to ACOs, see Notice 2011-20 and FS-2011-11, available at IRS.gov/uac/Tax-Exempt-Organizations-Participating-in-the-Medicare-Shared-Savings-Program-through-Accountable-Care-Organizations.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>26. Do you maintain or intend to maintain one or more donor advised funds?</p> <p>In general, a donor advised fund is a fund or account that is owned and controlled by the organization but that is separately identified by reference to contributions of a donor or donors and with respect to which a donor (or any person appointed or designated by the donor) has or expects to have advisory privileges concerning the distribution or investment of amounts held in the fund or account by reason of the donor's status as a donor. For additional information, see Publication 557.</p> <p>Check "No" if you are a governmental unit referred to in section 170(c)(1) or a private foundation referred to in section 509(a).</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>27. Are you organized and operated exclusively for testing for public safety and requesting a foundation classification under section 509(a)(4)?</p> <p>Generally, these organizations test consumer products to determine their acceptability for use by the general public.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>28. Are you requesting classification as a private operating foundation?</p> <p>Private foundations lack general public support. What distinguishes a private operating foundation from other private foundations is that it engages directly in the active conduct of charitable, religious, educational, and similar activities (as opposed to indirectly carrying out these activities by providing grants to individuals or other organizations). Private operating foundations are subject to more favorable rules than other private foundations in terms of charitable contribution deductions and attracting grants from private foundations. However, to be classified as a private operating foundation, an organization must meet certain tests. Additional information about private operating foundations is available at IRS.gov/Charities-&Non-Profits/Private-Foundations/Private-Operating-Foundations.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<p>29. Are you applying for retroactive reinstatement of exemption under section 5 or 6 of Rev. Proc. 2014-11, after being automatically revoked?</p> <p>Only organizations applying for reinstatement under section 4 or 7 of Rev. Proc. 2014-11 may use Form 1023-EZ. If you are applying for retroactive reinstatement under section 5 or 6 of Rev. Proc. 2014-11, you must submit the full Form 1023 along with the appropriate reasonable cause statement and a statement confirming you have filed the required annual returns as described in the revenue procedure.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

National Taxonomy of Exempt Entities (NTEE) Codes.

Arts, Culture, and Humanities		B82	Scholarships, Student Financial Aid Services, Awards	E20	Hospitals and Related Primary Medical Care Facilities	G20	Birth Defects and Genetic Diseases
A01	Alliance/Advocacy Organizations	B83	Student Sororities, Fraternities	E21	Community Health Systems	G25	Down Syndrome
A02	Management & Technical Assistance	B84	Alumni Associations	E22	Hospital, General	G30	Cancer
A03	Professional Societies, Associations	B90	Educational Services and Schools - Other	E24	Hospital, Specialty	G40	Diseases of Specific Organs
A05	Research Institutes and/or Public Policy Analysis	B92	Remedial Reading, Reading Encouragement	E30	Health Treatment Facilities, Primarily Outpatient	G41	Eye Diseases, Blindness and Vision Impairments
A11	Single Organization Support	B94	Parent/Teacher Group	E31	Group Health Practice (Health Maintenance Organizations)	G42	Ear and Throat Diseases
A12	Fund Raising and/or Fund Distribution	B99	Education N.E.C.	E32	Ambulatory Health Center, Community Clinic	G43	Heart and Circulatory System Diseases, Disorders
A19	Nonmonetary Support N.E.C.*	Environmental Quality, Protection, and Beautification		E40	Reproductive Health Care Facilities and Allied Services	G44	Kidney Disease
A20	Arts, Cultural Organizations - Multipurpose	C01	Alliance/Advocacy Organizations	E42	Family Planning Centers	G45	Lung Disease
A23	Cultural, Ethnic Awareness	C02	Management & Technical Assistance	E50	Rehabilitative Medical Services	G48	Brain Disorders
A25	Arts Education	C03	Professional Societies, Associations	E60	Health Support Services	G50	Nerve, Muscle and Bone Diseases
A26	Arts Council/Agency	C05	Research Institutes and/or Public Policy Analysis	E61	Blood Supply Related	G51	Arthritis
A30	Media, Communications Organizations	C11	Single Organization Support	E62	Ambulance, Emergency Medical Transport Services	G54	Epilepsy
A31	Film, Video	C12	Fund Raising and/or Fund Distribution	E65	Organ and Tissue Banks	G60	Allergy Related Diseases G61 Asthma
A32	Television	C19	Nonmonetary Support N.E.C.	E70	Public Health Program (Includes General Health and Wellness Promotion Services)	G70	Digestive Diseases, Disorders
A33	Printing, Publishing	C20	Pollution Abatement and Control Services	E80	Health, General and Financing	G80	Specifically Named Diseases
A34	Radio	C27	Recycling Programs	E86	Patient Services - Entertainment, Recreation	G81	AIDS
A40	Visual Arts Organizations	C30	Natural Resources Conservation and Protection	E90	Nursing Services (General)	G83	Alzheimer's Disease
A50	Museum, Museum Activities	C32	Water Resource, Wetlands Conservation and Management	E91	Nursing, Convalescent Facilities	G84	Autism
A51	Art Museums	C33	Land Resources Conservation	E92	Home Health Care	G90	Medical Disciplines
A52	Children's Museums	C34	Land Resources Conservation	E99	Health - General and Rehabilitative N.E.C.	G92	Biomedicine, Bioengineering
A54	History Museums	C35	Energy Resources Conservation and Development	Mental Health, Crisis Intervention		G94	Geriatrics
A56	Natural History, Natural Science Museums	C36	Forest Conservation	F01	Alliance/Advocacy Organizations	G96	Neurology, Neuroscience
A57	Science and Technology Museums	C40	Botanical, Horticultural, and Landscape Services	F02	Management & Technical Assistance	G98	Pediatrics
A60	Performing Arts Organizations	C41	Botanical Gardens, Arboreta and Botanical Organizations	F03	Professional Societies, Associations	G99	Diseases, Disorders, Medical Disciplines N.E.C.
A61	Performing Arts Centers	C42	Garden Club, Horticultural Program	F05	Research Institutes and/or Public Policy Analysis	Medical Research	
A62	Dance	C50	Environmental Beautification and Aesthetics	F11	Single Organization Support	H01	Alliance/Advocacy Organizations
A63	Ballet	C60	Environmental Education and Outdoor Survival Programs	F12	Fund Raising and/or Fund Distribution	H02	Management & Technical Assistance
A65	Theater	C99	Environmental Quality, Protection, and Beautification N.E.C.	F19	Nonmonetary Support N.E.C.	H03	Professional Societies, Associations
A66	Music	Animal-Related		F20	Alcohol, Drug and Substance Abuse, Dependency Prevention and Treatment	H05	Research Institutes and/or Public Policy Analysis
A69	Symphony Orchestras	D01	Alliance/Advocacy Organizations	F21	Alcohol, Drug Abuse, Prevention Only	H11	Single Organization Support
A6A	Opera	D02	Management & Technical Assistance	F22	Alcohol, Drug Abuse, Treatment Only	H12	Fund Raising and/or Fund Distribution
A6B	Singing, Choral	D03	Professional Societies, Associations	F30	Mental Health Treatment - Multipurpose and N.E.C.	H19	Nonmonetary Support N.E.C.
A6C	Music Groups, Bands, Ensembles	D05	Research Institutes and/or Public Policy Analysis	F31	Psychiatric, Mental Health Hospital	H20	Birth Defects, Genetic Diseases
A6E	Performing Arts Schools	D11	Single Organization Support	F32	Community Mental Health Center	H25	Down Syndrome Research
A70	Humanities Organizations	D12	Fund Raising and/or Fund Distribution	F33	Group Home, Residential Treatment Facility - Mental Health Related	H30	Cancer Research
A80	Historical Societies, Related Historical Activities	D19	Nonmonetary Support N.E.C.	F40	Hot Line, Crisis Intervention Services	H40	Specific Organ Research
A84	Commemorative Events	D20	Animal Protection and Welfare	F42	Rape Victim Services	H41	Eye Research
A90	Arts Service Organizations and Activities	D30	Wildlife Preservation, Protection	F50	Addictive Disorders N.E.C.	H42	Ear and Throat Research
A99	Arts, Culture, and Humanities N.E.C.	D31	Protection of Endangered Species	F52	Smoking Addiction	H43	Heart, Circulatory Research
Education		D32	Bird Sanctuary, Preserve	F53	Eating Disorder, Addiction	H44	Kidney Research
B01	Alliance/Advocacy Organizations	D33	Fisheries Resources	F54	Gambling Addiction	H45	Lung Research
B02	Management & Technical Assistance	D34	Wildlife Sanctuary, Refuge	F60	Counseling, Support Groups	H48	Brain Disorders Research
B03	Professional Societies, Associations	D40	Veterinary Services	F70	Mental Health Disorders	H50	Nerve, Muscle, Bone Research
B05	Research Institutes and/or Public Policy Analysis	D50	Zoo, Zoological Society	F80	Mental Health Association, Multipurpose	H51	Arthritis Research
B11	Single Organization Support	D60	Other Services - Specialty Animals	F99	Mental Health, Crisis Intervention N.E.C.	H54	Epilepsy Research
B12	Fund Raising and/or Fund Distribution	D61	Animal Training, Behavior	Diseases, Disorders, Medical Disciplines		H60	Allergy Related Disease Research
B19	Nonmonetary Support N.E.C.	D99	Animal-Related N.E.C.	G01	Alliance/Advocacy Organizations	H61	Asthma Research
B20	Elementary, Secondary Education, K - 12	Health - General and Rehabilitative		G02	Management & Technical Assistance	H70	Digestive Disease, Disorder Research
B21	Kindergarten, Preschool, Nursery School, Early Admissions	E01	Alliance/Advocacy Organizations	G03	Professional Societies, Associations	H80	Specifically Named Diseases Research
B24	Primary, Elementary Schools	E02	Management & Technical Assistance	G05	Research Institutes and/or Public Policy Analysis	H81	AIDS Research
B25	Secondary, High School	E03	Professional Societies, Associations	G11	Single Organization Support	H83	Alzheimer's Disease Research
B28	Specialized Education Institutions	E05	Research Institutes and/or Public Policy Analysis	G12	Fund Raising and/or Fund Distribution	H84	Autism Research
B30	Vocational, Technical Schools	E11	Single Organization Support	G19	Nonmonetary Support N.E.C.	H90	Medical Specialty Research
B40	Higher Education Institutions	E12	Fund Raising and/or Fund Distribution	Crime, Legal Related		H92	Biomedicine, Bioengineering Research
B41	Community or Junior Colleges	E19	Nonmonetary Support N.E.C.	Medical Research		H94	Geriatrics Research
B42	Undergraduate College (4-year)	Health - General and Rehabilitative		Diseases, Disorders, Medical Disciplines		H96	Neurology, Neuroscience Research
B43	University or Technological Institute	E01	Alliance/Advocacy Organizations	G01	Alliance/Advocacy Organizations	H98	Pediatrics Research
B50	Graduate, Professional Schools (Separate Entities)	E02	Management & Technical Assistance	G02	Management & Technical Assistance	H99	Surgery Research
B60	Adult, Continuing Education	E03	Professional Societies, Associations	G03	Professional Societies, Associations	Medical Research N.E.C.	
B70	Libraries	E05	Research Institutes and/or Public Policy Analysis	G05	Research Institutes and/or Public Policy Analysis	I01	Alliance/Advocacy Organizations
B80	Student Services, Organizations of Students	E11	Single Organization Support	G11	Single Organization Support	I02	Management & Technical Assistance
		E12	Fund Raising and/or Fund Distribution	G12	Fund Raising and/or Fund Distribution	I03	Professional Societies, Associations
		E19	Nonmonetary Support N.E.C.	G19	Nonmonetary Support N.E.C.	I05	Research Institutes and/or Public Policy Analysis

National Taxonomy of Exempt Entities (NTEE) Codes. (Continued)

I11	Single Organization Support	L12	Fund Raising and/or Fund Distribution	Youth Development	P80	Services to Promote the Independence of Specific Populations	
I12	Fund Raising and/or Fund Distribution	L19	Nonmonetary Support N.E.C.	O01	Alliance/Advocacy Organizations	P81	Senior Centers, Services
I19	Nonmonetary Support N.E.C.	L20	Housing Development, Construction, Management	O02	Management & Technical Assistance	P82	Developmentally Disabled Centers, Services
I20	Crime Prevention N.E.C.	L21	Public Housing Facilities	O03	Professional Societies, Associations	P84	Ethnic, Immigrant Centers, Services
I21	Delinquency Prevention	L22	Senior Citizens' Housing/ Retirement Communities	O05	Research Institutes and/or Public Policy Analysis	P85	Homeless Persons Centers, Services
I23	Drunk Driving Related	L25	Housing Rehabilitation	O11	Single Organization Support	P86	Blind/Visually Impaired Centers, Services
I30	Correctional Facilities N.E.C.	L30	Housing Search Assistance	O12	Fund Raising and/or Fund Distribution	P87	Deaf/Hearing Impaired Centers, Services
I31	Transitional Care, Half-Way House for Offenders, Ex-Offenders	L40	Low-Cost Temporary Housing	O19	Nonmonetary Support N.E.C.	P99	Human Services - Multipurpose and Other N.E.C.
I40	Rehabilitation Services for Offenders	L41	Homeless, Temporary Shelter For	O20	Youth Centers, Clubs, Multipurpose	International, Foreign Affairs, and National Security	Q01 Alliance/Advocacy Organizations Q02 Management & Technical Assistance Q03 Professional Societies, Associations Q05 Research Institutes and/or Public Policy Analysis Q11 Single Organization Support Q12 Fund Raising and/or Fund Distribution Q19 Nonmonetary Support N.E.C. Q20 Promotion of International Understanding Q21 International Cultural Exchange Q22 International Student Exchange and Aid Q23 International Exchanges, N.E.C. Q30 International Development, Relief Services Q31 International Agricultural Development Q32 International Economic Development Q33 International Relief Q40 International Peace and Security Q41 Arms Control, Peace Organizations Q42 United Nations Association Q43 National Security, Domestic Q70 International Human Rights Q71 International Migration, Refugee Issues Q99 International, Foreign Affairs, and National Security N.E.C.
I43	Services to Prisoners and Families - Multipurpose	L50	Housing Owners, Renters Organizations	O21	Boys Clubs		
I44	Prison Alternatives	L80	Housing Support Services -- Other	O22	Girls Clubs O23 Boys and Girls Clubs (Combined)		
I50	Administration of Justice, Courts	L81	Home Improvement and Repairs	O30	Adult, Child Matching Programs		
I51	Dispute Resolution, Mediation Services	L82	Housing Expense Reduction Support	O31	Big Brothers, Big Sisters		
I60	Law Enforcement Agencies (Police Departments)	L99	Housing, Shelter N.E.C.	O40	Scouting Organizations		
I70	Protection Against, Prevention of Neglect, Abuse, Exploitation	Public Safety, Disaster Preparedness, and Relief	M01 Alliance/Advocacy Organizations M02 Management & Technical Assistance M03 Professional Societies, Associations M05 Research Institutes and/or Public Policy Analysis M11 Single Organization Support M12 Fund Raising and/or Fund Distribution M19 Nonmonetary Support N.E.C. M20 Disaster Preparedness and Relief Services M23 Search and Rescue Squads, Services M24 Fire Prevention, Protection, Control M40 Safety Education M41 First Aid Training, Services M42 Automotive Safety M99 Public Safety, Disaster Preparedness, and Relief N.E.C.	O41	Boy Scouts of America		
I71	Spouse Abuse, Prevention of			O42	Girl Scouts of the U.S.A.		
I72	Child Abuse, Prevention of			O43	Camp Fire		
I73	Sexual Abuse, Prevention of			O50	Youth Development Programs, Other		
I80	Legal Services			O51	Youth Community Service Clubs		
I83	Public Interest Law, Litigation			O52	Youth Development - Agricultural		
I99	Crime, Legal Related N.E.C.			O53	Youth Development - Business		
Employment, Job Related	J01 Alliance/Advocacy Organizations			O54	Youth Development - Citizenship Programs		
	J02 Management & Technical Assistance			O55	Youth Development - Religious Leadership		
	J03 Professional Societies, Associations			O99	Youth Development N.E.C.		
	J05 Research Institutes and/or Public Policy Analysis	Human Services - Multipurpose and Other	P01 Alliance/Advocacy Organizations P02 Management & Technical Assistance P03 Professional Societies, Associations P05 Research Institutes and/or Public Policy Analysis P11 Single Organization Support P12 Fund Raising and/or Fund Distribution P19 Nonmonetary Support N.E.C. P20 Human Service Organizations - Multipurpose P21 American Red Cross P22 Urban League P24 Salvation Army P26 Volunteers of America P27 Young Men's or Women's Associations (YMCA, YWCA, YWHA, YMHA) P28 Neighborhood Centers, Settlement Houses P29 Thrift Shops P30 Children's, Youth Services P31 Adoption P32 Foster Care P33 Child Day Care P40 Family Services P42 Single Parent Agencies, Services P43 Family Violence Shelters, Services P44 Homemaker, Home Health Aide P45 Family Services, Adolescent Parents P46 Family Counseling P50 Personal Social Services P51 Financial Counseling, Money Management P52 Transportation, Free or Subsidized P58 Gift Distribution P60 Emergency Assistance (Food, Clothing, Cash) P61 Travelers' Aid P62 Victims' Services P70 Residential, Custodial Care P72 Half-Way House (Short-Term Residential Care) P73 Group Home (Long Term) P74 Hospice P75 Senior Continuing Care Communities				
	J11 Single Organization Support						
	J12 Fund Raising and/or Fund Distribution						
	J19 Nonmonetary Support N.E.C.						
	J20 Employment Procurement Assistance, Job Training						
	J21 Vocational Counseling, Guidance and Testing						
	J22 Vocational Training						
J30 Vocational Rehabilitation							
J32 Goodwill Industries							
J33 Sheltered Remunerative Employment, Work Activity Center N.E.C.	Recreation, Sports, Leisure, Athletics					N01 Alliance/Advocacy Organizations N02 Management & Technical Assistance N03 Professional Societies, Associations N05 Research Institutes and/or Public Policy Analysis N11 Single Organization Support N12 Fund Raising and/or Fund Distribution N19 Nonmonetary Support N.E.C. N20 Recreational and Sporting Camps N30 Physical Fitness and Community Recreational Facilities N31 Community Recreational Centers N32 Parks and Playgrounds N40 Sports Training Facilities, Agencies N50 Recreational, Pleasure, or Social Club N52 Fairs, County and Other N60 Amateur Sports Clubs, Leagues, N.E.C. N61 Fishing, Hunting Clubs N62 Basketball N63 Baseball, Softball N64 Soccer Clubs, Leagues N65 Football Clubs, Leagues N66 Tennis, Racquet Sports Clubs, Leagues N67 Swimming, Water Recreation N68 Winter Sports (Snow and Ice) N69 Equestrian, Riding N6A Golf N70 Amateur Sports Competitions N71 Olympics Committees and Related International Competitions N72 Special Olympics N80 Professional Athletic Leagues N99 Recreation, Sports, Leisure, Athletics N.E.C.	
J40 Labor Union, Organizations							
J99 Employment, Job Related N.E.C.							
Food, Agriculture, and Nutrition		K01 Alliance/Advocacy Organizations	Civil Rights, Social Action, Advocacy	R01 Alliance/Advocacy Organizations R02 Management & Technical Assistance R03 Professional Societies, Associations R05 Research Institutes and/or Public Policy Analysis R11 Single Organization Support R12 Fund Raising and/or Fund Distribution R19 Nonmonetary Support N.E.C. R20 Civil Rights, Advocacy for Specific Groups R22 Minority Rights R23 Disabled Persons' Rights R24 Women's Rights R25 Seniors' Rights R26 Lesbian, Gay Rights R30 Intergroup, Race Relations R40 Voter Education, Registration R60 Civil Liberties Advocacy R61 Reproductive Rights R62 Right to Life R63 Censorship, Freedom of Speech and Press Issues R67 Right to Die, Euthanasia Issues R99 Civil Rights, Social Action, Advocacy N.E.C.			
		K02 Management & Technical Assistance					
		K03 Professional Societies, Associations					
		K05 Research Institutes and/or Public Policy Analysis					
		K11 Single Organization Support					
		K12 Fund Raising and/or Fund Distribution					
		K19 Nonmonetary Support N.E.C.					
	K20 Agricultural Programs						
	K25 Farmland Preservation						
	K26 Livestock Breeding, Development, Management						
K28 Farm Bureau, Grange	Housing, Shelter	L01 Alliance/Advocacy Organizations L02 Management & Technical Assistance L03 Professional Societies, Associations L05 Research Institutes and/or Public Policy Analysis L11 Single Organization Support					
K30 Food Service, Free Food Distribution Programs							
K31 Food Banks, Food Pantries							
K34 Congregate Meals							
K35 Eatery, Agency, Organization Sponsored							
K36 Meals on Wheels							
K40 Nutrition Programs							
K50 Home Economics							
K99 Food, Agriculture, and Nutrition N.E.C.							
Housing, Shelter					L01 Alliance/Advocacy Organizations	Community Improvement, Capacity Building	S01 Alliance/Advocacy Organizations S02 Management & Technical Assistance S03 Professional Societies, Associations
	L02 Management & Technical Assistance						
	L03 Professional Societies, Associations						
	L05 Research Institutes and/or Public Policy Analysis						
	L11 Single Organization Support						
	S01 Alliance/Advocacy Organizations						
	S02 Management & Technical Assistance						
	S03 Professional Societies, Associations						

National Taxonomy of Exempt Entities (NTEE) Codes. (Continued)

S05	Research Institutes and/or Public Policy Analysis	Science and Technology Research Institutes, Services U01 Alliance/Advocacy Organizations U02 Management & Technical Assistance U03 Professional Societies, Associations U05 Research Institutes and/or Public Policy Analysis U11 Single Organization Support U12 Fund Raising and/or Fund Distribution U19 Nonmonetary Support N.E.C. U20 Science, General U21 Marine Science and Oceanography U30 Physical Sciences, Earth Sciences Research and Promotion U31 Astronomy U33 Chemistry, Chemical Engineering U34 Mathematics U36 Geology U40 Engineering and Technology Research, Services U41 Computer Science U42 Engineering U50 Biological, Life Science Research U99 Science and Technology Research Institutes, Services N.E.C.	V31 Black Studies	X22 Roman Catholic
S11	Single Organization Support		V32 Women's Studies	X30 Jewish
S12	Fund Raising and/or Fund Distribution		V33 Ethnic Studies	X40 Islamic
S19	Nonmonetary Support N.E.C.		V34 Urban Studies	X50 Buddhist
S20	Community, Neighborhood Development, Improvement (General)		V35 International Studies	X70 Hindu
S21	Community Coalitions		V36 Gerontology (as a social science)	X80 Religious Media, Communications Organizations
S22	Neighborhood, Block Associations		V37 Labor Studies V99 Social Science Research Institutes, Services N.E.C.	X81 Religious Film, Video
S30	Economic Development		Public, Society Benefit - Multipurpose and Other W01 Alliance/Advocacy Organizations W02 Management & Technical Assistance W03 Professional Societies, Associations W05 Research Institutes and/or Public Policy Analysis W11 Single Organization Support W12 Fund Raising and/or Fund Distribution W19 Nonmonetary Support N.E.C. W20 Government and Public Administration W22 Public Finance, Taxation, Monetary Policy W24 Citizen Participation W30 Military, Veterans' Organizations W40 Public Transportation Systems, Services W50 Telephone, Telegraph and Telecommunication Services W60 Financial Institutions, Services (Non-Government Related) W61 Credit Unions W70 Leadership Development W80 Public Utilities W90 Consumer Protection, Safety W99 Public, Society Benefit - Multipurpose and Other N.E.C.	X82 Religious Television
S31	Urban, Community Economic Development			X83 Religious Printing, Publishing
S32	Rural Development			X84 Religious Radio
S40	Business and Industry			X90 Interfaith Issues
S41	Promotion of Business			X99 Religion Related, Spiritual Development N.E.C.
S43	Management Services for Small Business, Entrepreneurs			Mutual/Membership Benefit Organizations, Other Y01 Alliance/Advocacy Organizations Y02 Management & Technical Assistance Y03 Professional Societies, Associations Y05 Research Institutes and/or Public Policy Analysis Y11 Single Organization Support Y12 Fund Raising and/or Fund Distribution Y19 Nonmonetary Support N.E.C. Y20 Insurance Providers, Services Y22 Local Benevolent Life Insurance Associations, Mutual Irrigation and Telephone Companies, and Like Organizations Y23 Mutual Insurance Company or Association Y24 Supplemental Unemployment Compensation Y25 State-Sponsored Worker's Compensation Reinsurance Organizations Y30 Pension and Retirement Funds Y33 Teachers Retirement Fund Association Y34 Employee Funded Pension Trust Y35 Multi-Employer Pension Plans Y40 Fraternal Beneficiary Societies Y42 Domestic Fraternal Societies Y43 Voluntary Employees Beneficiary Associations (Non-Government) Y44 Voluntary Employees Beneficiary Associations (Government) Y50 Cemeteries, Burial Services Y99 Mutual/Membership Benefit Organizations, Other N.E.C.
S46	Boards of Trade			
S47	Real Estate Organizations			
S50	Nonprofit Management			
S80	Community Service Clubs			
S81	Women's Service Clubs			
S82	Men's Service Clubs			
S99	Community Improvement, Capacity Building N.E.C.			
Philanthropy, Voluntarism, and Grantmaking Foundations				
T01	Alliance/Advocacy Organizations			
T02	Management & Technical Assistance			
T03	Professional Societies, Associations			
T05	Research Institutes and/or Public Policy Analysis			
T11	Single Organization Support			
T12	Fund Raising and/or Fund Distribution			
T19	Nonmonetary Support N.E.C.			
T20	Private Grantmaking Foundations			
T21	Corporate Foundations			
T22	Private Independent Foundations			
T23	Private Operating Foundations			
T30	Public Foundations			
T31	Community Foundations			
T40	Voluntarism Promotion			
T50	Philanthropy, Charity, Voluntarism Promotion, General			
T70	Fund Raising Organizations That Cross Categories			
T90	Named Trusts/Foundations N.E.C.			
T99	Philanthropy, Voluntarism, and Grantmaking Foundations N.E.C.			
		Religion Related, Spiritual Development X01 Alliance/Advocacy Organizations X02 Management & Technical Assistance X03 Professional Societies, Associations X05 Research Institutes and/or Public Policy Analysis X11 Single Organization Support X12 Fund Raising and/or Fund Distribution X19 Nonmonetary Support N.E.C. X20 Christian X21 Protestant		

Chapter 21

Form 1023EZ

Part III Your Specific Activities

- 1** Enter the appropriate 3-character NTEE Code that best describes your activities (See the instructions): _____
- 2** To qualify for exemption as a section 501(c)(3) organization, you must be organized and operated exclusively to further one or more of the following purposes. By checking the box or boxes below, you attest that you are organized and operated exclusively to further the purposes indicated. **Check all that apply.**
- | | | |
|---|------------------------------------|---|
| <input type="checkbox"/> Charitable | <input type="checkbox"/> Religious | <input type="checkbox"/> Educational |
| <input type="checkbox"/> Scientific | <input type="checkbox"/> Literary | <input type="checkbox"/> Testing for public safety |
| <input type="checkbox"/> To foster national or international amateur sports competition | | <input type="checkbox"/> Prevention of cruelty to children or animals |
- 3** To qualify for exemption as a section 501(c)(3) organization, you must:
- Refrain from supporting or opposing candidates in political campaigns in any way.
 - Ensure that your net earnings do not inure in whole or in part to the benefit of private shareholders or individuals (that is, board members, officers, key management employees, or other insiders).
 - Not further non-exempt purposes (such as purposes that benefit private interests) more than insubstantially.
 - Not be organized or operated for the primary purpose of conducting a trade or business that is not related to your exempt purpose(s).
 - Not devote more than an insubstantial part of your activities attempting to influence legislation or, if you made a section 501(h) election, not normally make expenditures in excess of expenditure limitations outlined in section 501(h).
 - Not provide commercial-type insurance as a substantial part of your activities.
- ☐ **Check this box** to attest that you have not conducted and will not conduct activities that violate these prohibitions and restrictions.
- 4** Do you or will you attempt to influence legislation? ☐ **Yes** ☐ **No**
(If yes, consider filing Form 5768. See the instructions for more details.)
- 5** Do you or will you pay compensation to any of your officers, directors, or trustees? ☐ **Yes** ☐ **No**
(Refer to the instructions for a definition of **compensation**.)
- 6** Do you or will you donate funds to or pay expenses for individual(s)? ☐ **Yes** ☐ **No**
- 7** Do you or will you conduct activities or provide grants or other assistance to individual(s) or organization(s) outside the United States? ☐ **Yes** ☐ **No**
- 8** Do you or will you engage in financial transactions (for example, loans, payments, rents, etc.) with any of your officers, directors, or trustees, or any entities they own or control? ☐ **Yes** ☐ **No**
- 9** Do you or will you have unrelated business gross income of \$1,000 or more during a tax year? ☐ **Yes** ☐ **No**
- 10** Do you or will you operate bingo or other gaming activities? ☐ **Yes** ☐ **No**
- 11** Do you or will you provide disaster relief? ☐ **Yes** ☐ **No**

Part IV Foundation Classification

Part IV is designed to classify you as an organization that is either a private foundation or a public charity. Public charity status is a more favorable tax status than private foundation status.

- 1** If you qualify for public charity status, check the appropriate box (**1a – 1c** below) and skip to **Part V** below.
- a** ☐ **Check this box** to attest that you normally receive at least one-third of your support from public sources or you normally receive at least 10 percent of your support from public sources and you have other characteristics of a publicly supported organization. **Sections 509(a)(1) and 170(b)(1)(A)(vi).**
- b** ☐ **Check this box** to attest that you normally receive more than one-third of your support from a combination of gifts, grants, contributions, membership fees, and gross receipts (from permitted sources) from activities related to your exempt functions and normally receive not more than one-third of your support from investment income and unrelated business taxable income. **Section 509(a)(2).**
- c** ☐ **Check this box** to attest that you are operated for the benefit of a college or university that is owned or operated by a governmental unit. **Sections 509(a)(1) and 170(b)(1)(A)(iv).**
- 2** If you are not described in items **1a – 1c** above, you are a private foundation. As a private foundation, you are required by section 508(e) to have specific provisions in your organizing document, unless you rely on the operation of state law in the state in which you were formed to meet these requirements. These specific provisions require that you operate to avoid liability for private foundation excise taxes under sections 4941-4945.
- ☐ **Check this box** to attest that your organizing document contains the provisions required by section 508(e) or that your organizing document does not need to include the provisions required by section 508(e) because you rely on the operation of state law in your particular state to meet the requirements of section 508(e). (See the instructions for explanation of the section 508(e) requirements.)

Part V Reinstatement After Automatic Revocation

Complete this section only if you are applying for reinstatement of exemption after being automatically revoked for failure to file required annual returns or notices for three consecutive years, and you are applying for reinstatement under section 4 or 7 of Revenue Procedure 2014-11. (Check only one box.)

- 1 ☐ Check this box if you are seeking retroactive reinstatement under section 4 of Revenue Procedure 2014-11. By checking this box, you attest that you meet the specified requirements of section 4, that your failure to file was not intentional, and that you have put in place procedures to file required returns or notices in the future. (See the instructions for requirements.)
- 2 ☐ Check this box if you are seeking reinstatement under section 7 of Revenue Procedure 2014-11, effective the date you are filing this application.

Part VI Signature

- ☐ I declare under the penalties of perjury that I am authorized to sign this application on behalf of the above organization and that I have examined this application, and to the best of my knowledge it is true, correct, and complete.

**PLEASE
SIGN
HERE**

(Type name of signer)

(Type title or authority of signer)

(Signature of Officer, Director, Trustee, or other authorized official)

(Date)

Form **1023-EZ** (6-2014)



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Chapter 22

Community Data License Agreement - Sharing

Community Data License Agreement - Sharing - Version 1.0

This is the Community Data License Agreement – Sharing, Version 1.0 (“Agreement”). Data is provided to You under this Agreement by each of the Data Providers. Your exercise of any of the rights and permissions granted below constitutes Your acceptance and agreement to be bound by the terms and conditions of this Agreement.

The benefits that each Data Provider receives from making Data available and that You receive from Data or otherwise under these terms and conditions shall be deemed sufficient consideration for the formation of this Agreement. Accordingly, Data Provider(s) and You (the “Parties”) agree as follows:

Section 1. Definitions

1.1 “Add” means to supplement Data with Your own or someone else’s Data, resulting in Your “Additions.” Additions do not include Results.

1.2 “Computational Use” means Your analysis (through the use of computational devices or otherwise) or other interpretation of Data. By way of example and not limitation, “Computational Use” includes the application of any computational analytical technique, the purpose of which is the analysis of any Data in digital form to generate information about Data such as patterns, trends, correlations, inferences, insights and attributes.

1.3 “Data” means the information (including copyrightable information, such as images or text), collectively or individually, whether created or gathered by a Data Provider or an Entity acting on its behalf, to which rights are granted under this Agreement.

1.4 “Data Provider” means any Entity (including any employee or contractor of such Entity authorized to Publish Data on behalf of such Entity) that Publishes Data under this Agreement prior to Your Receiving it.

1.5 “Enhanced Data” means the subset of Data that You Publish and that is composed of (a) Your Additions and/or (b) Modifications to Data You have received under this Agreement.

1.6 “Entity” means any natural person or organization that exists under the laws of the jurisdiction in which it is organized, together with all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, “control” means (a) the power, directly or indirectly, to cause the direction or management of such entity, whether by contract or otherwise, (b) the ownership of more than fifty percent (50%) of the outstanding shares or securities, (c) the beneficial ownership of such entity or, (d) the ability to appoint, whether by agreement or right, the majority of directors of an Entity.

1.7 “Ledger” means a digital record of Data or grants of rights in Data governed by this Agreement, using any technology having functionality to record and store Data or grants, contributions, or licenses to Data governed by this Agreement.

1.8 “Modify” means to delete, erase, correct or re-arrange Data, resulting in “Modifications.” Modifications do not include Results.

1.9 “Publish” means to make all or a subset of Data (including Your Enhanced Data) available in any manner which enables its Use, including by providing a copy on physical media or remote access. For any form of Entity, that is to make the Data available to any individual who is not employed by that Entity or engaged as a contractor or agent to perform work on that Entity’s behalf. A “Publication” occurs each time You Publish Data.

1.10 “Receive” or “Receives” means to have been given access to Data, locally or remotely.

1.11 “Results” means the outcomes or outputs that You obtain from Your Computational Use of Data. Results shall not include more than a *de minimis* portion of the Data on which the Computational Use is based.

1.12 “Sui Generis Database Rights” means rights, other than copyright, resulting from Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, as amended and/or succeeded, as well as other equivalent rights anywhere in the world.

1.13 “Use” means using Data (including accessing, copying, studying, reviewing, adapting, analyzing, evaluating, or making Computational Use of it), either by machines or humans, or a combination of both.

1.14 “You” or “Your” means any Entity that Receives Data under this Agreement.

Section 2. Right and License to Use and to Publish

2.1 Subject to the conditions set forth in Section 3 of this Agreement, Data Provider(s) hereby grant(s) to You a worldwide, non-exclusive, irrevocable (except as provided in Section 5) right to: (a) Use Data; and (b) Publish Data.

2.2 To the extent that the Data or the coordination, selection or arrangement of Data is protected or protectable under copyright, Sui Generis Database Rights, or other law, Data Provider(s) further agree(s) that such Data or coordination, selection or arrangement is hereby licensed to You and to anyone else who Receives Data under this Agreement for Use and Publication, subject to the conditions set forth in Section 3 of this Agreement.

2.3 Except for these rights and licenses expressly granted, no other intellectual property rights are granted or should be implied.

Section 3. Conditions on Rights Granted

3.1 If You Publish Data You Receive or Enhanced Data:

- (a) The Data (including the Enhanced Data) must be Published under this Agreement in accordance with this Section 3; and

Community Data License Agreement - Sharing - Version 1.0

- (b) You must cause any Data files containing Enhanced Data to carry prominent notices that You have changed those files; and
- (c) If You Publish Data You Receive, You must preserve all credit or attribution to the Data Provider(s). Such retained credit or attribution includes any of the following to the extent they exist in Data as You have Received it: legal notices or metadata; identification of the Data Provider(s); or hyperlinks to Data to the extent it is practical to do so.

3.2 You may not restrict or deter the ability of anyone who Receives the Data (a) to Publish the Data in a publicly-accessible manner or (b) if the project has designated a Ledger for recording Data or grants of rights in Data for purposes of this Agreement, to record the Data or grants of rights in Data in the Ledger.

3.3 If You Publish Data You Receive, You must do so under an unmodified form of this Agreement and include the text of this Agreement, the name of this Agreement and/or a hyperlink or other method reasonably likely to provide a copy of the text of this Agreement. You may not modify this Agreement or impose any further restrictions on the exercise of the rights granted under this Agreement, including by adding any restriction on commercial or non-commercial Use of Data (including Your Enhanced Data) or by limiting permitted Use of such Data to any particular platform, technology or field of endeavor. Notices that purport to modify this Agreement shall be of no effect.

3.4 You and each Data Provider agree that Enhanced Data shall not be considered a work of joint authorship by virtue of its relationship to Data licensed under this Agreement and shall not require either any obligation of accounting to or the consent of any Data Provider.

3.5 This Agreement imposes no obligations or restrictions on Your Use or Publication of Results.

Section 4. Data Provider(s)' Representations

4.1 Each Data Provider represents that the Data Provider has exercised reasonable care, to assure that: (a) the Data it Publishes was created or generated by it or was obtained from others with the right to Publish the Data under this Agreement; and (b) Publication of such Data does not violate any privacy or confidentiality obligation undertaken by the Data Provider.

Section 5. Termination

5.1 All of Your rights under this Agreement will terminate, and Your right to Receive, Use or Publish the Data will be revoked or modified if You materially fail to comply with the terms and conditions of this Agreement and You do not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If Your rights under this Agreement terminate, You agree to cease Receipt, Use and Publication of Data. However, Your obligations and any rights and permissions granted by You under

this Agreement relating to Data that You Published prior to such termination will continue and survive.

5.2 If You institute litigation against a Data Provider or anyone else who Receives the Data (including a cross-claim in a lawsuit) based on the Data, other than a claim asserting breach of this Agreement, then any rights previously granted to You to Receive, Use and Publish Data under this Agreement will terminate as of the date such litigation is filed.

Section 6. Disclaimer of Warranties and Limitation of Liability

6.1 EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE DATA (INCLUDING ENHANCED DATA) IS PROVIDED ON AN “AS IS” BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

6.2 NEITHER YOU NOR ANY DATA PROVIDERS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE DATA OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Section 7. Miscellaneous

7.1 You agree that it is solely Your responsibility to comply with all applicable laws with regard to Your Use or Publication of Data, including any applicable privacy, data protection, security and export laws. You agree to take reasonable steps to assist a Data Provider fulfilling responsibilities to comply with applicable laws with regard to Use or Publication of Data Received hereunder.

7.2 You and Data Provider(s), collectively and individually, waive and/or agree not to assert, to the extent permitted by law, any moral rights You or they hold in Data.

7.3 This Agreement confers no rights or remedies upon any person or entity other than the Parties and their respective heirs, executors, successors and assigns.

7.4 The Data Provider(s) reserve no right or expectation of privacy, data protection or confidentiality in any Data that they Publish under this Agreement. If You choose to Publish Data under this Agreement, You similarly do so with no reservation or expectation of any rights of privacy or confidentiality in that Data.

7.5 The Community Data License Agreement workgroup under The Linux Foundation is the steward of this Agreement (“Steward”). No one other than the Steward has the right to modify or publish new versions of this Agreement. Each version will be given a

Community Data License Agreement - Sharing - Version 1.0

distinguishing version number. You may Use and Publish Data Received hereunder under the terms of the version of the Agreement under which You originally Received the Data, or under the terms of any subsequent version published by the Steward.

Chapter 23

Community Data License Agreement - Permissive

Community Data License Agreement - Permissive - Version 1.0

This is the Community Data License Agreement – Permissive, Version 1.0 (“Agreement”). Data is provided to You under this Agreement by each of the Data Providers. Your exercise of any of the rights and permissions granted below constitutes Your acceptance and agreement to be bound by the terms and conditions of this Agreement.

The benefits that each Data Provider receives from making Data available and that You receive from Data or otherwise under these terms and conditions shall be deemed sufficient consideration for the formation of this Agreement. Accordingly, Data Provider(s) and You (the “Parties”) agree as follows:

Section 1. Definitions

1.1 “Add” means to supplement Data with Your own or someone else’s Data, resulting in Your “Additions.” Additions do not include Results.

1.2 “Computational Use” means Your analysis (through the use of computational devices or otherwise) or other interpretation of Data. By way of example and not limitation, “Computational Use” includes the application of any computational analytical technique, the purpose of which is the analysis of any Data in digital form to generate information about Data such as patterns, trends, correlations, inferences, insights and attributes.

1.3 “Data” means the information (including copyrightable information, such as images or text), collectively or individually, whether created or gathered by a Data Provider or an Entity acting on its behalf, to which rights are granted under this Agreement.

1.4 “Data Provider” means any Entity (including any employee or contractor of such Entity authorized to Publish Data on behalf of such Entity) that Publishes Data under this Agreement prior to Your Receiving it.

1.5 “Enhanced Data” means the subset of Data that You Publish and that is composed of (a) Your Additions and/or (b) Modifications to Data You have received under this Agreement.

1.6 “Entity” means any natural person or organization that exists under the laws of the jurisdiction in which it is organized, together with all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition, “control” means (a) the power, directly or indirectly, to cause the direction or management of such entity, whether by contract or otherwise, (b) the ownership of more than fifty percent (50%) of the outstanding shares or securities, (c) the beneficial ownership of such entity or, (d) the ability to appoint, whether by agreement or right, the majority of directors of an Entity.

1.7 “Modify” means to delete, erase, correct or re-arrange Data, resulting in “Modifications.” Modifications do not include Results.

1.8 “Publish” means to make all or a subset of Data (including Your Enhanced Data) available in any manner which enables its Use, including by providing a copy on physical media or remote access. For any form of Entity, that is to make the Data available to any individual who is not employed by that Entity or engaged as a contractor or agent to perform work on that Entity’s behalf. A “Publication” occurs each time You Publish Data.

1.9 “Receive” or “Receives” means to have been given access to Data, locally or remotely.

1.10 “Results” means the outcomes or outputs that You obtain from Your Computational Use of Data. Results shall not include more than a *de minimis* portion of the Data on which the Computational Use is based.

1.11 “Sui Generis Database Rights” means rights, other than copyright, resulting from Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, as amended and/or succeeded, as well as other equivalent rights anywhere in the world.

1.12 “Use” means using Data (including accessing, copying, studying, reviewing, adapting, analyzing, evaluating, or making Computational Use of it), either by machines or humans, or a combination of both.

1.13 “You” or “Your” means any Entity that Receives Data under this Agreement.

Section 2. Right and License to Use and to Publish

2.1 Subject to the conditions set forth in Section 3 of this Agreement, Data Provider(s) hereby grant(s) to You a worldwide, non-exclusive, irrevocable (except as provided in Section 5) right to: (a) Use Data; and (b) Publish Data.

2.2 To the extent that the Data or the coordination, selection or arrangement of Data is protected or protectable under copyright, Sui Generis Database Rights, or other law, Data Provider(s) further agree(s) that such Data or coordination, selection or arrangement is hereby licensed to You and to anyone else who Receives Data under this Agreement for Use and Publication, subject to the conditions set forth in Section 3 of this Agreement.

2.3 Except for these rights and licenses expressly granted, no other intellectual property rights are granted or should be implied.

Section 3. Conditions on Rights Granted

3.1 If You Publish Data You Receive or Enhanced Data:

- (a) You may do so under a license of Your choice provided that You give anyone who Receives the Data from You the text of this Agreement, the name of this Agreement and/or a hyperlink or other method reasonably likely to provide a copy of the text of this Agreement; and

- (b) You must cause any Data files containing Enhanced Data to carry prominent notices that You have changed those files; and
- (c) If You Publish Data You Receive, You must preserve all credit or attribution to the Data Provider(s). Such retained credit or attribution includes any of the following to the extent they exist in Data as You have Received it: legal notices or metadata; identification of the Data Provider(s); or hyperlinks to Data to the extent it is practical to do so.

3.2 You may provide additional or different license terms and conditions for use, reproduction, or distribution of that Enhanced Data, or for any combination of Data and Enhanced Data as a whole, provided that Your Use and Publication of that combined Data otherwise complies with the conditions stated in this License.

3.3 You and each Data Provider agree that Enhanced Data shall not be considered a work of joint authorship by virtue of its relationship to Data licensed under this Agreement and shall not require either any obligation of accounting to or the consent of any Data Provider.

3.4 This Agreement imposes no obligations or restrictions on Your Use or Publication of Results.

Section 4. Data Provider(s)' Representations

4.1 Each Data Provider represents that the Data Provider has exercised reasonable care, to assure that: (a) the Data it Publishes was created or generated by it or was obtained from others with the right to Publish the Data under this Agreement; and (b) Publication of such Data does not violate any privacy or confidentiality obligation undertaken by the Data Provider.

Section 5. Termination

5.1 All of Your rights under this Agreement will terminate, and Your right to Receive, Use or Publish the Data will be revoked or modified if You materially fail to comply with the terms and conditions of this Agreement and You do not cure such failure in a reasonable period of time after becoming aware of such noncompliance. If Your rights under this Agreement terminate, You agree to cease Receipt, Use and Publication of Data. However, Your obligations and any rights and permissions granted by You under this Agreement relating to Data that You Published prior to such termination will continue and survive.

5.2 If You institute litigation against a Data Provider or anyone else who Receives the Data (including a cross-claim in a lawsuit) based on the Data, other than a claim asserting breach of this Agreement, then any rights previously granted to You to Receive, Use and Publish Data under this Agreement will terminate as of the date such litigation is filed.

Section 6. Disclaimer of Warranties and Limitation of Liability

6.1 EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, THE DATA (INCLUDING ENHANCED DATA) IS PROVIDED ON AN “AS IS” BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, EITHER EXPRESS OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR CONDITIONS OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

6.2 NEITHER YOU NOR ANY DATA PROVIDERS SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE DATA OR THE EXERCISE OF ANY RIGHTS GRANTED HEREUNDER, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Section 7. Miscellaneous

7.1 You agree that it is solely Your responsibility to comply with all applicable laws with regard to Your Use or Publication of Data, including any applicable privacy, data protection, security and export laws. You agree to take reasonable steps to assist a Data Provider fulfilling responsibilities to comply with applicable laws with regard to Use or Publication of Data Received hereunder.

7.2 You and Data Provider(s), collectively and individually, waive and/or agree not to assert, to the extent permitted by law, any moral rights You or they hold in Data.

7.3 This Agreement confers no rights or remedies upon any person or entity other than the Parties and their respective heirs, executors, successors and assigns.

7.4 The Data Provider(s) reserve no right or expectation of privacy, data protection or confidentiality in any Data that they Publish under this Agreement. If You choose to Publish Data under this Agreement, You similarly do so with no reservation or expectation of any rights of privacy or confidentiality in that Data.

7.5 The Community Data License Agreement workgroup under The Linux Foundation is the steward of this Agreement (“Steward”). No one other than the Steward has the right to modify or publish new versions of this Agreement. Each version will be given a distinguishing version number. You may Use and Publish Data Received hereunder under the terms of the version of the Agreement under which You originally Received the Data, or under the terms of any subsequent version published by the Steward.

Chapter 24

Context for Using Community Data License Agreements

Context for Using Community Data License Agreements

In drafting the Community Data License Agreement (CDLA), we have been on a “listening tour” talking to many organizations about what a license agreement for collaborating on data might look like and how they may be used. In addition to receiving many excellent and sometimes specific suggestions for improvement, we have learned that we need to view any discussion of a data licensing within a broader context of how it will be used.

There will be at least three layers of potential considerations in any data sharing situation that uses the CDLA in an open community data repository. The first will be the inbound agreements or licenses that govern the contribution of data to the repository. Any organization can unilaterally publish data using a CDLA. However, if communities will be openly collaborating on building data communities other considerations come into focus. The second will be the outbound license and/or the technically imposed limits on its use. The third will be the charter of the organization that hosts the data. We’ve tried to share our findings on these three aspects below.

1. The Inbound License.

What we are focused on initially is the development of a family of inbound license or contribution agreements that will enable flexibility in the use of the data going forward by avoiding a period of “license proliferation” before the community converges on a few useful forms. As we know from experience with open source software, different license terms can prevent the combination of valuable assets and require the maintenance of separate repositories. The use of a small number of familiar licenses will greatly reduce the friction to both contribution and use of data that is made available in open repositories. Limiting the inbound license to essential terms that are necessary for contributions to be made, allows for maximum flexibility as both the social and technical constructs around data evolve.

2. The Outbound License or Technical Restrictions on Use

In some situations, in data as in software, the inbound license and the outbound license may be the same. For example, where the data is valuable but not sensitive and the goal is to maximize the use of the data, the same broad rights may be appropriate for both the inbound and outbound license. But, in other situations, the use of the data will be limited by the sensitivity of the information it contains and additional restrictions will be imposed on the use of the data by law, by agreement and/or by design.

a. By Law. Nothing in an open source license alters the obligations of a user to comply with applicable laws. For software, we know that U.S. citizens are still bound by U.S. export restrictions even with respect to open source software (although special rules may apply), but we do not include that obligation in the license. There was a short form permissive open source license that was approved by OSI a number of years ago that included a specific export law statement. That license has been formally deprecated and is no longer used even by its author. For data, we know that it does not matter what license is applied to the data, or what the license says, everyone handling the data will be obligated to comply with the laws applicable to data in the relevant jurisdiction.

b. By Agreement. If the inbound license is permissive, or if the data is made available only from a hosted source, data repositories may impose additional restrictions on the use of the data. In other words, the outbound license may not be the same as the inbound license. The restrictions imposed may

be intended to avoid misuse of sensitive data or violation of specific regulations known to be applicable. For example, if the use of the data is limited to a specific country, that restriction could be imposed in an outbound license. But as the additional restriction or obligation may change or new technical controls or processes may make the contractual restriction unnecessary, it is wise not to include the restriction in the inbound license such that a renegotiation of the inbound license would be required in order to implement potential changes in the data's availability.

c. By Design. The most effective way to impose restrictions is to build them into the architecture of the repository that is the source of the data. Although technical restrictions have been highly disfavored by free software advocates, such as installing software on hardware that does not permit updates, technical restrictions may be necessary to enable the use of sensitive data as a shared resource. Imposing restrictions by agreement shifts risk legally but does not reduce the actual risk of unintentional misuse. Building a platform to automate the imposition of the restrictions, by, for example, allowing queries of sensitive data but limiting the form of results to prevent the distribution of the sensitive data, may be necessary to give contributors and collaborators comfort that their entrustment of the data to a specific source is reasonable.

3. The Charter of the Community that Is Entrusted with the Data

A third layer of restriction may be imposed by the Charter of the community, organization or institution that is entrusted with curating the data. If the community is established for the purpose of making data available for a particular purpose, freedom to use the data for any purpose and in any manner within the confines of a charter will avoid restrictions that make sense in the current environment but make little or no sense in the longer term due to changes in technology, social norms or the legal landscape. Communities that curate data, particular communities focused on specific geographies, industries or uses, will be best able to anticipate, identify and structure criteria and reviews to address relevant restrictions to their community. For example, weather data from government sensors may not generally invoke data privacy concerns; however, if the sensors are individuals' smartphones and tracking geolocation data, additional concerns may arise. It's best for the community working in these specific contexts to address the issues of sharing the data, and difficult for a license drafter to address in the abstract. The privacy concerns may also evolve over time (e.g. Country X could shift from banning to allow sharing an individual's geolocation data if the user consents).

We hope this context is helpful in our conversations regarding a proposed family of licenses that could serve as the standard inbound license or contribution agreement for a data repository. We are not trying to build an entire data and regulatory infrastructure into the licenses. We are rather trying to limit the licenses such that they resolve once and for all the contributor's rights with respect to the data, but do not impose additional obligations that may, will or should change over time. We do not want the licenses to impose the equivalent of required use of CD-ROM technology for delivery of data. We want to strike the right balance to maximize both contributions and usefulness.

What happens after the inbound license will change over time. But the data that is contributed today will continue to be valuable for decades or centuries to come. Our goal is to provide an inbound license that will not impede this evolution.

<https://cdla.io/context/>

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