

Comments for the Patent Standards Workshop, Project No. P11-1204

Xiph.Org Foundation

June 14, 2011

Patents affect standards in a fundamentally different way from any other context. Competition normally limits the value of a patent, with that value determined by the advantage of the patented technique over the next best option. However, patents essential to the implementation of a standard gain their value from network effects. The innovation often plays no role. This gives the holder of such a patent the ability to hinder or eliminate entire markets which would compete with their own offerings.

Participants in Standards Setting Organizations (SSOs) cannot be certain that patent claims will not arise after the standard has been set. This handicaps the standards setting process, stifling the adoption of innovative technologies. The problem is particularly acute for royalty-free standards, where the incentives for patent holders to cooperate are lower and the costs of failure are higher.

To help reduce these negative effects, The Xiph.Org Foundation recommends that the FTC work to require specific, ex ante disclosure of patents or patent applications that would read on standards under development, that failure to disclose exhaust the patent, and assertion of such a patent ex post be deemed anti-competitive. This should apply not only to standards development activities that the patent holder participates in or knows about, but those it *should* have known about. Furthermore, vague infringement allegations or activities designed to avoid an SSO's disclosure requirements or undermine the standards process should also be deemed anti-competitive.

1 The Importance of Royalty-Free Standards

A fundamental reason that the internet and the web have seen such remarkable growth, rapid innovation, and an extraordinary creation of value for the entire world is that people can build new things on the web without asking anyone for permission. To quote Chris Blizzard from Mozilla [1]:

It's worth saying twice. Anyone can create technology or services on the web and they don't have to ask anyone for permission to do it. This is why we've had

billions of dollars of investment and a fundamental shift in the way that western society acts and communicates—all in the course of a very short period of time.

The internet is powerful because it is common infrastructure based on public, royalty-free standards as mainstream, common, accepted, important—and overlooked—as the public standards that bring us running water, the electric grid, and the highway system. These royalty-free standards provide substantial value, both to consumers and to the businesses that interoperate with them.

To give some recent examples which help put a real price tag on this value, Google acquired On2 Technologies last year for 124.6 million dollars. Google then released On2's flagship product, the VP8 video codec, with a royalty-free patent license as part of the WebM project [2]. Google also recently acquired Global IP Solutions (GIPS) for 68.2 million dollars, and has opened up its real-time communications stack [3] for use in the developing WebRTC standards, royalty-free. Royalty-free internet standards such as these constitute investments totaling billions of dollars, and serve as the foundation for a significant fraction of the US economy.

Traditionally, Reasonable And Non-Discriminatory (RAND) licensing has been the goal of government attempts to ensure fairness in the role of patents in standards-setting. However, RAND is generally believed to be neither reasonable nor non-discriminatory [4], and in a royalty-free environment this is especially true. There are now many business models that would be destroyed by *any* per-unit licensing cost.

Multi-billion dollar companies such as Microsoft (market cap \$204 billion), Google (market cap \$164 billion), and Skype (recently acquired by Microsoft for \$8.5 billion) give away end-user software such as web browsers or VoIP applications at no cost, creating a potentially unlimited liability. Smaller companies would be harmed even by the legal requirement to *count* how many copies are distributed. Mozilla, for example, distributes the vast majority of its software over a large network of volunteer mirrors and Content Distribution Networks (CDNs) over which they have no direct control. There are also numerous third-party download sites which provide an enormous array of software downloads for free, funded by advertising revenue. This business scales precisely because they do not have to ask permission or negotiate a relationship for providing accurate download statistics to each vendor whose software they distribute.

The SILK voice codec recently developed by Skype provides another example of why giving away your inventions can make good business sense. In testing, Skype found that calls made using SILK lasted 10 minutes longer than those using the lower-quality G.729 codec [5]. This is obviously extremely valuable if one is in the business of selling phone calls. Skype has now contributed the technology behind the SILK codec to the Internet Engineering Task Force (IETF) for standardization, royalty-free, so that their users can enjoy this quality regardless of which networks Skype has to interoperate with.

Much of the value of successful royalty-free standards comes from near-universal adoption, but they are particularly vulnerable to patent hold-up. A royalty-bearing standard can absorb new patents into the pool formed around it with relatively little disruption, affecting the profitability of those using it only at the margin. However, a single patent holder

demanding royalties prevents a formerly royalty-free standard from being used with many business models where it was practical before. This vulnerability also gives them a higher burden of proof before market participants are willing to adopt them, making it more difficult to establish such standards in the first place.

2 The Anomalous Value of Patents in Standards

The March 2011 FTC report on Aligning Patent Notice and Remedies with Competition [6] says,

A patent does not necessarily confer market power because patented inventions often compete with alternative technologies. ...[T]he market reward earned by the patentee, and the economic value of the invention, will depend upon the extent to which consumers prefer the patented technology over alternatives. ...[O]ften, competition from acceptable alternatives will limit the market reward that a patent owner receives.

However, the point of having standards is to set aside competition in areas where interoperability is more valuable than innovation. Products that implement standards, particularly communications standards, may still compete on quality, efficiency, robustness, and security. There is still room for innovation in these areas, as well as in the products built on top of these standards. However, innovation in the technology essential to the standard itself would break compatibility and destroy the value of the standard. All the competition over that technology happens during the formation of the standard itself.

When patents are disclosed *ex ante*, during the standardization process, many courses of action are available. If the patents are owned by small and medium enterprises, or individual inventors, it may be feasible to acquire them directly, as Google did with On2 and GIPS, rewarding the inventors exactly as intended. When held by entrenched interests who refuse to offer a license on suitable terms, they can be designed around, limiting their value to the innovation they provide, again exactly as intended.

Continuing to quote the FTC report,

But *ex post* licensing to manufacturers that sell products developed or obtained independently of the patentee can distort competition in technology markets and deter innovation. The failure of the patentee and manufacturer to license *ex ante* with technology transfer results in duplicated R&D effort. When a manufacturer chooses technology for a product design without knowledge of a later-asserted patent, it makes that choice without important cost information, which deprives consumers of the benefits of competition in the technology market. If the manufacturer has sunk costs into using the technology, the patentee can use that investment as negotiating leverage for a higher royalty than the patented technology could have commanded *ex ante*, when competing with alternatives. The increased uncertainty and higher costs associated with *ex post* licensing can deter innovation by manufacturers.

Interoperability requirements make this situation even worse. Once proponents of a standard have invested billions of dollars building, deploying, and advertising it, creating substantial network effects, the leverage a patentee commands is not just “higher” than it would have been *ex ante*. It is unbounded.

To remedy this, the FTC makes several recommendations to improve notice in patent claims. However, the issue of notice is fundamentally unsolvable. The patent application process is an adversarial system, with large incentives for the minimal possible compliance with disclosure obligations. For software, such disclosures are particularly poor, as the October 2003 FTC report on *The Proper Balance of Competition and Patent Law Policy* [7] notes: “Several panelists discounted the value of patent disclosures, because the disclosure of a software product’s underlying source code is not required.” The absence of source code in patents with a software component makes it especially difficult to tell whether a proposed standard would infringe. Although it’s possible to improve notice, applicants can devise avoidance strategies much more quickly than legislation and regulation can be implemented to combat them.

The application process takes multiple years, during which time the applicant can revise their claims. This means that even if every granted patent provided perfect notice, SSOs would still not be able to determine whether some application might be revised so as to read on a proposed standard. Even if clearance research by an SSO (for those few that have a formal process for it) were perfect, which it cannot be, a standard would have to be held in limbo for many years to ensure no third-party claims arose. In the internet world, which sometimes measures time-to-market in weeks, this kind of delay is intolerable.

When the World Wide Web Consortium (W3C) was considering Xiph’s Theora video codec for inclusion in HTML5, one opponent argued privately that Theora’s clearly written, detailed specification endangered its royalty-free status, because it made it easier to modify the claims of an open patent application to ensure they read on the format. This argument was raised in 2008. The Theora specification was originally published in 2004, mostly describing technology first sold to the public in the year 2000. If even this much delay cannot provide confidence of non-infringement from as-yet unpublished claims, then improving notice is no help at all.

Although in theory such practices are not permitted by the patent office, which requires that claim revisions continue to cover only the original invention [8], they do occur. The astronomical payoff if successful, and lack of any real penalty for failure (merely a rejected application) virtually guarantee that some will try. We have seen at least one granted patent, deemed “essential” for a major standard years after it was finalized, where the claims were altered so drastically that they did not even cover the same subject matter as the initial claims—a fact we discovered only by looking at the file wrapper after noticing a startling disconnect between the claims and the abstract.

If notice is never sufficient to assure the developers of a standard that there are no unknown third-party claims, then one must give the patent holders themselves the incentives to do so. With RAND standards, these incentives are clear. Historically, most patent holders have tried to get as many patents as possible into the initial pool created around such a

standard, in order to guarantee a share of the agreed-upon royalties. However, some have not [9].

With royalty-free standards, even these imperfect incentives disappear. Patent holders have no clear motivation to disclose voluntarily, especially large, entrenched interests which may be unwilling to license on royalty-free terms and which cannot be bought out. If they can refuse to disclose what cannot be found by others, they prevent the development of alternatives.

3 The Problem of Absent Parties

Most SSOs have rules requiring the disclosure of any known patents from participants, and the Federal Register notice for this workshop [10] lists many of their drawbacks. The active subversion of one SSO's process by members of a competing patent pool exacerbates these problems. There are a number of examples of licensors of a royalty-bearing standard working against the formation of a competing royalty-free standard. There are many tools available for such an attack beyond mere patent hold-up.

Patentees will frequently avoid participation in working groups in order to avoid triggering disclosure requirements. They need not have actual patents that read on the competing standard. The mere uncertainty created by their non-participation is sufficient to cast doubt on the ability of the SSO's disclosure policy to prevent hold-up. Worse, they can make claims in other venues, without being bound by rules requiring them to identify the patent owners or the specific patent or application numbers.

This was a common tactic during the debate over the inclusion of Theora in HTML5, most famously with the claim [11] by Larry Horn, CEO of the MPEG-LA, that, "Virtually all codecs are based on patented technology," and "No one in the market should be under the misimpression that other codecs such as Theora are patent-free." These non-specific claims are carefully constructed to give the impression that Theora must be encumbered with royalty-bearing patents without ever explicitly saying so¹. Others, such as Steve Jobs, were more explicit [12]: "All video codecs are covered by patents. A patent pool is being assembled to go after Theora and other 'open source' codecs now." The intent in both cases is clear: to discourage adoption. No specific claims against Theora were ever made by the MPEG-LA or any of its member organizations, and no patent pool around Theora ever surfaced.

Competitors may continue to impact the standards process even while avoiding direct participation. Members of the competing pool can coordinate their activities, so that only some of them need participate. They can hire contractors to represent them or find other loopholes that avoid triggering disclosure requirements. Depending on the details of the SSO's rules, this may allow them to encourage the adoption of techniques covered by their patents without disclosure or to slow down the working group process if it has avoided these techniques. The latter confers a potential time-to-market advantage.

¹In fact, before being acquired by Google, On2 held several patents on the technology in Theora, but released them under an irrevocable royalty-free license, so the statements are factually correct.

4 SSO Disclosure Rules are Insufficient

Even ignoring the problem of absent parties, the rules governing discussion of patents and licensing are often vague and ineffective. There is a fear that establishing concrete rules may constitute unlawful collusion, and they frequently ask for guidance on their policies for antitrust concerns [13]. This problem is compounded by the international nature of standards, since the law varies from jurisdiction to jurisdiction, and no one is an expert on all jurisdictions. This leads to concerns that *any* discussion of licensing terms or even the scope of patent claims may have legal ramifications, and this discussion is frequently disallowed [14, 15].

In the worst case, an SSO may disallow the consideration of patents entirely when choosing technology for a standard, relying merely on an agreement to license the results on RAND terms. This leads to licensing of patents completely out of proportion to their market value. No attempt can be made to avoid patents, and since unpatented techniques are unlikely to be the best in every technical category, the result is almost surely guaranteed to be patented, even if the technical difference between the chosen technologies and unencumbered alternatives is very small. But it gets worse.

If you are a contributor to a RAND standard development process, it is very important that some of your patented technology makes it into the final standard. If it does, you can cross-license your patents with the other “insiders” and completely avoid paying to use the resulting format. Even if your goal is not to profit from your participation, failure to get some patents into the result guarantees that you will have to *pay* to use the fruits of your own labors. The final standard ends up rife with inconsequential or even detrimental technology that could easily have been avoided.

5 No Mechanism to Resolve Disputes

Most SSOs also lack a dispute resolution mechanism to handle cases where the patented status of a technology is contested, and it is unclear such disputes *could* be resolved outside of a courtroom. In the case of a baseline video codec for HTML5, the relevant part of the standard was simply removed, and there is now no standard in this area. Different browser vendors support different codecs, and a website must encode all of their videos in multiple formats if they want to support all users. Many websites choose to use only one format, and simply do not support users whose browser cannot play it back. One choice raises the cost of providing video on the web, while the other harms users by denying them service. With upcoming real-time web communication standards, the situation is even worse, as the first option is no longer available. Since the end-user clients must communicate directly, if they do not support a common format, they cannot talk to each other at all.

The inability to resolve disputes allows patent holders to use disclosures as an asymmetric weapon. It is very easy to list a patent number and claim infringement, without even specifying which part of the proposed standard the patent allegedly reads on. This makes it very difficult and expensive to verify whether there is infringement, which part of the

standard must be removed or modified to avoid it, and whether or not such a work-around or alternative does avoid it. Even after *In re Seagate* [16], conservative legal departments are loath to let engineers examine the contents of patents for fear of willful infringement claims, so many working group participants will not.

If some participants do consult a patent attorney and do a private analysis, the standard advice is not to disclose the results (which would waive privilege), meaning the analysis must be replicated by each organization that wishes to adopt the standard. Once a rightsholder asserts infringement, there may be no obligation to update that claim as the standard changes, leaving the SSO at the mercy of the rightsholder to declare that the infringement has been cured. Counterintuitively, finding no infringement is the most difficult situation of all. This gives the working group the uncomfortable choice of leaving the standard as-is or adopting an inferior alternative. The first choice leaves doubt in the minds of those who have not done their own analysis, or who reach a different conclusion, and hinders adoption. The second option unnecessarily reduces the quality of the standard. Since those who contributed a technology to the standard have often deployed it experimentally or in a limited context beforehand, adopting an alternative may even be seen as an admission of infringement on their part, making them reluctant to approve.

6 Summary and Recommendations

In summary, based on its experience and analysis of royalty-free technology standards, the Xiph.Org Foundation recommends that the FTC take the following actions:

- Require specific, ex ante disclosure of patents or patent applications that would read on standards under public development. Failure to disclose should exhaust the patent, and assertion of such a patent ex post should be deemed anti-competitive. This guarantees ex ante disclosure, limiting the ability of patent holders to demand compensation proportional to network effects and switching costs rather than the value of the underlying technology.
- Create a legal framework in which patent holders can receive notice of public standards development activities occurring in their sector, and apply these disclosure rules to all parties so notified, even if they do not participate in the standardization process. Similar to public notice in class-action law, this shifts the burden of determining if a patent reads on a standard to the patent holder. If the patent holder cannot be bothered to determine if their patent reads on a particular standard, then the intrinsic value of the technology, ex ante, must necessarily be small.
- Issue clear guidance to patent holders that vague infringement allegations or activities designed to avoid an SSO's disclosure requirements or undermine the standards process are anti-competitive. This will help alleviate active subversion of the standardization process by members of a competing pool and allow the resulting standards to compete on price and technical value.

References

- [1] <http://www.0xdeadbeef.com/weblog/2010/01/html5-video-and-h-264-what-history-tells-us-and-why-were-standing-with-the-web/>.
- [2] <http://www.webmproject.org/>.
- [3] <http://sites.google.com/site/webrtc/>.
- [4] <http://www.ftc.gov/opp/intellect/020417jefferyfromm.pdf>.
- [5] http://blogs.skype.com/en/2010/09/the_power_of_silk.html.
- [6] <http://www.ftc.gov/os/2011/03/110307patentreport.pdf>.
- [7] <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>.
- [8] http://www.uspto.gov/web/offices/pac/mpep/documents/appxr_1_121.htm.
- [9] <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/330>.
- [10] <http://www.ftc.gov/os/fedreg/2011/05/110509standardsettingfrn.pdf>.
- [11] <http://www.streamingmedia.com/Articles/ReadArticle.aspx?ArticleID=65782>.
- [12] http://www.theregister.co.uk/2010/04/30/steve_jobs_claims_ogg_theora_attack/.
- [13] <http://www.justice.gov/atr/public/speeches/223363.htm>.
- [14] <http://www.ietf.org/mail-archive/web/codec/current/msg01237.html>.
- [15] <http://www.ietf.org/mail-archive/web/codec/current/msg02345.html>.
- [16] <http://www.cafc.uscourts.gov/opinions/M830.pdf>.