

Do Web Standards and Patents Mix?

By David Clark

In *IEEE Computer* Volume 35, Number 10
(October 2002), pages 19-22.

IEEE Copyright Notice

Copyright (c) 2002 IEEE. Reprinted from *IEEE Computer*
Volume 35 Number 10 (October 2002), pages 19-22.

This material is posted here with permission of the IEEE. Such permission of the IEEE does not in any way imply IEEE endorsement of any of OASIS's products or services. Internal or personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution must be obtained from the IEEE by sending a blank email message to pubs-permissions@ieee.org.

By choosing to view this document, you agree to all provisions of the copyright laws protecting it.

Do Web Standards and Patents Mix?

David Clark

Since the Internet's early days, engineers and researchers have built the "network of networks" largely with open standards, which many argue has let the technology become as popular as it is today.

However, that popularity may also discourage companies that develop promising new Internet technologies from making them available for use in open standards in the future.



The Web offers many potential opportunities for innovative technology companies to make money in areas such as telecommunications, consumer electronics, streaming media, and e-commerce.

Case Study: W3C Patent Policy Framework

The issue of using patented technologies in standards was at the core of a controversy involving the World Wide Web Consortium's proposed Patent Policy Framework.

Initially, the W3C proposed letting companies enforce patents and charge royalties for technologies used in the organization's standards. Proponents say that a company has the right to earn revenue if other companies use its technology, even as part of a standard, to make money.

However, the proposal generated a barrage of comments, almost entirely in favor of using only royalty-free technologies in standards, said W3C spokesperson Ian Jacobs. Opponents contended that standards are meant to promote the use of important technologies and thus should be freely available. Therefore, they said, either standards shouldn't be based on patented technologies or companies should not enforce patents used in standardized technologies.

The W3C subsequently revised the Patent Policy Framework proposal to express a preference for royalty-free standards. The proposal now requires members to disclose patents applicable to any of the organization's proposed standards. If a technology is important to a standard but the patent holder requires royalties, the W3C will create an ad hoc Patent Advisory Group to mediate the situation. If the group can't resolve the issue, it could recommend dropping the proposed standard or using a patented technology and letting the patent holder charge reasonable and nondiscriminatory (RAND) royalties.

However, Jacobs said, the Web community probably won't want to use standards that entail RAND licenses because low legal and financial barriers to standards use have been critical to the Web's success in the past.

Many in the industry expect the current proposal to become a model policy for standards organizations when the W3C finalizes it, scheduled for February 2003.

Therefore, a growing number of companies are receiving and enforcing patents for their potentially lucrative technologies. Meanwhile, as standards organizations work on various Web technologies, they frequently can't avoid turning to patented approaches.

Now, a debate has erupted between those who say the Internet should be built of freely available, standardized technology components and those who argue that useful technology development should be fairly compensated via royalties or licensing fees.

Some observers, such as Tim O'Reilly, founder of O'Reilly & Associates, a technology publisher, say this controversy threatens the Internet's future. They say that patent-based standards requiring royalty payments will slow or discourage adoption of new technologies, except by richer companies, thereby inhibiting development of the Web. They also say that these standards give patent holders too much power over technologies and how they are used.

Other observers contend it was inevitable that as the Web evolved into a potential way to generate revenue, companies would want to retain and sell new technologies they develop, rather than releasing them for general use. Moreover, they say, the ability to patent and profit from their work provides an incentive for companies to continue developing new technologies.

Recent issues have demonstrated just how controversial the use of patented technologies in computer-industry standards can be. For more information, see the four case study sidebars.

GROWING CONCERN

Because the Internet requires standards to work effectively, companies have frequently made their patented technologies available royalty free for proposed protocols. By forgoing licensing revenue to encourage standardization, they hope to earn a greater profit by selling products that use their technology.

Case Study: Web Services

Patent-related issues have become important in Web-services-related standards. Web services comprise a set of platform-neutral technologies designed to ease the delivery of network services over intranets and the Internet. Developers hope Web services will integrate networks, databases, PCs, and other devices into a single browser-accessible, virtual computing fabric.

Companies such as IBM, Microsoft, and Sun Microsystems are fighting for control of the potentially lucrative Web-services platform, and the use of patented technologies in Web-services standards—such as the simple object access protocol (SOAP) and the Web Services Description Language (WSDL)—could play a role in the competition.

Several factors limit the charging of royalties for technologies used in Web standards. For example, companies would likely avoid imposing high fees for technologies because they don't want competitors to do the same later. Also, companies don't want royalties to discourage standards use and thereby delay product development in the potentially lucrative Web-services market, according to Bob Suter, IBM's director of e-business-standards strategy. This could cost companies more money than they would make from royalties.

Like IBM, Microsoft has said it doesn't want to stifle the adoption of Web-services standards and products by collecting fees on its patented technologies. After repeated requests for comments, Microsoft submitted the following statement: "Our overarching goal is broad adoption [of Web services] to ensure interoperability. We can't make a blanket statement about licensing provisions as different specs have different underlying technologies and different standards bodies have different licensing policies. We have made major technologies such as SOAP and WS-Security available without royalties and comply with the . . . licensing policies of the standards bodies we work with."

WSDL

Companies would use the XML-based WSDL to describe the Web services they offer. In addition, WSDL would help users access a Web service by providing important information about it, such as the nature of its interface. WSDL is based on Microsoft's SOAP and IBM's Network Accessible Service Specification Language.

Initially, some W3C participants expressed concern that Microsoft and IBM might charge licensing fees for their technology contributions. WSDL Working Group member Hewlett-Packard protested, and IBM and Microsoft agreed to make their technologies, which generally come with fees, available royalty free. Allaire, BEA, Bowstreet, Commerce One, and several other companies are also providing their technologies royalty free for use in WSDL, said W3C staff member Philippe Le Hégaré.

Web Services Interoperability Organization

IBM and Microsoft, along with Autodesk, AT&T, BEA Systems, HP, Intel, and other companies, have formed the Web Services Interoperability organization (<http://www.ws-i.org/>). The WS-I plans to bring the work of multiple standards-development organizations together to create guidelines for interoperable Web-services approaches, said vice chair Norbert H. Mikula.

The group plans to establish a basic technology set for WS-I compatibility and then certify that products meet that requirement. The organization will provide Web-services-interoperability guidelines, samples of conforming Web-services functionality, and test tools that can verify whether a product satisfies the guidelines, said WS-I spokesperson Christian DeNike. In the process, DeNike noted, participating companies will maintain their own licensing terms for patented technologies.

For example, during the World Wide Web Consortium's development of cascading-style sheet specifications, Microsoft claimed patents on various elements of the technology but agreed to offer royalty-free licenses to fellow W3C members who used the standards commercially.

However, companies are not always willing to take such action. Royalty and licensing fees can generate considerable income, which is particularly important in today's business climate. Some sources estimate that companies and individuals worldwide received up to \$150 billion in patent-related royalties last year and that this total will grow 30 percent annually over the next five years.

Surge in patent applications

Several factors suggest patent issues will increasingly affect the Web. One factor is the growing number of patents being pursued. James E. Rogan, director of the US Patent and Trademark Office (USPTO), has said that about 7 million patent applications are pending worldwide, with the annual workload increasing by 20 to 30 percent. Last year, more than 22,500 software patents alone were issued in the US.

The proliferation of business-method-software patents will also affect the Web. The USPTO received more than 2,500 applications for such patents last year. These patents, which protect methods of conducting business, are exemplified by Amazon.com's patent on the one-click method of ordering products online. With this method, vendors store customer information in advance, letting buyers complete orders with a single click.

However, said O'Reilly, business-method patents will restrict the use of even some obvious methods and techniques and thereby stifle the Web's rapid innovation.

Standards organizations and patent holders

Most standards organizations require that working-group participants dis-

close intellectual-property rights relating to a proposed specification.

According to Professor Mark Lemley of the University of California, Berkeley's Boalt Hall School of Law, standards organizations often require participants to sign an agreement to license, either on royalty-free or reasonable and nondiscriminatory (RAND) terms. However, he noted, "It is not clear what [RAND] obligations mean in practice."

Meanwhile, most organizations discourage companies from discussing the specifics of their patents or possible licensing terms during the standards-development process, to accelerate the proceedings and avoid the appearance of collaboration among working group members.

Lemley noted that not discussing licensing details in advance can lead to problems if an organization adopts a patent-based standard but then disagrees with the patent holder over what constitutes reasonable terms.

This issue is important because the terms of a standards organization's RAND requirements don't generally specify what "reasonable and nondiscriminatory" fees are. This can lead to disputes between the organizations and patent holders, explained W3C staff member Philippe Le Hégarret.

Problems from unexpected sources

Sometimes, said Le Hégarret, companies don't reveal that they hold a related patent—either intentionally or because they're unaware they hold a claim—until after a standard is adopted. In some cases, he explained, the sponsoring organization might not have adopted the standard had it known about the patent.

Even worse, say some attorneys, is the *submarine-patent* scenario. Many businesses that received patents during the technology boom of recent years were either purchased by other firms or landed in holding companies. In some cases, an organization may adopt a standard using the patent, believing it was royalty free, and then find that

Case Study: MPEG-4

MPEG-4 is a new Internet-multimedia standard that offers fast, efficient audio and video compression and decompression, as well as features such as standardized ways to create and define multimedia objects, synchronize them in transmission, and let users interact with them. The standard uses patented technologies from 18 companies, whose intellectual-property interests are represented by MPEG LA.

MPEG-4 delivers MPEG-2's video quality using two-thirds the bandwidth. This improves the delivery of streaming multimedia on the Internet and permits data rates to scale as needed.

Late last year, MPEG LA proposed a licensing plan for the new technology that would, among other features, charge content and service providers for each hour of video they stream, without a maximum annual payment. Apple Computer and other companies vehemently protested that the plan would hurt online multimedia by making MPEG-4 too expensive to use, despite its advantages. Apple even delayed a public beta version of its MPEG-4-based QuickTime 6 multimedia product.

In response to the protests, MPEG LA revised its licensing terms and established maximum annual charges for content and service providers.

Case Study: JPEG

Forgent Networks, a video-network software and services vendor, claims that its 1997 acquisition of Compression Labs gave it a patent on data-compression technology used in a baseline version of the JPEG (Joint Photographic Experts Group) image-compression standard. Forgent claims its patent, which expires in 2006, covers all uses except those related to the satellite-broadcast business.

A couple of companies have reportedly paid fees to Forgent, which could establish a precedent for its claim. However, many businesses pay fees to patent claimants without acknowledging the validity of the claims, rather than mount an expensive and time-consuming legal defense, noted Steve Telleen, a vice president at Giga Information Group, a market research firm. Forgent failed to respond to repeated requests for comment.

Supporters of a royalty-free JPEG standard, including many vendors, contend that prior art—which could include papers on the topic or sales of products that used the technology before Compression Labs' patent application—would invalidate Forgent's claims.

Many JPEG members agree and plan to publish evidence when it is confirmed, said member Richard Clark, CEO of the Elysium Ltd. Web consultancy. JPEG members are slated to officially discuss the issue later this month.

the new owner, which didn't participate in the standards-setting process, is now aggressively trying to enforce its intellectual-property rights.

Impeding competition

Some developers and standards organizations say using patented technologies in standards will hurt marketplace competition.

Patent holders have an unfair competitive advantage because they can build products using their own standardized technologies without having to pay royalty fees, noted Steve Telleen, a vice president at Giga Information Group, a market research firm. Competitors must either incur the additional licensing costs or attempt to work without the technologies, which is often impractical.

IEEE

distributed systems

ONLINE

Expert-authored articles and resources

IEEE Distributed Systems Online

brings you peer-reviewed features, tutorials, and expert-moderated pages covering a growing spectrum of important topics, including

- **Grid Computing**
- **Mobile and Wireless**
- **Distributed Agents**
- **Security**
- **Middleware**
- **and more!**

IEEE Distributed Systems Online

supplements the coverage in *IEEE Internet Computing* and *IEEE Pervasive Computing*. Each monthly issue includes magazine content and issue addenda such as interviews and tutorial examples.

To receive regular updates, email dsonline@computer.org

Industry Trends

Sometimes a company that owns the rights to a standard can determine which competitors can sell compliant products, explained UC Berkeley's Lemley.

Industry observers are concerned that new, patent-based protocols that ride on top of older ones, such as TCP/IP and HTTP, could add overhead and make it more difficult to work with standards that were once openly available.

On the other hand, contended Larry Horn, vice president of licensing and business development for MPEG LA, a consortium of companies that hold patents to various MPEG-related technologies, fair compensation for technology development drives further innovation. "If the incentive was taken away," he said, "people wouldn't bother to develop these technologies."

Numerous standardized Internet technologies require users to pay royalties. One example is MPEG-2, an audio- and video-compression standard adopted by the Moving Picture Experts Group that consists of patented technologies from several companies.

Despite the royalties, Horn said, MPEG-2 has become widely adopted because the fees are reasonable compared to the benefits that the technology gives product developers.

Royalties have become a complicated and ideological Web-technology issue. Some opponents say patents have no place in such a rapidly changing field. Because of the financial burden and usage limitations they create, said JPEG member Richard Clark, CEO of the Elysium Ltd. Web consultancy, "patents are a direct threat to smaller businesses, individual entrepreneurs, and, in particular, the [open-source] software movement." Also, he explained, an information-technology patent generally lasts longer than the technology itself, thereby seriously limiting marketplace participation and competition.

Other opponents say that patents will halt the kind of free and rapid development needed for tomorrow's Internet. Patents can be exclusionary and thereby restrict the cooperation necessary to evolve core Internet technologies, said Giga's Telleen. Companies have plenty of opportunity to make money without restricting basic Internet-infrastructure innovation and development, he explained.

However, MPEG LA's Horn and others say licensing fees can be fair, reasonable, and acceptable, and that the current system for using patented technology in standards will correct itself. "The market will eventually create the balancing points where reasonable sellers are willing to make patented technology available in open markets to reasonable buyers who are willing to pay a price that they can absorb in their product development," he explained.

Nonetheless, predicted Unisys's head patent counsel, Mark Starr, "We're going to see massive amounts of patent litigation in this decade."

Law professor Lemley disagreed, saying that standards organizations are developing approaches to using patented technologies that, while not ideal, are better than the current system. "By ameliorating some of the threats that overly broad and overlapping patents pose for innovation, standards organizations' rules help the patent system do what it was originally designed to do: promote innovation." ■

David Clark is a freelance technology writer based in Lafayette, Colorado. Contact him at dwclark@earthlink.net.

Editor: Lee Garber, Computer, 10662 Los Vaqueros Circle, PO Box 3014, Los Alamitos, CA 90720-1314; l.garber@computer.org