From: Mark Bohannon
Sent: Monday, April 15, 2013 4:21 PM
To: SoftwareRoundtable2013
Cc: Patrick McBride; Robert Tiller; Melanie Chernoff
Subject: Red Hat Response to PTO Request for Comments on Partnership for Enhancement of Quality of Software-Related Patents/Preparation of Patent Applications

Dear Ms. Rao and Mr. Sked:

Please find attached the comments of Red Hat, Inc., in response to the above referenced PTO Requests for Comments.

If you have trouble opening the document, or need additional information, don't hesitate to contact us.

Best,

Mark

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This is a Message from:

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Response of

Red Hat, Inc.

to the Requests for Comments regarding

Partnership for Enhancement of Quality of Software-Related Patents
**published by the U.S. Patent and Trademark Office ("PTO") on
January 3, 2013**

and

Preparation of Patent Applications
published by the PTO on January 15, 2013

Red Hat, Inc. appreciates the opportunity to respond to the Requests for Comments in the above referenced matters. We have combined our response to both items in this submission. We also appreciated the opportunity to speak at the New York City Roundtable on February 27.

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to deliver reliable and high-performing cloud, Linux, middleware, storage and virtualization technologies. An S&P 500 index member, Red Hat provides high-quality, secure and affordable technology solutions that are found throughout mission-critical systems in the financial, transportation, telecommunications and government (civilian and defense) sectors and in enterprises around the United States and the world. In September 2012, Red Hat was recognized as one of the world's most innovative companies.[1]

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1   Forbes, "The World's Most Innovative Companies", Sept. 2012, found at: http://www.forbes.com/innovative-companies/list/.

The 'Collaborative Innovation' Model: Open Source Software is Mainstream

Collaborating through upstream software development projects is at the heart of the economic and business model that is driving the growing recognition that open source is the most effective way to develop software. Open source software vendors leverage the work done by innovative, vibrant open source communities (e.g., Linux, Jboss.org, OpenStack, Gluster, and KVM), allowing customers to take advantage of the work of many companies and individual developers. This collaborative model differs from the traditional proprietary software vendors' model where research and development are largely accomplished entirely by the vendors' employees.

In our case, Red Hat works with thousands of developers, only some of whom are our employees, who together contribute code and other work to upstream communities. Red Hat employees are among the key maintainers of, and contributors to, many of those communities. We find strength in the many people who contribute to - and the varied corporate and academic entities that sponsor - the open source projects that are our partners. The benefits of this collaborative innovation model do not flow to just one company; rather, the fruits of the work are available throughout the economy and empower many technology products and sectors.

For example, in the Defense sector, open source software is driving more agile and rapid technology deployment on the battlefield[2], and powers the operating system of the U.S. Navy nuclear submarine fleet. It is the technology that sustains weather forecasting, drives space exploration[3], and was crucial to recent mission successes such as Mars Curiosity rover, which provided 'big data' results as widely available as possible.[4]

Reflecting the Administration's 'Open Innovation' agenda[5], *www.whitehouse.gov* utilizes open source software. The Administration actively encourages "using and contributing back to open source software as a way of making it easier for the government to share data, improve tools and services, and return value to taxpayers."[6]

Stock exchanges around the world prefer open source software; indeed, most worldwide trading volume runs on Linux.[7] Various consumer products rely on open

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2   Open Technology within DoD, Intel Systems" April 7, 2007), found at http://archive09.linux.com/feed/61302. Brigadier General Nickolas G. Justice, U.S. Army (ret.) "When we rolled into Baghdad, we did it using open source."

3   SpaceX lessons learned", http://lwn.net/Articles/540368/.

4   NASA achieves data goals for Mars rover with open source software", 22 Oct 2012, found at: http://opensource.com/life/12/10/NASA-achieves-data-goals-Mars-rover-open-source-software.

5   An Open Innovation Toolbox", posted February 14, 2012, found at: http://www.whitehouse.gov/blog/2012/02/14/open-innovation-toolbox.

6   http://www.whitehouse.gov/developers.

7   http://www.ict-summit.jp/2011/pdf/0614am_Mr.Jim_Whitehurst.pdf.

source software, including mobile phones, wireless routers and automotive software.[8] BIND (Berkeley Internet Name Domain) widely implements the Domain Name System (DNS) protocols, part of the core Internet standards, and is open source software.[9]

Open source has also revolutionized enterprise IT architecture and economics. Ten years ago, a startup would have spent precious investment capital on infrastructure and Web software. Today, open source software reduces or eliminates the friction of starting a new venture, since "open-source infrastructure software is free and the Web hosting account might go for $5 a month."[10] As one seasoned observer has noted, many best-known brands (like Twitter, Facebook, Amazon, and Google) "were built on a foundation of open source software, and wouldn't exist without the ... [open standards and protocols of the] Internet and the world wide web, Linux, and the cornucopia of open source tools and languages that made the fertile soup from which today's tech innovation sprang."[11]

The Patent Challenge

We commend the PTO for focusing on the issues surrounding software-related patents. As a growing and successful software development model, open source software, as well as companies like Red Hat that create jobs and value by providing mission-critical solutions using open source software, are harmed by unclear, overly broad software patents, and confront abusive litigation often based on such patents.

For some industries, especially software, a single commercial product can touch "dozens, hundreds, or even thousands of patents."[12] Companies in these sectors confront a particularly daunting "web of overlapping intellectual property rights that [they] must hack [their] way through in order to actually commercialize new technology."[13] "Much of this ... results from the nature of the technology; computer hardware and software contain an incredibly large number of incremental innovations .... [and] as more and more patents issue on incremental inventions, firms seek more and more patents"[14] to use as defensive bargaining chips.

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8   See, e.g., http://www.genivi.org/.
9   https://www.isc.org/software/bind.
10 The Blessings of Open Source for Small Business," posted 26-07-2012, found at: http://h30565.www3.hp.com/t5/Feature-Articles/The-Blessings-of-Open-Source-for-Small-Business/ba-p/5684.
11 Tim O'Reilly, "The Clothesline Paradox: How Sharing Economies Create Value", OSCON, July 18, 2012, found at: http://www.slideshare.net/timoreilly/the-clothesline-paradox-and-the-sharing-economy-pdf-with-notes-13685423.
12 Federal Trade Commission, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY , 2003, pg. 6. ("FTC 2003 Report").
13 Carl Shapiro, Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting, in 1 INNOVATION POLICY AND THE ECONOMY 120 (Adam Jaffe et al. eds., 2001).
14 FTC 2003 Report, pg. 6. See, also Judge Richard Posner: "[The software industry]is a progressive, dynamic

The dense landscape of low quality software patents directly affects innovation. As former Federal Trade Commission Chairman Jon Leibowitz succinctly put it, "Poor patent quality tips the balance between exclusivity and competition. Unclear scope and poor notice hurts innovation."[15] It also adversely affects day-to-day business conduct and strategies. For example, the current situation has made it largely impractical for the software sector to utilize traditional approaches, found in other sectors, for assessing patent issues before releasing products.

Even more troubling, it has aggravated litigation abuses. For example, software patents are disproportionately the subject of patent litigation[16], with most patent defendants sued over a software patent, many of which are vague, overbroad and invalid. More seriously, the percentage of such defendants is 82% when "patent assertion entities"[17] bring litigation. Their abusive practices oftentimes involve "weak or poorly-granted patents ... [or] claim[s of] ownership over basic ideas."[18]

Topics for Which the
PTO is Requesting Written Comments

Red Hat agrees with the PTO's assessment that "software-related patents pose unique challenges from both an examination and an enforcement perspective," and appreciates its recognition that "one of the most significant issues with software inventions is identifying the scope of coverage of the patent claims."[19] The PTO has appropriately stated that when defining software patent boundaries, and in contrast to other fields (such as computer hardware), "software by its nature is operation-based and is typically embodied in the form of rules, operations, algorithms or the like."

industry rife with invention. But the conditions that make patent protection essential in the pharmaceutical industry are absent. Nowadays most software innovation is incremental, created by teams of software engineers at modest cost, and also ephemeral—most software inventions are quickly superseded. Software innovation tends to be piecemeal ... so that a software device ... may have tens of thousands, even hundreds of thousands, of separate components (bits of software code or bits of hardware), each one arguably patentable." (Sept 2012), found at: http://www.becker-posner-blog.com/2012/09/do-patent-and-copyright-law-restrict-competition-and-creativity-excessively-posner.html.

15 Opening Remarks at the FTC's Patent Assertion Entity Workshop , December 10, 2012 , found at: http://www.ftc.gov/speeches/leibowitz/121210paeworkshop.pdf.

16 Colleen V. Chien and Aashish R. Karkhanis, Functional Claiming and Software Patents, *Presentation to the 12 February 2013 Software PTO Roundtable,* February 12, 2013, found at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2215867&download=yes##.

17 See Federal Trade Commission, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION , March 2011 ("FTC 2011 Report"), pg. 51: "The business model of PAEs focuses on purchasing and asserting patents against manufacturers already using the technology, rather than developing and transferring technology."

18 Statement of Judiciary Committee Chairman Bob Goodlatte before the Subcommittee on Courts, Intellectual Property and the Internet, Hearing on Abusive Patent Litigation: The Impact on American Innovation & Jobs, and Potential Solutions, March 14, 2013, found at: http://judiciary.house.gov/news/2013/Statement%20Abusive%20Patent%20Litigation.html.

19 78 Federal Register 292, January 3, 2013.

We think key issues related to software-related patents (some of which the PTO has identified) likely require changes in law.[20] Nonetheless, we see a clear nexus between the growing thicket of software patents and abusive patent litigation, so we support and encourage the PTO's Partnership, its systematic examination of the issues identified in the Federal Register Notice, and its efforts at improving quality. Indeed, we believe the agency should accelerate and expand these important initiatives.

Topic 1: Establishing Clear Boundaries
for Claims That Use Functional Language

Red Hat considers this topic area one of special significance that warrants measurably improving the application and examination process. We have years of experience challenging abusive patent aggressors, and strategically reviewing third party patents that menace our business, partners, and customers. Along the way, we have concluded that the scope of coverage for the typical software patent today is difficult to judge without expensive litigation. In fact, in our experience, aggressors intentionally choose patents having unclear claim scope for assertion _because_ they can make money from the confusion and risk that follow from the lack of clarity.

With our experiences in mind, and in response to the PTO's first Topic 1 question, our answer is that applicants typically do not comply with the requirements of 35 U.S.C. 112(b) for providing corresponding structure to perform the claimed function in a claim invoking 35 U.S.C. 112(f). Similarly, in our experience, examiners do not apply such requirements properly. If applicants did routinely comply with such requirements, and examiners routinely applied such requirements properly, we would not see the flood of unclear patents so prevalent in our industry.

We also think, responding to the PTO's second Topic 1 question, that the law should require that applicants support claims with non-112(f) functional limitations with disclosed structure sufficient to perform the recited functions. How can one determine the bounds of such a functional limitation without an example of structure that performs the function? Such disclosure would aid our efforts to discern the bounds of the software patents we review.

The answers to both these questions turn on whether the applicant is "particularly pointing out and distinctly claiming"[21] the actual invention (known as the "definiteness

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20 See, for example, our amicus briefs in cases such as *Bilski* (http://www.redhat.com/f/pdf/rh-supreme-court-brief.pdf); *Global-Tech* (http://www.redhat.com/f/pdf/Global-Tech-Amicus-Brief-Weil.pdf); *CLS Bank* (http://www.patentlyo.com/files/cls.google.pdf); *Ultramercial* (https://www.eff.org/sites/default/files/FINAL_ULTRAMERCIAL_ISO_CERT.pdf); and *i4i* (http://www.redhat.com/f/pdf/amicus-brief-2011-02-02.pdf).

21 35 U.S.C. 112(b).

test"). Examiners should apply this check rigorously to the structure and acts described in the applicant's specification for performing the function. The natural result of more rigorous application of the definiteness test should be that applicants are required to:

- Disclose working software code[22] for claim elements that can be implemented using software;
- Disclose details about the cooperation or interaction among claim elements;
- Limit claimed subject matter to the actual invention; and
- Exclude subject matter beyond the actual invention that is merely desirable to the inventor as a royalty base.

The PTO's third Topic 1 question relates to the treatment under 35 U.S.C. 112(f) of claims directed to computers performing certain functions and containing elements that are not set forth in typical means-plus-function format. In Red Hat's experience, such claims are the frequent subject of applicants' overreaching, and are particularly difficult to view as clearly bound. Accordingly, such claims should be met by default treatment under 35 U.S.C. 112(f) and particularly strict interpreting of disclosure obligations for corresponding structures and acts. This disclosure should involve divulging working software code for programming the claimed computer.

Topic 2: Future Discussion Topics for
the Software Partnership

As it develops the Software Partnership, the PTO's Roundtables and outreach to date have been important initial steps for the agency and its teams in understanding the issues faced by the software sector and the issues surrounding software-related patents. We encourage the PTO to use the Partnership to engage on the issues facing the sector and on the unique qualities of software-related patents it has identified.

 Among some possible areas for future work and discussion:

Meaningful quality metrics for software-related patents. As the PTO continues focusing on "delivering high-quality patents"[23], the agency should measure

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22 Proprietary software vendors may complain about a requirement to disclose source code, but source code disclosure is a routine matter when defining the bounds of other forms of coverage, such as copyright - a form of protection such vendors regularly avail themselves of.

23 Statement of David J. Kappos, Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office before the Committee on the Judiciary, U.S. House of Representatives, "Implementation of the Leahy-Smith America Invents Act" (May 16, 2012), found at: http://www.uspto.gov/news/speeches/2012/kappos_AIA_testimony.jsp.

progress transparently and effectively. One suggestion for an effective quality measurement comes from an observation by then-Director Kappos that, in the PTO's initial nine-month assessment of its first comprehensive guidelines for review of claim clarity, the agency found that Section 112 rejections increased 20+ percent.[24] We view increases in such rejections as an important step toward increased patent quality.

The PTO has also noted it has "reached out to experts in the software industry to provide technical training to our patent examiners, so they are up to date on the latest developments."[25] We commend that step. To ensure the fullest array of software expertise is available, the PTO should expand this outreach to assure the broadest input and updates.

Library of common terms related to software-related patents. We believe the PTO should initiate an effort, with industry, to develop a library of common terms related to software-related patents. Further discussions of this topic would have merit. Our initial view is that such an effort could be useful, if: (1) the effort is open and transparent, and the public may comment on its work product; (2) it is driven by technical software expertise; and (3) the process and outcome includes and reflects diverse software publishers, developers and users.

Topic 3:
Preparation of Patent Applications

Red Hat endorses the practices described in the PTO's supplemental Request for Comments.[26] Applicants should use the elaborated practices when preparing applications to better position the applications for examination. This, in turn, will assist the public in determining the scope of patent claims issuing from the applications.

Our comments on the practices identified by the PTO follow:

Practice II.A.1, Presenting Claims in a Standardized Template. This practice would be a constructive step for applicants in preparing their applications. Post-issuance confusion about a matter as simple as the parts of a claim reflects poorly on patent quality and can be avoided using this well-conceived idea.[27]

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24 Keynote Address of Under Secretary of Commerce for IP & Director of the USPTO David Kappos at the Center for American Progress forum oh "High Tech Patents", November 20, 2012, found at: http://www.uspto.gov/news/speeches/2012/kappos_CAP.jsp.

25 Ibid.

26 78 Federal Register 2960-2961, January 15, 2013.

27 We believe the PTO should adopt a similar practice in prior art rejections. An examiner could directly map the prior art against the claim limitations using the claim template supplied by the applicant or one modified for the purpose by the examiner to clearly identify each limitation as present or absent in the prior art.

Practice II.A.2, Identifying Claim Support in the Specification using a Claim Chart or Standardized Template. Red Hat endorses this practice as well. It would help clarify claim scope and enforce a heretofore-unseen level of rigor on examination of claim support. As a corollary to this practice, we recommend the PTO update its Guidelines, and instruct examiners to consider only material identified in such a manner when examining claims under Section 112.

Practices II.A.3 and II.A.4, Indicating Whether Examples and Preambles Limit the Claims. Requiring the applicant to so indicate in a patent application and directing examiners to state their understanding of same when examining the application could further clarify claims and be a constructive step in achieving the PTO's quality objectives. In reviewing this practice, the PTO should consider the following additional elements:

- The applicant should also indicate whether the order of steps in a method or process claim are intended to be limiting; and
- Similarly, the applicant should indicate whether functional statements in claims - such as limitations beginning with "whereby," "whereat," "such as," "such that," "so that," "wherein," and the like – are intended to be limiting.

Practice II.A.5, Identifying Means or Step Plus Function Clauses and Corresponding Structure, Material, or Acts. Red Hat endorses this practice too, since the current practice treats software-related patent applications differently from applications in other arts. Without a clear statement from the applicant, the examiner should state either that no 112(f) clauses are present, or identify such clauses and their corresponding structure, material, and acts in the specification. To augment the practice, we also encourage the PTO, through its Guidelines or the Manual of Patent Examining Procedure, to stress with examiners the importance of examining for the less commonly recognized step-plus-function claims as well as the more commonly recognized means-plus-function claims.

Practice II.A.6, Using Notation Systems to Disclose Supporting Algorithms. We recommend the PTO adopt this practice also, since using a known system to disclose an algorithm would clarify the bounds of the claims supported by the disclosure. We encourage the PTO to define such systems broadly, along with examples, while avoiding limiting such systems to particularly known systems, such as UML.

Practice II.B.1, Indicating Whether Terms of Degree have a Lay or Technical Meaning. We endorse this practice, because confusion often arises in determining claim scope due to ill-defined terms of degree. Further, we believe examiners should think broadly about what constitutes a term of degree. For example, we believe the term "remote" - commonly used in patents involving networked

computers to define server computers and client computers – is, in such a context, a term of degree. Examiners should insist that applicants explain the scope of the term and whether it has a lay or technical meaning.

Practices II.B.2 and II.B.3, Including a Glossary of Ambiguous, Distinctive, and Specialized Terms and Designating a Default Dictionary. These practices could help reform the application process. To make these meaningful, applicants should identify in the background portion of the specification a publicly available dictionary that defines claim terms. If the dictionary does not define a claim term, the applicant should do so in the detailed description portion of the specification, but only by referring to the dictionary. The PTO should reject claims containing terms not defined in such a manner as indefinite, or at least should subject such claims to much greater scrutiny regarding definiteness.

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For further information or to answer any questions the PTO may have, please contact:

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