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Patents on Compatibility Standards and Open Source – Do Patent Law Exceptions and Royalty-Free Requirements Make Sense?

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Abstract

This article discusses the problem that open source software can not support compatibility standards, which have patent royalties. As the use of open source continues to grow, the article asks whether it makes sense to include a compatibility exception in patent law or require royalty-free licenses in formal standardization organizations and procurement policies. The article proposes that the answer may not be in the patent policies – be they from the government or from industry standard bodies – but perhaps in the practices of individual companies. While some companies want to collect licenses for their "intellectual property" no matter what, one can also observe that some major information technology companies have recently dedicated patents on a royalty-free basis to the use of open source developers without any standardization or regulatory pressures. Encouraging such company practices might be the best option for a government if it considers patent royalties on compatibility standards a policy problem.

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1. Introduction

It has been long known that open source developers oppose software patentability and demand exceptions in patent law. One of the problem areas has been software interoperability. Recently, open source software developers have started to criticize industry-wide compatibility standards policies, which allow "reasonable and non-discriminatory" (RAND) patent licenses. In essence, the critique is centered on the possibility to collect patent royalties from otherwise accessible standards. Since many open source licenses do not allow the collection of even "reasonable" patent royalties, it may be impossible to implement a RAND standard in open source software. Thus, such policies may in fact discriminate against open source developers and calling RAND standards "open" does not sound proper.

One can now argue that discrimination has nothing to do with the idea of "open standards" since standards are about technological compatibility and not about intellectual property policy. There is some truth in that statement. There is no unanimous definition of open standards and arguably most of the information technology industry agrees that standards can have RAND licenses – whatever that means.[1] For the information technology industry at large, reasonable licensing fees do not create barriers. Only open source advocates, academics and some small companies are arguing for royalty-free standards. For them, even reasonable fees can be a problem.

Traditionally, the excessive and anti-competitive use of intellectual property rights has been balanced through competition law. The recent Microsoft decision has highlighted how hard it can be even for European Union to force a software company to disclose their proprietary standards and how detailed requirements open source developers have for open standards. The negotiations have been locked over the question whether Microsoft can collect royalties from interoperable open source developers who wish to access Windows file systems or not.[2]

We start this article by briefly introducing the problem of patent royalties with open source software. Then, we go further than competition policy: we ask whether it makes sense to include a compatibility exception in patent law or require royalty-free licenses in formal standardization organizations and procurement policies. We summarize the policy discussion around the proposed, and now forgotten, software patent directive and review recent controversies on patent royalties at industry standard bodies. Finally, we discuss how truly open "royalty free" standards can be defined through procurement policies.

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[1] According to Lemley's recent survey, many industry standard bodies do not define in detail what they mean by RAND-terms and, consequently, there seems to be inconsistencies between different bodies over their RAND-policies. See Mark Lemley (2002): "Intellectual Property Rights and Standard Setting Organizations", California Law Review, Vol. 90, p. 1889-.

[2] Matthew Broersma: "Microsoft, EU at Odds over Antitrust Compliance", eWeek, April 27, 2005. http://www.eweek.com/article2/0,1759,1790128,00.asp.

Figure 1. Different policy levels to deal with patent royalties on compatibility standards.

Our main argument is that the root of the problem is not in the patent policies per se – be they from the government or from industry standard bodies – but merely in the practices of individual companies. While some companies want to collect licenses for their "intellectual property" no matter what, we can also observe that some major information technology companies have recently dedicated patents on a royalty-free basis to the use of open source developers without any standardization or regulatory pressures.[3] Encouraging such company practices might be the best a government can do if it considers patents on compatibility standards a policy problem.

2. Open Source Software and Patent Licenses

Let's start from the root of the problem: what have patents to do with open source? Software projects can be identified as open source when the software is licensed with an open source license.[4] Open source licenses can be further categorized into several groups.[5] From patents perspective, the most important licenses are GNU General Public License (GPL) and GNU Lesser General Public License (LGPL), which are also the most used open source licenses covering projects such as Linux.[6]

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[3] In January 2005, IBM donated 500 patents to open source developers, then SUN granted 1200 patents with their Solaris announcement, and according to the latest news Computer Associates is considering to follow. There has been some sceptical comments about their motives, see e.g. Steven J. Vaghan-Nichols: "PUBPAT Questions Sun's Open-Source Patent Policies", eWeek, January 28, 2005. http://www.eweek.com/article2/0,1759,1756846,00.asp.

[4] For a complete list of open source licenses, see http://www.opensource.org/licenses/.

[5] See e.g. Lawrence Rosen (2004): Open Source Licensing. Prentice Hall.

[6] At sourceforge.org, which hosts over 100 000 open source projects, around 65% of all projects use GNU GPL and another 10% LGPL.

Both of these licenses include a similar patent clause.[7] GPL clause 7 reads as follows:

> *"7. If, as a consequence […] of patent infringement […] conditions are imposed on you […] that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program. […]"*

In short, the most popular open source have a built-in termination mechanism that does not allow the development of software that requires any kind of royalty payments for third party patents. In more technical wording, GPL and LGPL are incompatible with patent royalties: if there is a patent for some software invention and that patent is not licensed for free to everyone forever, it is not possible to develop free software for that invention.

To be precise, not all open source licenses have such patent clauses. For instance the popular BSD license lacks one. However, patent clauses essentially similar to those of GPL and LGPL are becoming more and more common. Almost all recent open source licenses have such.[8] Whatever one may think of the practicality of this kind of termination clauses, it seems clear that open source development becomes problematic indeed if there are many existing software patents around.

3. Intellectual Property Policy on Compatibility Standards

We wouldn't discuss patent royalties on compatibility standards if intellectual property wouldn't apply to such standards in the first place. At the moment, one can have patents that cover for example file formats. If one wants to develop a new software product that can play popular mp3 music files or can access Microsoft's popular file systems, a patent license may be needed.[9]

It hasn't been, and still isn't, so clear that some form of intellectual property can really cover standards. Traditionally, dominant software companies have relied on *secrecy* to build a time-buffer against interoperable developers from developing competing products. In essence, binary software distribution gives any potential competitor further tasks to analyze, disassemble and then rewrite necessary interoperable parts of the software before entering the markets.

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[7] The patent language in GNU licenses dates back to 1991, when the license author Richard M. Stallman and the Free Software Foundation already campaigned against software patents in the United States.

[8] Some of them may have even more far-reaching termination clauses that try to affect the enforceability of other software patents as well. See e.g. the latest versions of Apache license and Open Software Licenses for that matter.

[9] Thomson Multimedia licenses mp3-patents , see http://www.mp3licensing.com/, and Microsoft licenses filesystem patents, see http://www.microsoft.com/mscorp/ip/tech/.

In the late 1980s and early 1990s, a major political battle was fought whether software standards could be *copyrighted*.[10] In Europe, the result crystallized in the software copyright directive from 1991,which stated that copyright protects only practical expression of computer programs (source code) and it does not reach to ideas and principles including interfaces.[11] Thus, compatibility standards can't be generally copyrighted. Copyright can only apply to e.g. specification documents but it can't prohibit in any way independent implementations of the specifications themselves.

In the early 2000s, the discussion has shifted towards *patents*. In Europe, a proposed directive on the patenting of "computer implemented innovations" became one of the fiercest lobbying events ever. Again, the discussion was polarized with two opposite positions. The main issues were whether it is possible to have software patents at all and, if affirmative, what kind of limitations there is for the use of software patents. For example European Parliament's rapporteur Michel Rocard pinpointed these long-standing areas of controversy as follows:

> *"For in this short text we in fact only have two serious problems that are likely to encourage conflict with the Commission and Council: the problem of delimiting what is patentable and what is not, and interoperability."* [12]

From historical perspective, one can see the software patent directive proposal as the next test case of the EU's established position on interoperability. Curiously, against the principles of the software copyright directive from 1991, the original Commission's proposal did not include any relevant exclusion for use of the patents to block compatible products from markets.[13] However, European parliament, after heavy lobbing from software patent critics, included a new limitation for interoperability:

> *Article 6a*
>
> *Member States shall ensure that, wherever the use of a patented technique is needed for a significant purpose such as ensuring conversion of the conventions used in two different computer systems or networks so as to allow communication and exchange of data content between them, such use is not considered to be a patent infringement.*

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[10] For an overview, see e.g. Jonathan Band and Masanobu Katoh (1995): Interfaces on Trial. Westview Press.

[11] Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs, article 1, states: "Ideas and principles which underlie any element of a computer program, including those which underlie its interfaces, are not protected by copyright under this Directive." In the United States, leading cases Apple Computer, Inc. v. Microsoft Corp., 799 F. Supp. 1006, 1017 (N.D. Cal. 1992) and Lotus Dev. Corp. v. Borland Int'l, Inc., No. 93-2214 (1st Cir. Mar. 9, 1995) rejected even the copyrightability of graphical user interfaces.

[12] Working Document on the patentability of computer-generated inventions- Committee on Legal Affairs - Rapporteur: Michel Rocard. April 13, 2005

[13] Article 6 stated only that decompilation should be possible.

The software patent proponents understood far too well that the formulation of 6a could effective against the most valuable uses of software patents i.e. patents on compatibility standards. Therefore they launched immediately a high profile counter attack including a letter from the CEOs of the biggest technology companies Europe, which warned[14]:

> *"…However, the vote in Parliament on 24 September 2003 has completely turned the Commission's original proposal around, removing effective patent protection for much - and in the case of telecommunications and consumer electronics, probably most - of our R&D investment. This would have devastating consequences for our companies. It would be open for all-comers to exploit the results of our expensive R&D programmes at no cost, and even without any R&D overheads of their own. This is contrary to what was stated at the Lisbon European Council, namely that "innovation and ideas must be adequately rewarded within the new knowledge-based economy, particularly through patent protection."*

The intervention was successful as the Council of Ministers removed in the end the article 6a in their response to Parliament's proposal. As a result, the Parliament turned down the whole directive proposal in the second reading in July 2005. This was seen as the only acceptable compromise for both lobbying parties. Pro-patent groups feared that the Parliament could again vote for interoperability exceptions. Likewise, anti-patent groups feared that any possible exceptions could be changed anyway behind closed doors before the directive would be finally signed.

Unfortunately, the rejection of the directive means that the legal situation remains unclear. It is well known that European Patent Office has granted thousands of software patents that may cover compatibility standards. Whether those patents are truly valid, remains to be discussed at future patent policy forums.

4. Recent Controversies in Industry Standards Bodies

Industry standard bodies seem to have as many approaches to intellectual property as there are definitions of open standards. Most bodies permit their members to own intellectual property rights on otherwise open standards but then require certain licensing terms.[15] RAND-terms have been dominant, until recently open source advocates have started to challenge them in public. Next, we summarize three examples of such controversies.

W3C. World Wide Web Consortium responsible of HTML and related web standards recently renewed its patent licensing policies. Working group consisting of industry heavyweights including Microsoft, Hewlett-Packard, Philips, Apple, AT&T, IBM, Nortel Networks and Sun Microsystems proposed a RAND-policy in 2001. The proposal backfired when open source advocates and others criticized the possibility of patent royalties.[16] Within a few months the working group changed the patent license

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[14] Alcatel, Ericsson, Nokia and Siemens

[15] See Lemley (2002) for an overview of different intellectual property practises in use.

[16] Margaret Kane and Mike Ricciuti: "W3C patent plan draws protests", October 1, 2001, CNET News.com,

proposal into essentially royalty free.[17] This was basically the form in which the proposal was finally accepted and became effective in 2004.[18] It seems to be a valid goal not to discriminate open source categorically when it comes to the core Internet infrastructure.

IETF. Microsoft's proposed "Sender ID" standard to fight spam created a patent licensing related controversy at IETF (Internet Engineering Task Force). While everyone accepted the common goal to combat the problems of unsolicited commercial email the controversy over patent licensing terms made it impossible to accept the standard. Apache Software Foundation, which maintains the development of the leading web server software, found a number of problems with Microsoft's supposedly royalty free license. In an open letter to the IETF working group in question they concluded:[19]

> *"...as developers of open source e-mail technologies, we are concerned that no company should be permitted IP rights over core Internet infrastructure. We believe the IETF needs to revamp its IPR policies to ensure that the core Internet infrastructure remain unencumbered."*

The working group soon suspended its activities and Sender ID didn't go any further at IETF. Again, the core Internet infrastructure argument won. Microsoft later commented:[20]

> *"The test of whether Sender ID or any other proposed solution is an open standard is not whether it has been ratified through an open consensus-based process, but rather whether the proposal can be widely adopted."*

OASIS. OASIS is a leading web services standards body, which also recently revised its patent policies. This time the core infrastructure argument didn't win. After all, web services are seen more as industry standards with different business model possibilities than ubiquitous Internet technology. Thus, royalty free was included only as an option so the new policy is basically RAND. OASIS chairman commented:[21]

> *"OASIS isn't an open-source organization ... We are a standards organization. We could have made the decision to be royalty-free, but we decided not to do that. We historically have been centered on*

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http://news.com.com/W3C+patent+plan+draws+protests/2100-1023_3-273752.html?tag=nl.

[17] Margaret Kane: "W3C retreats from royalty policy", February 26, 2002, CNET News.com, http://news.com.com/W3C+retreats+from+royalty+policy/2100-1023_3-845023.html?tag=st.rn.

[18] W3C Patent Policy, February 5, 2004, http://www.w3.org/Consortium/Patent-Policy-20040205/. See also Jason V. Morgan (2002): "Open Source Software and Software Patents: Finding the Common Ground in a Patent Pool", University of Utah School of Computing, available at http://opensource.mit.edu/papers/morgan.pdf.

[19] "ASF Position Regarding Sender ID", September 2, 2004, http://www.apache.org/foundation/docs/sender-id-position.html.

[20] Michael Hintze: "RE: E-Mail Authentication Summit – Comments", September 30, 2004, http://www.ftc.gov/os/comCents/emailauthentication/512447-0039.pdf.

[21] Paul Festa: "Warming up to open source", February 9, 2005, CNET News.com, http://news.com.com/Warming+up+to+open+source/2100-7344_3-5569610.html?tag=nl.

> *the RAND option. The new policy is a better option for our members so that they have choices."*

So the historical argument for industry needs won over open source. In the end open source advocates attacked – so far in vain – the new policy in an open letter to all OASIS members:[22]

> *"Do not implement OASIS standards that aren't open. Demand that OASIS revise its policies. If you are an OASIS member, do not participate in any working group that allows encumbered standards that cannot be implemented in open-source and free software."*

5. Pro Open Source Procurement Policies in the European Union

In the midst of the debate around the proposed software patent directive, European Union also started to promote software procurement rules, which require the use of truly open compatibility standards without patent royalties. "European Interoperability Framework" defines open standards with three factors:[23]

- The standard is adopted and will be maintained by a not-for-profit organization, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties (consensus or majority decision etc.).
- The standard has been published and the standard specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use it for no fee or at a nominal fee.
- The intellectual property - i.e. patents possibly present - of (parts of) the standard is made irrevocably available on a royalty free basis.

As noted, the "royalty free"-criteria for patents is critical for open source products because licensing patents is often not possible due to restrictions found in the open source licenses as described above. EU's policy goes even further in its support for open source software arguing:

> *"…OSS products are, by their nature, publicly available specifications, and the availability of their source code promotes open, democratic debate around the specifications, making them both more robust and interoperable. As such, OSS corresponds to the objectives of this Framework and should be assessed and considered favourably alongside proprietary alternatives."*

Thus, it seems that governments – as major software users – have good reasons to avoid situations where open source can be discriminated against. Not surprisingly, the supporters of proprietary software have not watched this development passive. For

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[22] Paul Festa: "OASIS patent policy sparks boycott" February 22, 2005, CNET News.com, http://news.com.com/OASIS+patent+policy+sparks+boycott/2100-7344_3-5585711.html?tag=nefd.lede.

[23] European Interoperability Framework For Pan-European Egovernment Services. http://europa.eu.int/idabc. The current version of the framework is a draft for consultation. Following this consultation, the framework will be finalized and implemented.

example Business Software Alliance (BSA) attacked promptly the proposal and suggested that the patent licensing policy should be changed to RAND.[24] They further pointed out regarding the suggested procurement rules:

> *"BSA would also respectfully recommend that the EIF replace its current statements regarding OSS (specifically, the last bullet on page 8) with a statement encouraging the adoption and implementation of software procurement policies that are neutral with respect to technologies, development platforms and licensing models. Procurement policies that are based on reasonable, objective criteria, such as interoperability, security, and value for money, are not only consistent with the goal of interoperability, but also maximize competition, innovation, and consumer choice."*

6. Conclusions

Open source means necessarily open compatibility standards. To compare, the opposite is not always true: an open compatibility standard under RAND-policy can be licensed with terms incompatible with open source. A paradox is complete. However, that does not mean that the RAND policy itself would be necessarily incompatible with open source; it only allows patent holders to decide whether they want to discourage the use of open source. Of course, if the policy goal is to support open source, it makes sense to make sure that patent royalties can't be collected. This was also the goal of e.g. European Parliament's approach to the proposed software patent directive and EU's recommended eGovernment procurement policies. In fact, there seems to be little reason for *governments* to allow discrimination against open source.

Industry standardization bodies are a different issue. Sometimes royalty-free requirements make sense, for example if the standard covers essential Internet infrastructure or is licensed by a dominant company. However, requiring patents on standards to be always royalty free is not necessarily the optimal solution as was seen from our examples. Allowing heterogeneity on the markets may be more important than categorical discrimination against some established business practice such as patent royalties on standards. Thus, we recommend any technology standardization body should carefully investigate both the benefits and drawbacks of requiring royalty-free patent licenses. Royalty-free terms do explicitly prohibit discrimination against open source software but at the same time they can decrease the possible business models available to those companies, which actually develop new technology on the standards.

In fact, open source may not suffer from patents at all if the patent holders have enough incentives to support open source. As noted before, some of the biggest technology companies have announced that they license some of their patents royalty free to open source developers *without* any formal standardization or regulatory pressures. This suggests that companies can sometimes, when it fits their strategy, to gain more from the maximum adoption of standards than by limiting the adoption

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[24] Benoít Müller (2005): "Letter to Mr Pedro Ortun, Director of Basic & Design Industries, Tourism, IDABC on the European Interoperability Framework (EIF) for Pan-European eGovernment Services",

http://www.bsa.org/eupolicy/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=22753.

with patent royalties.[25] Encouraging such company practices might be the best a government can do if it considers patents on compatibility standards a policy problem.

To conclude, the answer to our question "Do patent law exceptions and royalty-free requirements make sense" is that the devil is in the details. For governments and the society at large, such policies seem to make often sense. But for the industry, such policies may not be needed. The dynamics of the standardization game seem to imply that proprietary standard strategies are never dominant in the entire industry and will be eventually cracked by competitive forces.[26]

[25] See also Wilbert Kraan (2005): "Patents, Open Standards and Open Source", The centre for educational technology interoperability standards, January 17, 2005. http://www.cetis.ac.uk/content2/20050117062907.

[26] See e.g. Peter Grindley (1995): Standards, Strategy, and Policy. Oxford University Press. p. 29-