Analysis on balance: Standardisation and Patents

This paper provides an analysis of the interaction of patents and standards and finishes with some concrete proposals to address the most pressing issues. It was written under the assumption of very little background knowledge, and therefore provides some of the background necessary to understand the issue. An expert in the field should be able to skip the Background section.

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Introduction

Software patents have been a hugely controversial debate, with lines of battle drawn primarily between large corporations holding large patent portfolios and engaged in multiple cross-licensing deals, and the Have-Nots, entrepeneurs, small and medium enterprises, and software users from the student using GNU/Linux all the way to institutional users in governments.

This debate got a lot quieter with the rejection of the software patent directive in 2005. Its place in the headlines was taken by other debates, such as standardisaton. Open Standards have been a buzzword for years, but never has this term been discussed more intensively.

On Wednesday, 19 November 2008, both debates met in Brussels at a workshop titled "IPR in ICT standardisation", although "Patents in ICT standardisation" would have been a more suitable name because the discussion was exlusively about the interaction of patents and ICT standardisation.

Patents and standards are fundamentally at odds, so many people call for a balance between patents and standards. This article comments upon the workshop and explains why standards should prevail over patents at least in the area of software.

Background: Patents & Standards 101

The idea of patents is not new. Its roots lie in the royal "litterae patentes" that conferred exclusive rights to certain people. Democratic governments eventually took the position of the monarchs, and patent legislation has evolved over time, but the fundamental characteristics of what is a patent have not changed.

Succinctly put, a patent is a monopoly granted for a limited time by the government on behalf of its citizens.

The term monopoly has many negative connotations, and for good reason. A monopoly stifles innovation and increases price due to the absence of competition. On these grounds a monopoly is generally understood to be to the detriment of economy and society. It is not illegal to obtain a monopoly, but society has a legitimate interest in limiting abuse of the power that a monopoly confers, and seeks to achieve this through antitrust law.

The monopoly right created by a patent brings with it all side effects of a monopoly. It is granted by the state because it is understood that the absence of patents might prevent publication of breakthroughs, which is understood to be more harmful than granting the patent monopoly.

This initial patent deal is based upon disclosure, so that others can learn from and build upon a new idea. Lack of useful disclosure or advancement of public knowledge translates into the granting of a monopoly with no return for society.

Like patents, standards are closely related to disclosure. The root of the word standard appears to go back to heraldry, where it refers to a symbol that is used to make a rallying point visible in battle.

Modern use of the term keeps that meaning of publicly visible point of reference, although it has been transferred to other areas. So among other things it is understood as "*something established by authority, custom, or general consent as a model or example*" or also "*a structure built for or serving as a base or support.*" (from Merriam-Webster On-line dictionary).

In Information and Communication Technologies, a standard has both the above meanings. According to the British Standards Institution (BSI), a standard is "*an agreed, repeatable way of doing something. It is a published document that contains a technical specification or other precise criteria designed to be used consistently as a rule, guideline, or definition. [...] Any standard is a collective work. Committees of manufacturers, users, research organizations, government departments and consumers work together to draw up standards that evolve to meet the demands of society and technology. [...]*"

The underlying idea is that a standard establishes common ground, it provides the means for interoperability and competition. This is especially true for ICT due to their strong networking effects. If all participants in an ICT market adhere to the same standards and make an effort to guarantee interoperability, not only can customers choose freely between various products and services, they can also exchange information with one another without problems.

In contrast, absence or failure of standardisation warps networking effects in a way that monopolisation becomes almost certain. Users of one product or service could only interoperate with users of the same product or service. Over time, one solution would attain such a large user base that other users are de-facto left with the choice to join this group, or be unable to communicate fully with the

majority of users. This could for instance be achieved by bundling software with a predominant hardware platform.

So standards are largely an instrument to enable competition for the public benefit. The purpose of standards is intrinsicly anti-monopolistic.

It is also pro-innovative. Since derivation from a standard automatically breaks it, standardisation and innovation seem opposed goals, and to some extent they are. But where all changes are done in consensus between implementors, the result is an updated version of the standard available to all. The second path is innovation on top of the standard, using the standard as a base for innovation rather than innovating inside the standard.

Due to its global, consensus-driven nature, the first process is comparatively slow. Another problem is the a substantial barrier to entry into the standards process. As a result, large companies are overrepresented in comparison to small and medium enterprises (SME).

The second path is open to everyone, private person, SME, or large industry. It is also limited only by the speed of development of the team making the innovation. If the innovation was made by just one party, there will be a temporary monopoly. But given a certain maturity, the innovation is then likely to be formalised into a standard again, forming the base for the next innovation to be built on top.

While the first path allows primarily for slow, small improvements, the second path allows for full participation of the economic majority and is much better suited for groundbreaking ideas and arguably the more important to protect for society.

Conflict: Fundamentally opposed instruments

The fundamentally different goals for patents and standards surfaced multiple times during the debate, for instance in the speech of Mr Karsten Meinhold, chairman of the ETSI IPR Special Committee, who summarised it as "*IPRs and Standards serve different purposes: IPRs are destined for private exclusive use, Standards are intended for public, collective use*".

Both patents and standards derive their justification from the public benefit, yet upholding one deprives the other of its function. Standards seek to counteract monopolies, patents establish them. Or, as Tomoko Miyamoto, Senior Counsellor of the Patent Law Section in the World Intellectual Property Organization (WIPO) said in her presentation: Patent thickets and patent hold-ups arise from legitimate exploitation of the exclusive rights intentionally conferred by patents. They are a normal and intended consequence of the patent system.

Allowing patents on standards consequently is an intentional act to grant monopolies on standards to certain parties that includes the right to block implementation by other parties.

Ex-Ante Disclosure

There are multiple attempts through which the standardisation community has tried to mitigate these effects over the years. One of these mechanisms is called "Ex-Ante Disclosure." The parties working on a standard use this mechanism to commit to licensing terms while the standard is still being drafted. If these terms are not acceptable to the other parties working on the standard, the technology that is covered by the patent is not included in the standard.

What are acceptable terms is highly subjective. A large corporation with big patent portfolio and existing cross-licensing agreement with the holder of the relevant patents might consider adding one more patent to the agreement a minor inconvenience. The same situation looks substantially different from the perspective of a small or medium enterprise that typically has at most a small patent portfolio and has to expect extortionate licensing.

Since SMEs are strongly underrepresented in standardisation, Ex-Ante Disclosure is likely to bring more satisfactory results to large corporations with large patent portfolios that compete in the same area. The economic majority generally has no say about the acceptability of the terms.

Another issue of ex-ante disclosure is difficult enforcement, as Suzanne Michel, Assistant Director Office of Policy and Coordination of the U.S. Federal Trade Commission (FTC) pointed out in her presentation. The FTC had found that Rambus Incorporated had joined and attended standardisation meetings of the Joint Electron Device Engineering Council (JEDEC) in order to modify their patent applications to cover technology that was under discussion for inclusion in future standards. In the opinion of the FTC, this behaviour was deceptive, violated JEDEC's disclosure policy, and illegaly gave Rambus monopoly power.

The D.C. Circuit Court disagreed with the interpretation of the FTC in their April 2008 decision. According to Ms Michel, the court said that avoiding so-called "Reasonable and Non-Discriminatory" (RAND) licensing terms does not constitute abuse, and that there is no proof that JEDEC would have avoided technologies if it had known that Rambus was planning to use its patents to the fullest extent allowed by law. The court also expressed reluctance to make patents unenforceable based on vague disclosure policies.

Both patents and standards derive their justification from the public benefit. There was no additional disclosure of new technology provided by the patents that

Rambus filed on the standards that were about to be published. Giving Rambus monopoly power over standards developed by JEDEC is also detrimental to public interest. So it seems likely that a full public interest evaluation of this situation would give that indeed the public interest did not prevail in this case.

So it would appear that the FTC was correct in its evaluation, and so was the court, because establishing time-limited monopolies is the very purpose and function of patent law. The role of courts does not extend to the undoing of laws and most legislators have not given the public interest conflict between patents and standards consideration.

JEDEC has meanwhile updated its disclosure policy, which may help to avoid similar issues in the future. Considering the value that patent law has in relation to standardisation for many courts, only a future court case can demonstrate whether the issue has been resolved in a way that holds up to formal legal review.

(F)RAND

This is true for all standardisation bodies that require ex-ante disclosure, which most of them don't. Instead the majority of bodies appear to rely on purely voluntary disclosure and the assurance that patent holders involved in the process will agree to so-called RAND or FRAND ("Fair, Reasonable and Non Discriminatory") terms.

One common criticism of (F)RAND terms is the lack of a definition of what is reasonable and for whom. During the 2006 Internet Governance Forum (IGF) in Athens, Susy Struble of Sun Microsystems pointed out that what is reasonable for one party may not be reasonable to another.

Licensing practices do indeed vary, and are influenced by various factors, including, but not limited to, whether or or not a company has a stake in the relevant market, and how aggressively it pursues its patent revenues.

Additionally, patents can be sold or acquired as part of a business restructuring or acquisition. A future patent holder may consider different terms reasonable, so could a patent holder who did not participate in the standardisation process and never committed even to RAND terms.

RAND terms generally amount to a vague assurance to license upon request. Such an assurance does not constitute a perpetual license on the patent and is not valid for the new holder of a patent. So a new holder can choose freely how to enforce the patent, including patent hold-ups on all existing implementations of the standard.

As Ms Miyamoto from WIPO pointed out, a patent hold-up is a legitimate and intended use of the patent system. So even in a RAND regime, there is a substantial amount of uncertainty that invariably favors large companies, which not only have deeper pockets, they also have larger legal departments and patent portfolios.

It is this uncertainty that has caused great frustration among SMEs, which Charles Schulz of Ars Aperta summarised as RAND referring to "RANDom licensing at the sight of competitors." In his presentation, Mr Schulz also pointed out that (F)RAND terms are discriminating against Free Software. Even RAND terms linked to zero royalties, the so called RF-on-RAND ("Royalty Free on RAND"), RAND-RF ("RAND Royalty Free") or RAND-Z ("RAND with Zero royalties") terms often exhibit the same problems because they do not permit sublicensing.

Free Software (a.k.a. Open Source, FOSS or FLOSS) is based on the principle that every living person and every legal entity can be a user, developer, distributor, or any combination of the above. Only conditions which permit this to take place are acceptable to Free Software, which is estimated to reach 32% of all IT services and 4% of European GDP by 2010.

In her presentation, Amy Marasco, General Manager Standards Strategy of Microsoft, emphasised that she does not consider Free Software a business model. That is true to the same extent that proprietary software itself is not a business model. Business models are what is built on top of both Free Software and/or proprietary software.

Ms Marasco continued to point out that all these business models are legitimate. And while there are strong differences in opinion about which software model is the better and more sustainable choice for economy and society, from the perspective of a political analysis of standards, all business models based upon proprietary software, Free Software, or a mixture of the two need to be considered valid and legitimate.

As mentioned before, the Free Software related parts of European GDP are estimated to reach 4% by 2010. All parties agree that all business models, including those incorporating Free Software, are legitimate. This raises the question whether it can be considered Fair, Reasonable and Non-Discriminatory to exclude this legitimate part of economy by choice of patent licensing terms.

Harm from exclusion?

The situation bears an odd semblance to the situation with counterfeit pharmaceuticals, where the argument for patent enforcement is generally accompanied by public health considerations. But only effective pharmaceuticals that are identical to the patented product would actually violate the patent. Health risks arise primarily where the patents are not being violated.

In standards, the situation is somewhat similar. If patents are part of a standard, only an implementation that is covered by the patents provides an effective an-

titdote to monopolisation. Having to circumvent patents will generally break standards compliance and harm the public benefit that is the driving force behind standardisation.

So patents in standards have the potential to make full interoperability impossible for legitimate businesses in some markets. As the aforementioned BSI points out: "Standards are designed for voluntary use and do not impose any regulations. However, laws and regulations may refer to certain standards and make compliance with them compulsory."

Once a technology has been standardised, certain choices are no longer made for technological quality. Even where a better solution exists that would have the additional value of not violating a potential patent on the standard, an implementor would choose to follow the technologically inferior standard in order to have full access to the market. Such a case reverts the initial idea of patenting: The technology is valuable because it is patented, not patented because it is valuable.

There are also cases where certain standardisation organisations, e.g. the International Organisation for Standardisation (ISO) have a priviledged position with governments for procurement decisions. Due to patents and insufficient (F)RAND conditions, not all standards priviledged in this way can be implemented by all legitimate market participants that should be able to compete in public tenders.

So through the special priviledge for organisations like ISO which accept terms insufficient to guarantee competition, the monopoly right conferred by patents translates into an oligopoly or even a monopoly for public procurement. This exclusion of competition from tenders by means of patents on standards is detrimental to the public benefit because it leads to higher prices and consequently higher taxes.

Remedies for this situation would have to address the way in which governments grant procurement preferences to standards, the way in which patents are handled in standards, the patent system itself, or a combination of all of the above.

Attempted remedies

Good patent research costs around 100.000 EUR per case according to Rigo Wenning, Legal Counsel & Patent Policy Team Contact of the W3C/ERCIM who spoke about "Standards, Patents and the Dynamics of Innovation on the Web." The W3C is indeed the only Standards Setting Organisation (SSO) that has a sufficient patent policy for its standards in order to accomodate all legitimate business models.

From the perspective of most SMEs, 100.000 EUR patent research costs are prohibitively expensive. But even large companies will find this cost considerable, which is only one of the cost generators. More damage can be caused by injunctions against a product, or claims for damages. In his presentation of IBM's "SoftIP" concept, Roger Burt, Senior Counsel of IBM Europe introduces the issues with a quote from a BSA et al. Amicus brief in eBay v MercExchange. The quote summarises the problems of large industry rather well:

"Technology products typically consist of hundreds or thousands of patented components. It therefore is impossible for technology companies to investigate all of the patents, and pending patent applications that may be relevant to a new invention (product), notwithstanding their best efforts to do so. When, as frequently occurs, the claim of infringement is not made until after the new product is released or the industry standard has been adopted, designing around the claim is no longer a realistic option. Because an injunction will issue automatically upon a finding of infringement even if the claim relates to an insignificant part of the product the target of the claim is forced to pay an extortionate settlement in order to preserve its business."

Another attempt to keep patents fees from becoming exorbitant even for the largest corporations was introduced by Tim Frain, Director IPR regulatory affairs, Nokia in his presentation about "FRAND Best Practice." Mr Frain advocates a system based on "Aggregated Reasonable Terms" & "Proportionality" (ART+P).

The underlying idea of this approach is that if every patent holder individually charges patent fees they consider Fair, Reasonable and Non-Discriminatory, the resulting fees may easily add up to 50% or more of the cost for the end product. So all patent holders should commit ex-ante that the aggregate licensing cost for all patents should be reasonable. As an example, Mr Frain cited that in Nokias view, the patent licensing fees on the communication technology for mobile phones should be below 10% per handset.

Both approaches are attempts to control the use of monopolies granted by patents and as such are trying to get voluntary buy-in from other parties to not exercise rights that the patent system has granted them.

Unfortunately they both fall short of the criterion of non-discrimination against legitimate business models, and the ART+P approach also has the practical weakness that convergence joins more than one kind of technology per device, so the total patent royalties on a smart phone may still reach 50% even if the cost for GSM & Co are limited to 10%. But even these 10% can be considerable for laptops with included UMTS modems, or embedded devices, an area in which the profit margins are typically far below 10%.

To put it in the form of a controversial question: Is

it fair and reasonable that patent holders receive a higher monopoly rent than an innovative company stands to gain by bringing out a new product and bearing all the risk associated with it?

Cui bono?

So who benefits? As explained before, patents are designed as a trade-off. Their benefits are often explained with the lone inventor having a genius idea. Would it be fair if this inventor published the idea only to see a large company bring it to market faster than the inventor could, with no financial reward for the inventor? Most people would agree this is not fair.

In the absence of patents, such an inventor could only choose between accepting fate, or keeping the innovation secret for as long as possible while trying to bring it to market. Patents grant a temporary monopoly for the inventor in return for publication, such that the inventor can find investors, set up a company, finish product development, bring it to market, and enjoy a head start before others can compete normally.

This mechanism seems to have worked reasonably well for some time in the past. But some basic parameters have changed, while patents have been extended in an essentially unreflected way to more areas. This is particularly true for software, where patents play no meaningful role in disclosure, breaking the patent deal for society whereas the time of bringing new innovation to the market and the time between groundbreaking discoveries has been decreasing.

Raymond Kurzweil found an exponential pattern in innovation reaching back all the way to single-cell organisms. Concluding that this must be a universal principle, Mr Kurzweil has been making predictions for the future of which several have turned out to be largely accurate so far. When applying this principle to patents, from the constant duration of the monopoly guaranteed follows an exponential growth of the value of an individual patent.

The price that society is paying for granting patents has been growing exponentially since the time that the initial patent bargain was struck. This would explain why the price for the patent system seems increasingly exorbitant with growing calls for reform, which have led to the recent announcement of the "First in Series of Hearings on Evolving Intellectual Property Marketplace" by the U.S. Federal Trade Commission (FTC).

Remedies to this problem could be to decrease the lifespan of patents, adapt them to the specific situation in the field, and exclude fields from patenting in which patents provide no meaningful disclosure.

When it comes to standards, it was An Baisheng, Deputy Director of the Division of Technical Regulations Department for WTO Affairs of the Chinese Ministry of Commerce who raised the question of public vs private benefit in his presentation titled "Strike the Right Balance between Public and Private Interests in IPR in ICT Standardization".

Taking our "lone inventor" scenario above, the question that we'd have to ask for patents on standards is: Would it be fair if our inventor could prevent someone else from bringing to market an innovation of their own that somehow interacts with the initial invention? To make it less abstract: Should a patent on a typewriter extend to carbon copy paper that has the right size to be used in that typewriter? Most people would agree this goes too far.

Potential Remedies

1. Interoperability trumps patent

During the software patent debate in the European Union there was consensus among SME, Free Software and big businesses representatives from companies such as IBM or Sun Microsystems that patents which limit or prevent interoperability should be unenforceable.

In the European Union, this could be introduced into the ongoing Community Patent debate. On a global level, WIPO should consider this as part of its ongoing Development Agenda discussions.

Once implemented, this would solve the most harmful side-effects for all legitimate business models and give interoperability and competition preference over monopoly rights. Considering the extraordinary networking effects that exist in this market, such a preference seems justified.

2. Update policy in SSOs

Secondly, Standard Setting Organisations (SSOs) could update their patent policies to ensure that their standards are usable in all business models. Many SSO representatives in the meeting maintained that it was not their place to mandate certain patent policies. At the same time, the Common Patent Policy of ITU-T, ITU-R, ISO and IEC already states the principle that "*a patent embodied fully or partly in a Recommendation — Deliverable must be accessible to everybody without undue constraints.*" As this analysis demonstrates, current application of RAND falls short of that principle.

There is additional precedence supplied by the common way in which SSOs protect standards against potential later claims from Copyright holders by requiring all participants to a standardisation process to assign their copyright to the SSO. Applying appropriate similar measures on patents for similar reasons seems justified.

3. Provide intermediate and migration possibilities

Many patent-encumbered standards already exist, and even if WIPO ends up agreeing on a general interoperability preference, it will take decades for this to become local law.

As an intermediate solution, (F)RAND needs to be enforced in a way that the license terms do not disciminate against any valid business model, as is still common today. A potential solution could be to tie (F)RAND royalties to the downstream licensing revenue.

Business models that are based on proprietary licensing based on copyright or patents for revenue would continue to operate as they do today. Business models that do not rely on such licensing revenue would be enabled to interoperate and compete.

Taking this step would also realign ITU-T, ITU-R, ISO and IEC again with their declared Common Patent Policy.

4. Update governmental procurement guidelines

Governments and Inter-Governmental Organisations should update their procurement guidelines to procure only products based upon standards that do not discriminate against any legitimate business model. This means a review of blanket approval for certain standard setting organisations, and only a limited approval for organisations that have not updated their patent policies appropriately by the time of the review.

DISCLAIMER: This paper was written from the perspective of an expert in the field of software. The conclusions may apply in their entirety, partially, or not at all to areas other than software.