

[Revised August 2007; earlier version appeared in Sherrie Bolin, ed., *The Standards Edge: Golden Mean*]

Common and Uncommon Knowledge: Reducing Conflict between Standards and Patents

Brian Kahin

Computer & Communications Industry Association/University of Michigan

ABSTRACT: As standards have become critical for advancing technology and new markets, patents have become easier to get, more potent, and readily available for software and business methods. The low standards and opacity of the patent system has made inadvertent infringement commonplace, dramatically increasing opportunities for patent trolls to threaten IT standards. Since these standards have much the same investment rationale as most forms of intellectual property, standards that meet threshold requirements should be accorded protection from patent predators. Patent holders should assert their rights promptly or waive the opportunity to sue those who merely practice the standard.

In March of 2007, Alcatel-Lucent won a patent infringement against Microsoft and was awarded \$1.52 billion in damages, a record verdict for an infringement judgment. The award was not about cutting edge proprietary technology but for using a familiar industry standard for audio encoding, MP3, developed in the early 1990s. Microsoft thought it had duly licensed MP3 from the Fraunhofer Institute for \$16 million in 1994,¹ only to learn 13 years later that it owed someone else nearly 100 times much for another patent underlying the standard. The verdict has become a poster child for more disciplined calculation of damages awarded in litigation, a controversial issue in patent reform. However, it also shows how vulnerable industry standards are to attacks from patent holders that do not participate in developing or setting the standard, a structural problem has not been addressed in the debate over patent reform.

It is remarkable that how little policy-level attention is accorded standards given the strategic importance of standards to the IT sector—and the importance of the IT sector to innovation, economic growth, and national competitiveness. IT standards do not merely serve traditional goals such as safety or reduction of consumer confusion or simple compatibility. They are platforms for advancing technology and creating markets—well-known, well-defined tides that lift many boats. They are core essential architectural elements for complex information systems and infrastructure. Standards assure buyers that they are investing in technology that works with and adds value to other investments, value that will not disappear at the whim of a particular vendor.

The time-critical, market-making nature of IT standards has led to a variety of alliances and consortia, rather than formal standards development organizations, for developing many of the most important IT standards. These entities do not seek accreditation and validation from the American National Standards Institute (ANSI). Open to international participation, they look to the global IT marketplace, which does not fit with the nationally based framework for *de jure* standards. They often forego formalities in favor of speed and flexibility.

While other countries participate in international standards organizations (ISO, IEC, ITU) through national agencies, the U.S. participates through ANSI, a private organization. Government agencies, including the National Institute for Standards and Technology (NIST) are members of ANSI, along with private companies and associations. The U.S. Government's interest in standards is indirect, less regular, and more laissez-faire and reactive by comparison with other national governments. IT standards setting is further insulated from U.S. policymaking by virtue

of its market orientation and global scope. Although many IT standards are developed or ultimately validated through formal channels, IT standards development as a whole, vast as it is, is fragmented and lacks political presence.

Even within firms, IT standards activities are often widely dispersed among operating divisions and units. Despite rising awareness of the strategic importance of leadership in setting standards, there is seldom a natural locus for addressing standards as a matter of corporate strategy or policy – in marked contrast to patents. Standards suffer from their history and reputation as common denominators in a world where market presence and competitive strength are defined by differentiation and single-firm control.

Yet in IT, standards are essential to technological and economic progress. Innovations are cumulative, building on each other and on the shared systems and ecologies in which they participate. In a world where lock-in and stranded investments are the stuff of legend, customers want assurance that they can connect and use components from a wide choice of contractors and vendors.

The Paradigm of Complementarity

The spectacular success of the Internet proved the value of open standards as platforms for innovation. Anyone was free to build on openly available nonproprietary protocols—no permission required. This openness spurred innovation in products and services on a vast, unprecedented scale. No single company had the resources, ingenuity, and entrepreneurship to create the Internet explosion on its own.

A common platform makes possible the wealth of proprietary implementations, just as a common language makes possible the richness of literature. If the platform is to be recognized as open rather than controlled by particular private interests, defining the platform is necessarily a group process. Implementers and users should also be concerned about how the standard will evolve in the future, since IT standards often continue to evolve as the surrounding technology changes. A standard may be royalty-free, but the patent holder may confine the license to the practicing the standard as written, and this can constrain further evolution of the standard.

If the common platform is relatively simple and abstract, as may be the case for an interface specification, a format, or a protocol, it may be free of patents. A complex compression program containing many functional elements is likely to include many patented processes. A patent pool may be needed to assemble a marketable package so that implementers do not have to face patent holders one by one. The MPEG-2 pool, for example, includes 102 U.S. patents plus hundreds of similar patents issued by other countries.

Patents and Standards

A good standard may be largely invisible because it is taken for granted. Its value stems from its commonality and ubiquity – not its exclusivity or scarcity as in the case conventional goods. Companies rely on standards as much as they rely on their wholly owned property. Yet despite their role in generating future revenue, standards cannot be treated as assets because they cannot be controlled or traded.

By contrast, patents have gained much attention as intangible assets that can be controlled, traded, licensed, securitized, and collateralized. Yet a patent is only a right to exclude, not a right to exploit. The ability to exploit the patented technology may depend on underlying patent that belongs to someone else and may or may not be available. In the U.S., patented technology cannot even be tested without permission from the patent holder. The patent itself can be invalidated at any time by prior art that the patent holder is not aware of.

Twenty years ago, simple specifications rarely involved patented technology. Since then, the patent-specialized Court of Appeals for the Federal Circuit has abolished limitations on patentable subject matter and lowered standards of patentability. While standards have assumed unprecedented importance, patents have become easier to acquire, more versatile, and more powerful. In fact, the growth of standards-dependent investments has encouraged patent applicants to use creative tactics to track and capture emerging standards.

These changes enable “patent trolls” (best defined by a business model of “being infringed”²) to extract large settlements from companies with products on the market. The possibility of an injunction means that producers risk shutting down an entire product line if a single patented function (among the tens of thousands of functions a complex information technology product performs) is found to infringe. Although this risk is less now than before the Supreme struck down the Federal Circuit’s automatic injunction rule, the threat of injunction enables the patent holder to seek a settlement far beyond the original value of the patented technology.

For patented technology embedded in standards, the economic risk is far worse. Not only is the standard likely to be deeply embedded and impractical to excise, it will be implemented widely, perhaps by every firm in the market. Since all implementations, including downstream uses, are potential targets, the incentives to ambush are high. A patent infringed by an adopted standard becomes far more valuable in time than it would have been had the standards developers known about it when they had the ability to work around it.

Could the standards developers have searched for the patent, found it, and designed around it in the first place? Possibly, but the cost would have been enormous and risks would remain. Panelists in the 2002 FTC hearings on patents and innovation indicated that even large companies had abandoned product clearances because they were not cost-effective. Relevant patents must first be identified, no small task in IT product that may contain tens of thousands of possibly patentable functions and components. In 2005, validity opinions cost an average of \$13,000 each in 2005. An opinion on whether a particular component or process infringes a particular patent costs another \$13,000.³ Even if all issued patents and published patent applications that might affect the product could be identified, unpublished applications will be missed. On the other hand, many IT patents are ultimately invalid because there is prior art out there somewhere, even though it may be difficult to find. Knowing this, it does not make much to expend vast resources to clear every function and component.

Participants in standards setting efforts are commonly asked to disclose patents that might be relevant to the standard under discussion. However, many companies are reluctant to commit to full disclosure. As Frederick J. Telecky of Texas Instruments put it:

TI has something like 8000 patents in the United States that are active patents, and for us to know what’s in that portfolio, we think, is just a mind-boggling, budget-busting exercise to try to figure that out with any degree of accuracy at all.⁴

By the same token, however, it is unreasonable to expect an uncapitalized standards effort to figure out the potential effect of thousands of patents that may be held by companies inside or outside the process—especially when it is impossible to identify unpublished or yet-to-be-filed applications. The low standards of inventiveness combined with the richness of the technology means that there are far too many questionable patents out there, and the special penalties for willful infringement discourage looking.¹

In addition to having made patents more potent, more plentiful, and difficult to defeat, the Federal Circuit has favored patent holders against standards development efforts. It has held that a duty of good faith cannot be implied and that disclosure obligations should be narrowly construed.⁵

Astoundingly, the Federal Circuit has even endorsed amending applications to knowingly capture the work of others:

[T]here is nothing improper, illegal or inequitable in filing a patent application for the purpose of obtaining a right to exclude a known competitor's product from the market; nor is it in any manner improper to amend or insert claims intended to cover a competitor's product the applicant's attorney has learned about during the prosecution of a patent application.⁷

Standards organizations try to mitigate potential problems by getting all participants to agree to license any of their patents that may be needed to practice the standard on a reasonable and nondiscriminatory (RAND) basis. However, standards organizations are technically oriented; they lack the will and capacity to oversee or enforce this requirement. The patent holder is free to negotiate licensing terms privately, licensee-by-licensee, according to its own definition of reasonable and preclude public disclosure of the terms. Under these circumstances, individual licensees are unlikely to take the patent holder to court.

Markets for standards should be robust and transparent – no less than other markets. All the issues—technology, price, license terms—should be on the table in timely manner, just as they are in other business decisions. Potential users of standards quite reasonably want to know the cost differential between competing approaches, along with any differences in licensing terms and conditions. Ex ante licensing would help participants reach decisions that make business sense and avoid the uncertainties and abuses of RAND licensing. A recent report by the Federal Trade Commission and the Department of Justice argues that “ex ante” licensing can be pro-competitive and should not be considered a per se antitrust violation.⁸

However, neither a RAND commitment nor ex ante licensing is effective against patent holders outside the process, since non-participants are not bound by any disclosure or licensing commitments. Once the standard is chosen and many firms have embedded it in products that have been designed, manufactured, and widely distributed, the “highest and best use” of the patent from the patent holder’s perspective will be to extract, or “extort,” as much as possible of the sunk investments based on the patent.

Opportunities for conflict and ambush have increased, as both standards and patents have expanded in scope and significance. But while standards are disciplined by the market, patents have proliferated by legislative, judicial, and administrative fiat. The 1952 Patent Act framed patents as an entitlement that had to be allowed unless the examiner could show that the subject matter was obvious to a person having ordinary skill in the art. This threshold was further lowered by the Court of Appeals for the Federal Circuit by making it difficult to show obviousness in combinations,⁹ exalting secondary factors that favored nonobviousness, and by enhancing the presumption of validity, making it hard to show obviousness in court.

In addition to creating legal stumbling blocks for other innovators, low-quality patents dilute the value of patents for conveying knowledge. Patent documents may be available for free on the Internet, but on the whole low-quality patents raise more questions than they answer. Unlike spam, patents cannot be ignored or deleted.

In contrast to the murky patent landscape, standards development demands highly focused and explicit communication and generation of specific knowledge that is easy to understand and implement. The need for certainty and economy cautions against duplicative, potentially incompatible standards setting efforts. The process must produce, validate, and publicize useful information. Its value is affirmed when multiple firms adopt and implement the standard successfully.

Standards as an Asset

The invisibility of economic value in today's economy is not unique to standards. It partly expressed by the "intangibles" problem, as measured in the growing discrepancy between stock market valuation of firms and the much lower value of the asset base on the corporate books. Intangible assets include intellectual property, R&D, human capital, organizational capital, and customer capital. The very limited ability of the firm to trade, control, exploit, or monetize these assets makes it difficult to assign them a dollar. In many cases, the economic value is speculative or contingent. Or it may be derived from sources, relationships, and emerging opportunities outside the firm.

Standards are shared intangible assets for a market segment, an entire industry, or even multiple industries. A standard may promise a large future market for new technology, products, and services, but it depends on who is pushing the standard, unforeseen technological advances, and competition from other standards and technologies. Standards are essential but beyond the control of the users – like the rule of law, economic stability, and political freedom.

Now consider the value of the standard from the point of view of the owner of a patent that has been inadvertently embedded in a complex. Holding up deep-pocketed companies like Microsoft is, in real estate parlance, "the highest and best use" of the patent. The private value that can be realized from the patent is roughly equal to the staggering costs that can be imposed on the rest of the world.

The patent holder can realize this opportunity by avoiding full disclosure within the standards process, but that's risky as the Dell and Rambus cases have shown – or by not participating at all and "getting lucky." Nonparticipants have no obligation to disclose patents and indeed, no obligation to license at all, RAND or otherwise. By surreptitiously tracking deliberations of a standards process, perhaps through an ally inside the process, a nonparticipant can shape a patent application to capture the standard. Sadly, the more open the process, the more information will spread to nonparticipants and the more vulnerable the standard will be.

While value of the standards is in its ubiquity, but that is also a measure of its vulnerability. Hidden patents can undermine rational business expectations of millions of integrators, packagers, resellers, service producers, and users – including users of complementary products and services and all the way down the value chain. Although patents are touted as an incentive to investment, the irony is that it can also undermine legitimate market-oriented investments by encouraging investment in arbitrage and extortion. The result is a systemic bias against open collaborative innovation and in favor of bad faith behavior and legal maneuvering. All the more remarkably, this is happening in a sector where the value of individual patents is diluted by numbers and generally secondary to other means of securing returns from innovation.¹¹

Reforms to mitigate the threat of extortion in the IT sector have been opposed by industries (biotech, pharma) where individual patents are extremely important—and by the patent bar, which is economically interested in keeping patents as powerful and plentiful as possible.

Just as patents are uniquely important to the pharmaceutical industry, standards are uniquely important to the IT sector. Yet IT standards are so critical, so time-sensitive, so market-oriented and strategic that they do not fit well within the traditional institutional model, and because so many IT standards are developed outside the formal international standards system, the IT sector is politically underrepresented within the system. No organization represents the business and policy interests of the many IT standards entities not accredited by ANSI. With little coordination among standards organizations, there has been no collective response to the problem of participants who act in bad faith nor to the problem of ambush by nonparticipants. There is no recognized domain for standards law or standards policy. Standards setting remains largely a function of the engineering community with only an attenuated relationship to business strategy and policy..

The fragmentation and institutional weakness of the IT standards enterprise is especially striking in the face of a deeply and broadly institutionalized patent system. IT standards are increasingly hostage to a one-size-fits-all patent system that defies empirical observation and leads to discriminatory results. Furthermore, the cottage industry in ambush and extortion preys not only on IT but on the benefits that IT brings to every sector in the economy. If IT wants reform, it must seek reform of the entire patent system—against the wishes of deeply invested and motivated interests who believe that any diminishment of patent power and scope, tactical, strategic, political, or otherwise, will have a direct impact on their bottom line. The system cross-subsidizes industries where patents work well at the expense of those where patents work poorly.

The limited monopoly of patents is intended to promote public disclosure of new knowledge. Patent information should be instant, clear, and significant, in reality, it is delayed, opaque, of indeterminate value, and a source of liability for willful infringement. Patents are negotiated privately between the applicant's patent attorney and a government employee, and the applicant is entitled to patent unless the examiner can show otherwise. There is no requirement for a working model or evidence that the technology performs as claimed. Even with publication after 18 months, there is virtually no third-party input into the examination process.

By contrast, the development of open standards occurs only if there is a shared, focused conviction that a standard is worth investigating, negotiating, and implementing. The inputs and outcomes in IT standards are subject to constant scrutiny and testing through expert deliberation, reference models, conformance testing, competing implementations, and commercial use. The information and knowledge in standards is documented by and for those who will use it for its intended purpose, unmediated by lawyers.

Encouraging and protecting investment has become the principal rationale of intellectual property and IT standards. Standards-driven investments are all the greater because they are multiplied across companies and extend down value chains and across networks of complements. Open standards processes further ensure the quality and accessibility of the knowledge behind the standard. Open licensing ensures the broadest and deepest use and reliance on the standard, and therefore the greatest possible investment. Yet the more open the process and the more open the licensing, the more vulnerable the standard is to free-riding by patent trolls, who, if they are lucky, get to exploit immense sunk investments made in reliance on the standard.

Patents and standards both create investment-backed expectations that merit recognition as intellectual property. The final report of the National Innovation Initiative observes: "From an intellectual property perspective, open and proprietary IP models should not be seen as mutually exclusive; rather the IP framework must enable both approaches."¹² The burdens of disclosing and learning about potential conflicts should be managed so that standards and patents work productively together rather than as two disconnected systems, one run by engineers and the other by lawyers.

Aligning Patents and Open Standards

Today, we have a system where patent holders have all the cards, while those invested in standards face unknown and practically unforeseeable land mines in the form of patents. Yet standards, too, deserve protection by virtue of the great investment that is needed to make IT products, systems, and infrastructure work as users expect.

One approach to the problem would be to raise the threshold of "nonobviousness" beyond the "person having ordinary skill in the art" to a proper expert standard – and apply the standard under peer review along the lines of the current peer-to-patent experiment.¹³ This should be augmented, as pending reform legislation proposes, by limiting "willful infringement" penalties so that engineers are not discouraged from reading patents. This would ensure that patents

embodied major advances recognized to those working in the field. There would be little risk of inadvertent infringement, especially by diverse experts working together to develop baseline standards.

This approach would solve much more than the problem of standards ambush, but by the same token, it would be hard to achieve. Patents are rationalized by scale of investment, rather than genuine invention, and there is widespread addiction to a volume-driven patent system. Any attempt to substantially reduce the volume of IT patents would meet with great resistance from patent departments and law firms.¹⁴

A more realistic approach would address standards specifically as an exception to the power of the patent holder to extract damages and enjoin unwitting infringers. Patents are uniquely powerful against standards. If patent holders are endowed with power to threaten investments on this scale, they should at least be obliged to make their rights known in a timely manner. If not, they should lose the ability to sue those who do no more than practice an open standard. *It is far more efficient to put patentees, who presumably know the field in which they are patenting, on notice of a relatively small number of open standards than to put multitudes of standards adopters and users on notice of multitudes of patents.*

Like ex ante licensing and patent disclosure by participants, clearing standards against ambush would add to the transparency and efficiency of the market. It would encourage participation in standards development processes by patent holders who might otherwise prefer avoid any commitments that would limit their ability to hold up the standard while still monitoring the process and adapting their patent accordingly.

Of course, a clearing mechanism would apply only standards that meet criteria of openness such that patent holders could be charged with constructive notice. At the same time, this would recognize that the more open process, the more vulnerable the standard will be to unscrupulous patent applicants that monitor the process and adapt their patent application to capture the standard. Certainly, standards developed by the Internet Engineering Task Force (IETF) or the World Wide Web Consortium are public and open enough to qualify as a protected standards. This is nothing more than an updated application of the venerable doctrine of laches. People should not sit on their rights, idly or cunningly, while others make huge investments on top of them.

The danger of individual patents holding standards hostage is a growing concern shared by businesses and consumers. IBM circulated a “safe harbor” proposal explaining the incentives for the patent holder to refrain from acting until standards are deeply embedded and widely adopted – and suggesting an adaptation of laches as a partial solution.¹⁵ The Consumer Project on Technology’s “Proposed WIPO Protocol for the Development of Open Standards” similarly proposes a formal procedure for protecting standards from ambush.¹⁶

Conclusion

Investors in innovation deserve a transparent and straightforward legal environment, especially in today’s knowledge-based economy where there is a need to encourage and protect investments in IT standards as well as conventional forms of intellectual property. In fact, it applies many times over, since an entire industry, whole sectors of the economy, and hundreds of millions of end users may depend on standards.

Following the lead of the National Innovation Initiative, we should recognize that open or public intellectual property is no less worthy of protection than property controlled by a single entity. And that those who misappropriate public property infringe on everyone – innovators, producers, and users, large and small.

About the Author

Brian Kahin is Senior Fellow at the Computer & Communications Industry Association; he is also adjunct professor and research investigator at the University of Michigan School of Information. Kahin served (1997-2000) as senior policy analyst at the White House Office of Science and Technology Policy, where he commissioned the RAND/STPI report, *Scaffolding the New Web*. Kahin was previously founding director of the Information Infrastructure Project at Harvard's John F. Kennedy School of Government, the first academic program to address the social, economic, and policy implications of the Internet. He has edited ten books including *Standards Policy for Information Infrastructure* (with Janet Abbate, MIT Press 1995).

¹ Douglas Heingartner, Patent Fights Are a Legacy of MP3's tangled origins, New York Times, March 5, 2007, <http://www.nytimes.com/2007/03/05/technology/05music.html?ei=5090&en=72ad80392c70cd63&ex=1330750800&partner=rssuserland&emc=rss&pagewanted=print>

² Markus G. Reitzig et al., *On Sharks, Trolls, and Other Patent Animals – 'Being Infringed' as a Normatively Induced Innovation Exploitation Strategy*, Feb. 2006 (working paper) available online at <http://ssrn.com/abstract=885914>

³ AIPLA, Report of the Economy Survey 2005

⁴ Frederick J. Telecky, "Statement at FTC/DOJ Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy," FTC/DOJ hearings, February 28, 2002, <http://www.ftc.gov/opp/intellect/020228telecky.pdf>.

⁵ *Rambus v. Infineon*, 318 F.3d 1081 (Fed. Cir. 2003).

⁷ *Kingsdown Medical Consultants v. Hollister*, 863 F.2d 867,874 (Fed. Cir. 1988)

⁸ U.S. Department of Justice and Federal Trade Commission, *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition, 2007*, 49-56

⁹ The so-called "teaching-suggestion-motivation test" was recently overruled by the Supreme Court in *KSR v. Teleflex*, 550 U.S. ___, 127 S. Ct. 1727 (2007)

¹¹ Council on Competitiveness, *Innovate America, Thriving in a World of Challenge and Change* (National Innovation Initiative Summit and Report, December 2004) 44.

¹³ Beth Simone Noveck, "Peer to Patent": *Collective Intelligence, Open Review and Patent Reform*, 20 Harv. J. L & Tech. 123 (2006)

¹⁴ The organized patent bar has consistently argued for a lower threshold of nonobviousness. See amicus briefs in the seminal cases of *Graham v. John Deere* and *KSR International v. Teleflex*.

¹⁵ IBM, *Issue Paper: Toward an Open Standards Based Innovation Economy*, 2005.

¹⁶ Consumer Project on Technology, "Proposed WIPO Protocol for the Development of Open Standards (PDOS) Version 1.0," <http://www.cptech.org/a2k/pdos.doc>.