

Before the
United States Patent & Trademark Office
Alexandria, VA

In re

Request for Comments and Notice of
Roundtable Events for Partnership for
Enhancement of Quality of Software-
Related Patents

Docket No. PTO-P-2012-0052

**COMMENTS OF
COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION**

Pursuant to the request for comments issued by the United States Patent & Trademark Office (USPTO) and published in the *Federal Register* at 78 Fed. Reg. 292 (Jan. 3, 2013), the Computer & Communications Industry Association (CCIA)¹ submits the following comments.

I. Summary

CCIA supports the USPTO's initial exploration of functional claiming and the need for clear boundaries as a step in the right direction. However, much more needs to be done to bridge the gulf between the community of software professionals and the USPTO. The functional claiming/clear boundaries discussion points the way to addressing other aspects of the abstraction problem, including limitations on patent-eligible subject matter. The broader definition of quality in the notice is also a step forward; unlike recent USPTO work on quality metrics, it looks beyond the agency's walls toward common understanding of how quality should be defined and evaluated. We recommend that the USPTO develop new methodologies for monitoring patent quality in collaboration with software professionals.

II. Background

CCIA welcomes the USPTO's efforts to engage the software community. There has been a pervasive reluctance on the part of the patent community as a whole to recognize the

¹ CCIA is an international nonprofit membership organization representing companies in the computer, Internet, information technology, and telecommunications industries. Together, CCIA's members employ nearly half a million workers and generate approximately a quarter of a trillion dollars in annual revenue. CCIA promotes open markets, open systems, open networks, and full, fair, and open competition in the computer, telecommunications, and Internet industries. A complete list of CCIA members is available at <http://www.ccianet.org/members>.

kaleidoscopic range of problems associated with software patents. This has left the debate to be framed simplistically in terms of whether software patents should be granted or not. The need for thoughtful discussion was not helped by the Supreme Court's long absence from the field, nor by the Court of Appeals for the Federal Circuit's unreasoned activism in expanding patentable subject matter culminating in the *State Street* and *AT&T* decisions.² The software community was of course not consulted in this judicial decision-making, yet empirical evidence shows that the views of software professionals and patent lawyers diverged greatly on the subject.³ Since the USPTO is the everyday face of the patent system, it has borne much of the hostility generated by the Federal Circuit's unilateral expansionism. Systemic problems predate this expansion, however. Concerns about software patent quality, especially breadth and obviousness, were voiced in the late 1980s well before the most sweeping Federal Circuit decisions. See e.g., Brian Kahin, *The Impact of Software Patents*, 24 EDUCOM Rev. 26-31 (1989). The promises of improved quality made repeatedly in response have yet to produce any results perceptible to software professionals. In fact, the inward focus of the USPTO Quality Metrics further evidence the difficulty that the agency has had in convincing the innovation community in software that it cares about their perceptions.

It is worth recalling that 1966 President's Commission on the Patent System recommended against patents for computer programs nearly half a century ago:

The Patent Office now cannot examine applications for programs because of a lack of a classification technique and the requisite search files. Even if these were available, reliable searches would not be feasible or economic because of the tremendous volume of prior art being generated. Without this search, the patenting of programs would be tantamount to mere registration and the presumption of validity would be all but nonexistent. It is noted that the creation of programs has undergone substantial and satisfactory growth in the absence of patent protection and that copyright protection for programs is presently available.⁴

² *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998); *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999).

³ See Effy Oz, *Acceptable Protection of Software Intellectual Property: A Survey of Software Developers and Lawyers*, 34 Info. & Mgmt. 161, 161-173 (1998); Pamela Samuelson *et al.*, *Developments on the Intellectual Property Front*, 35 Comm. of the ACM 33 (1992).

⁴ President's Commission on the Patent System, *To Promote the Progress of Useful Arts in an Age of Exploding Technology* (1966) available at <http://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=1010&context=historical>.

While patent law does not normally recognize practical constraints on the system, surely the USPTO must, even if the problems are not fully explored, acknowledged, and unarticulated. In this light, the deference that the agency has recently shown to applicants in its quality metrics is misplaced since its direct users are not only gratified by the ascending allowance rate but benefit professionally from the expanded scope of patenting available in software patents. This in turn has a negative effect on the performance of the system as a whole because it increases future demand as measured by the volume of applications. The natural consequence of this “positive” feedback loop is that budget realities constrain quality and the backlog problem persists. While attention is commonly drawn to the reduction in applications awaiting first action, the overall backlog of applications pending has barely budged. As discussed below, objective evidence shows that patents have been allowed much more liberally in the past three years, which strongly suggests that patent quality is declining.

The particular demands software is placing on the agency (including those identified by the President’s Commission) must be viewed in the context of (a) the agency’s limited resources, (b) the fact that problems in other areas of technology are more tractable than in software, and (c) the need for patents in areas of technology where they are demonstrably more important.

Unfortunately this perspective is not advanced by the bulk of USPTO’s immediate “customers” who are compensated to prosecute patents regardless of the impact on the USPTO’s resources, including diversion of resources from areas where patents are less plentiful and more valuable. Professional intermediaries resist changes that would constrain the scope and volume of their professional services, such as limitations on continuation practice, despite the burden this creates for the USPTO and other innovators. These professionals have commonly opposed limitations on patent-eligible subject matter and even tailoring that would acknowledge the differences among technologies and associated business models. There is nothing nefarious about this perspective, but it represents the same principal-agent problem seen in the originate-to-distribute model of sub-prime mortgaging or the volume-based business of mortgage securitization. Without adequate safeguards, this leads to a bubble, which we see in the skyrocketing number of software patent grants.

Following the methodology used by James Bessen in *A Generation of Software Patents*,⁵ we have calculated that the number of software patent grants rose 75% from 2009 (the last year reported by Bessen) to 2012, an astonishing surge. See Figure 1, *infra*. While some may attribute this to efforts to clean up the backlog, the dramatic rise in the allowance rate over the past three years strongly suggests that the diminishing backlog may have come at the cost of lowered standards. Recent research by Christopher Cotropia, Cecil Quillen, and Ogden Webster⁶ shows that when continuation applications are taken into account, the allowance rate has risen from 69% in 2009 to 88% in 2012. See Figure 2, *infra*. In other words, nearly three times as many patents are working their way through the system. Remarkably, this has happened in the wake of *KSR v. Teleflex*,⁷ the 2007 Supreme Court decision which raised the standard of nonobviousness, thereby increasing district court and Federal Circuit holdings of invalidity.⁸ The USPTO allowance rate is now approaching the extreme permissiveness reached at the time of the dot-com bubble, when the explicit mission of the USPTO’s patent office was “to help customers get patents.”

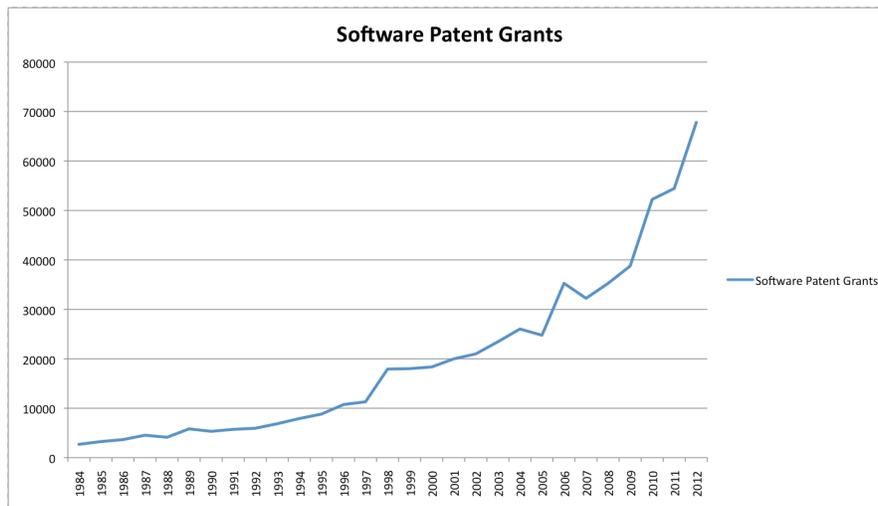


Figure 1 (Source: Original to CCIA; updating prior research by Bessen, *supra* n.5, as described in Appendix).

⁵ James E. Bessen, *A Generation of Software Patents*, Boston Univ. School of Law, Law & Econ. Research Paper No. 11-31 (2011), available at <http://ssrn.com/abstract=1868979>.

⁶ Christopher Anthony Cotropia, Cecil D. Quillen, Jr., and Ogden H. Webster, *Patent Applications and the Performance of the U.S. Patent and Trademark Office*, Richmond School of Law Intell. Prop. Inst. Research Paper No. 2013-01 (2013), available at <http://ssrn.com/abstract=2225781>.

⁷ *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007).

⁸ Ali Mojibi, *An Empirical Study of the Effect of KSR v. Teleflex on the Federal Circuit’s Patent Validity Jurisprudence*, 20 Alb. L.J. Sci. & Tech 559, available at <http://www.albanylawjournal.org/Documents/Articles/20.3.559-Mojibi.pdf>.

Percent of Patents Allowed, adjusted for refiled continuing applications

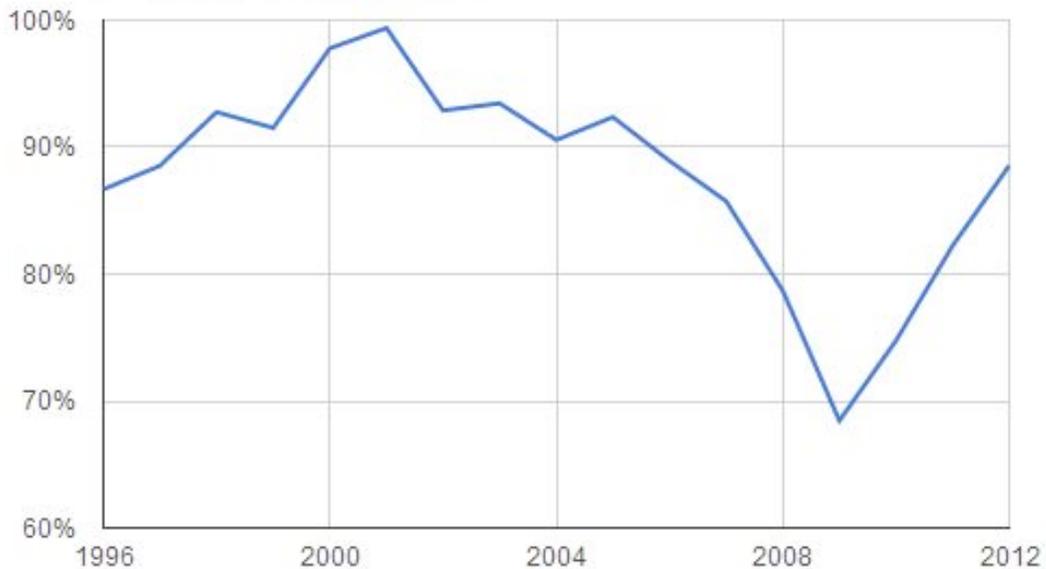


Figure 2 (Source: Original to CCIA; simplifying Fig. 7 of Cotropia et al., *Patent Applications and the Performance of the U.S. Patent and Trademark Office*, *supra* n.6).

The effect of the bubble in software patents together with the many specific examples of overbroad, abstract, incomprehensible, or blatantly obvious software patents is to undermine the quality, efficiency, and reputation of the patent system as a whole. These examples are now appearing incessantly in the IT trade press and blogs, where they serve to perpetuate, reinforce, and inflame the antipathy that software professionals feel toward the patent systems. Professor Mark Lemley, who has supported patents for software in principle, recently acknowledged:

It is worrying that our fastest developing, most innovative industries, the ones that are generating the most new innovations and the most money, by and large hate patents.⁹

Yet it is in these very industries that patent bubbles are driven by speculation, patent warfare, aggregators, patent assertion entities, privateering, and pervasive underlying asymmetries of information, cost, and risk.

⁹ Mark A. Lemley, *The Regulatory Turn in IP*, 36 Harv. J.L. & Pub. Pol'y 109 (2012) available at http://www.harvard-jlpp.com/wp-content/uploads/2013/01/36_1_109_Lemley.pdf.

Bubbles may serve the interests of certain specialists and businesses, but their damaging effects are spread far and wide. Graphic reports of unworthy patents combined with stories of opportunistic attacks on startups, app developers, retailers, and users take a toll. Ultimately, patent bubbles dilute the value of patents, create thickets, and undermine respect for intellectual property at home and abroad, including the efforts of trade negotiators to secure appropriate and predictable protection for intellectual property through international consensus. This hyperactivity has also spurred a state-sponsored and subsidized patent thicket in China that may ultimately disadvantage foreign companies as much or more than U.S. juries and ITC exclusion orders discriminate against foreign entrants in the U.S. market.

While the community of patent professionals has generally lined up against any perceived “weakening” of patents, some companies have recognized the adverse systemic effects of a distended unitary system outside of the legal framework. For example, Eli Lilly has argued

Permitting the patent laws to overreach their Congressionally mandated boundaries undermines confidence in the patent system and respect for patents and patenting. This disrespect operates to the detriment of *Amicus* and others dependent upon respect for valid patent rights for their economic survival.... Without question, patents containing claims to subject matter that is ephemeral and abstract, rather than clearly identified as physical and tangible, complicates the ability to identify those patents that may be relevant to making the commercial decisions to bring new products or services to market.¹⁰

“Technology neutrality” as a guiding principle goes only so far. Turning a blind eye to fundamental economic differences risks is bound to have discriminatory results.

III. Engaging the Software Community on Patent Quality

While much can said about what quality means or should mean, the longstanding and constantly recurring discussions about patent quality appear to have made little if any progress in practice. However, we applaud the reorientation and redefinition of quality in the USPTO’s Federal Register notice:

¹⁰ Brief of *Amicus Curiae* Eli Lilly and Company in Support of Petitioner, p. 1, *Microsoft v. AT&T*, 550 U.S. 437 (2007).

(a) For which the record is clear that the application has received a thorough and complete examination, addressing all issues on the record, all examination having been done in a manner lending confidence to the public and patent owner that the resulting patent is most likely valid; (b) for which the protection granted is of proper scope; and (c) which provides sufficiently clear notice to the public as to what is protected by the claims.¹¹

This definition improves significantly on the limited view of quality reflected in the 2010 Patent Quality Metrics which focused entirely on the USPTO's internal process and the perceptions of its immediate user base. We especially commend the emphasis on actual patents [(b) and (c)] and the concern for public assurance and notice [(a) and (c)].¹²

In line with the Software Partnership, we suggest that much more can be done to assess patent quality on a more objective and practical ongoing basis. This must speak to and engage the ultimate intended beneficiaries of the patent system in the field – the innovators who design and develop software. While the current USPTO Quality Metrics survey both examiners and applicants, the most meaningful data on quality will come from the technology professionals in the field.

Examples that could inform more effective USPTO surveys include the 2005 survey of patent quality commissioned by the Intellectual Property Owners Association¹³ and, more on point, Lisa Larrimore Ouellette's survey of practicing nanotechnologists, *Do Patents Disclose Useful Information?*¹⁴ Figure 3 (based on Ouellette's survey) shows the quality of patents as reflected in different questions about how technologists use or perceive patents.

¹¹ Request for Comments and Notice of Roundtable Events for Partnership for Enhancement of Quality of Software-Related Patents, 78 Fed. Reg. 292, 293 (Jan. 3, 2013).

¹² *Id.* at 293-94.

¹³ Intellectual Property Owners Association, *IPO Survey: Corporate Patent Quality Perceptions in the U.S.* (2005), available at <http://bit.ly/IPOPatentQuality2005>.

¹⁴ Lisa L. Ouellette, *Do Patents Disclose Useful Information?*, 25 Harv. J.L. & Tech. 531, 571 (2012). Ouellette found that only 64% had read a patent. Of these 70% (45% of whole sample) said they have looked to patents for technical information. Of these, 60% (28% of the sample) indicated that they found useful information but only 38% (18% of the sample) believed that the technology was reproducible using the information provided.

Do Nanotechnologists read patents?

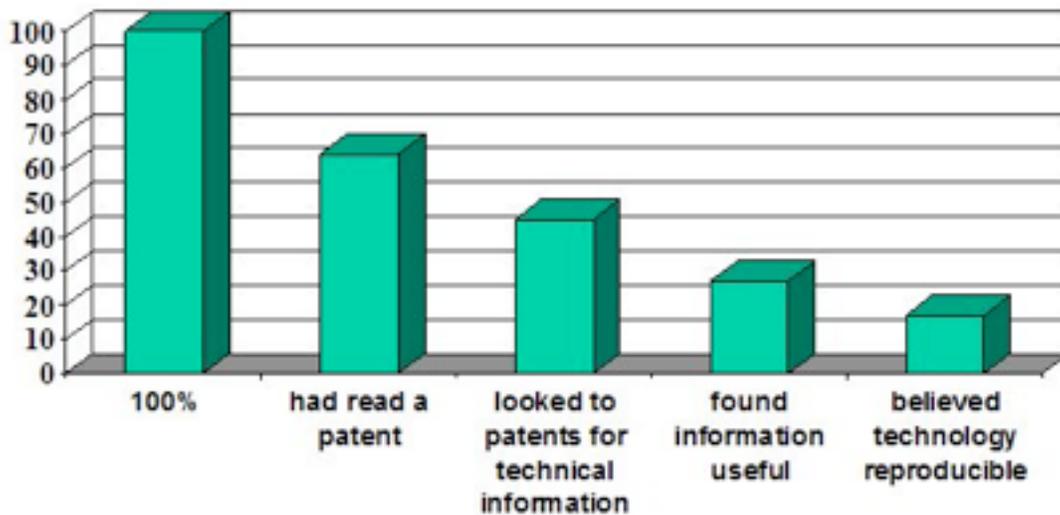


Figure 3 (Source: Original to CCIA; displaying survey data reported by Ouellette, *supra* n.14).

CCIA's first in-depth examination of the problems of the patent system in our sector advocated a higher and more practical standard of nonobviousness.¹⁵ In place of the cumbersome hypothetical "person having ordinary skill in the art" (PHOSITA), this proposal advanced a standard in line with peer review as practiced elsewhere in government and academia by focusing on persons having "recognized skill" in the art. This of course would require legislation, but it would constitute an important step in improving the quality of patents, lessening the burden on examiners, and building confidence in the system among its intended beneficiaries.

It is needed because the Federal Circuit has debased PHOSITA standard. As characterized in *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 454 (Fed. Cir. 1985), PHOSITA is "one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient, and often expensive, systematic research or by extraordinary insights, it makes no difference which."

This proposed heightened standard is also needed because the intensely competitive global economy does not revolve around ordinary skill. More and more, it revolves around star

¹⁵ Brian Kahin, *Patent Reform for a Digital Economy*, Computer & Communications Industry Association (2006), at 35, available at http://www.cciagnet.org/CCIA/files/ccLibraryFiles/Filename/000000000081/CCIA_WP_PatReformDigEcon.pdf.

performers, regardless of the field, as is demonstrated by the increasing stratification of compensation in a globalized economy.¹⁶ Tying patentability to ordinary skill is an anachronistic throwback to a local standard in a simpler world.

“Recognized skill” is an expert standard. It is comparatively objective because there are conventions for recognizing intellectual talent that are well-established and point to real people in the field, not difficult-to-apply legal constructs that inevitably vary from discipline to discipline. For example, experts are recognized by publication in peer-reviewed journals, and publication in a certain number of peer-reviewed journals could reasonably be considered *prima facie* evidence of recognition.

There are acknowledged limitations to peer review in other contexts. In publications and grant-making, it tends to reinforce conventional thinking within the field and to discriminate against new ideas that depart too far from the mainstream. However, the structure of the nonobviousness standard obviates this problem because it works from the other direction.

The USPTO cannot change the statutory standard on its own, but it can at least explore how peer review by experts in the technology might be able to help improve patent quality through systematic feedback on how the novelty and nonobviousness standards are working in practice. For professionals in the field this is critical to instilling respect for and confidence in the patent system. From a common-sense economic perspective, this is bound to be more revealing and informative than asking attorneys that prosecute patents for a living or determining whether the USPTO’s internal procedures are to their liking. Surveys are not inexpensive or easy to design but assuring patent quality over the long-term is an essential part of the examination function and a legitimate expense that should be covered by fees. It is especially important in areas as dynamic, volatile, and vulnerable to large-scale hold-up as software.

Software professionals do not want their work burdened by the cost and disruption of dealing with attorneys, especially when the result is to transform the language of innovation into something they cannot understand without a lawyer at their side as an interpreter. As eloquently expressed by one engineer in the “When Patents Attack” program on *This American Life*:

¹⁶ Erik Brynjolfsson and Andrew McAfee, *Race Against the Machine: How the Digital Revolution is Driving Productivity, Accelerating Innovation, and Irreversibly Changing Employment and the Economy*, Digital Frontier Press, 42-44 (2011).

[T]hey just write something that makes no sense. I personally, when I look at them, I'm not proud at all because most of them, it's just like mungo mumbo jumbo, which nobody understands and makes no sense from an engineering standpoint whatsoever.¹⁷

There are many design factors to be explored. A random selection of newly issued patents could be submitted to an expert panel for the kind of reactions elicited by the Ouellette nanotechnology survey.¹⁸ Her survey also asked for qualitative feedback, which enabled her to flesh out a remarkably clear picture of how the patent system was, and was not, working in the field.

Alternatively, the survey could target patents identified by recipients of notice letters (who would presumably want to remain anonymous). Review by an expert panel would then provide feedback on the most frequently asserted patents that could elicit a director-initiated *ex parte* reexamination. This could also be enormously helpful in shedding light on threats of nuisance litigation by patent assertion entities, which appear increasingly targeted to small companies that can afford to muster an effective defense.

Different survey approaches can and should be undertaken on an experimental basis. The USPTO should also consider working with academics and with professional societies like the Association for Computing Machinery (ACM). We believe that there are many who would be interested in helping design and implement such surveys, including identifying and calibrating the various dimensions of quality and disclosure that should be addressed.

IV. Functional Claiming and Abstraction

CCIA welcomes the USPTO's concerns about functional claiming, and we believe that recommendations put forth by Mark Lemley¹⁹ should be taken seriously. However, we also note that functional claiming is one aspect of the problem of abstraction that currently casts a long shadow over the patent system and patent practice.

¹⁷ This American Life, Episode 441, "When Patents Attack!", July 22, 2011, transcript available at http://www.thisamericanlife.org/sites/default/files/TAL441_transcript.pdf.

¹⁸ Ouellette, *Do Patents Disclose Useful Information?*, *supra* note 12, at 566.

¹⁹ Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, Stanford Public Law Working Paper No. 2117302 (2012), available at <http://www.stanford.edu/dept/law/ipsc/Paper%20PDF/Lemley,%20Mark%20-%20Paper.pdf>.

The thoughtful discussion called for by Under Secretary Kappos in one of his last public speeches,²⁰ November 20, 2012 at the Center for American Progress, is sorely needed. Unfortunately, some of his remarks were easily interpreted as absolutist position-taking that would even contravene the Supreme Court holdings in *Gottschalk v. Benson*, 409 U.S. 63 (1972), and *Parker v. Flook*, 437 U.S. 584 (1978). Moreover, the positions taken seemed based on individual desert rather than any utilitarian or economic principles. If the point is to acknowledge well-deserving personal achievement, patents would be given for scientific discoveries as well as technological applications. It makes even less sense to talk about technologies being entitled to patents on the basis of desert or discrimination.

Innovative individuals and businesses wrestle with uncertainty all the time. They do not want to be subject to regulatory regimes that impose additional uncertainty, whether that uncertainty derives from patent offices, private actors, or the application of laws. Abstraction is a source of uncertainty.

The *amicus* brief of the United States in *CLS Bank v. Alice Corp.*²¹ struggles mightily with drawing the line against abstraction and offers a list of a half dozen factors to consider. That case involves abstraction at a different level, but the approach of bringing out aspects of abstraction can and should be applied elsewhere. The limitation of the brief is that, like most legal documents, it focuses on judicial precedent rather than practical implications and economic consequences.

What is needed for a genuinely thoughtful discussion is a clearer understanding of the dimensions and aspects of abstraction -- and how drawing the line at different levels in different dimensions will affect innovation in software and related fields. The Federal Circuit's machine-or-transformation test²² was a serious effort to come to grips with the problem in a way that could be easily understood, even though it stopped short of determining whether (or when and how) a general-purpose computer is a "particular" machine. Examples such as specialized software that guides a robotic arm (cited by the Under Secretary) are specific enough that they impose little on uncertainty on others.

²⁰ Under Secretary of Commerce for IP & Director of the USPTO David Kappos, An Examination of Software Patents, Center for American Progress, Keynote Address, November 20, 2012, transcript *available at* http://www.uspto.gov/news/speeches/2012/kappos_CAP.jsp.

²¹ Brief of the United States *Amicus Curiae*, in support of neither party, *CLS Bank Int'l v. Alice Corp.*, 685 F.3d 1341, 1356 (Fed. Cir. 2012), *vacated, reh'g granted*, 2012 WL 4784336 (Fed. Cir. Oct. 9, 2012).

²² *In re Bilski*, 545 F.3d 943, 950 (Fed. Cir. 2008).

The great challenge posed by software is that it is capable of operating at many levels of abstraction. *State Street* threw the patent system open to any level of abstraction by summarily refocusing patent eligibility on whether there was a useful, concrete and tangible *result*. This generated undisciplined expectations that have been difficult to squeeze back into the bottle.

The debate can and should be re-framed in terms of *abstract* software patents. Once that is done, the hard work can begin. Abstraction is associated with semantic breadth and ambiguity, with immaterial and intangible objects, and with widely distributed use and liability. These characteristics present challenges at the very heart of today's knowledge-based economy, where they generate uncertainty above and beyond the uncertainty in innovation.

V. Conclusion

In conclusion, we suggest that forthcoming workshops in the Software Partnerships initiative focus on (1) measuring and monitoring quality; and (2) understanding the dimensions, costs, and risks of abstraction.

Respectfully submitted,

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Appendix

Fig. 1: Software Patent Grants. Author's research, based on method used in James E. Bessen, *A Generation of Software Patents*, Boston Univ. School of Law, Law & Econ. Research Paper No. 11-31 (2011), available at <http://ssrn.com/abstract=1868979>.

The following query was inputted into the USPTO's advanced search:

(apt/1 or apt/2) and (isd/1/1/2012->12/31/2012) and (ccl/341/\$ or ccl/345/\$ or ccl/370/\$ or ccl/375/\$ or ccl/380/\$ or ccl/381/\$ or ccl/382/\$ or ccl/700/\$ or ccl/701/\$ or ccl/702/\$ or ccl/703/\$ or ccl/704/\$ or ccl/705/\$ or ccl/706/\$ or ccl/707/\$ or ccl/714/\$ or ccl/715/\$ or ccl/716/\$ or ccl/717/\$ or ccl/726/\$ or ccl/902/\$)

Where (isd) was changed for each calendar year. Each (ccl/###/\$) indicates a patent category using either computer systems or software.