

INVESTING IN AMERICA'S FUTURE THROUGH
INNOVATION: HOW THE DEBATE OVER THE
SMART PHONE PATENT WARS (RE)RAISES
ISSUES AT THE FOUNDATION OF LONG-TERM
INCENTIVE SYSTEMS

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ABSTRACT

While the smart phone patent wars have generated debate about the patent system, the discussions raise a more fundamental question about the willingness of the United States to invest in our future. We as Americans need to make up our collective mind about whether we are satisfied with short-term gratification or whether we are willing to invest in the long-term. At their core, patents, and intellectual property in general, represent that investment. Drawing on recent patent quality metrics, the Article brings balance to the heated rhetoric, explaining why the best evidence available shows that the smart phone patent wars are not about low quality software patents or an ineffective patent system. Given this evidence, we Americans must continue to have faith in allowing our national innovation system to grow and develop as it has over 200+ years so that we and our children will have even more, and better, innovations to enjoy in the future.

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INTRODUCTION

High profile and high dollar patent litigation, particularly in the smart phone space, has prompted a raft of criticism about the patent system in general—and about software patents in particular. But this debate about the patent system raises a more fundamental question. In short, we as Americans need to make up our collective mind about whether we’re satisfied with a national focus reduced to “give it to me now and at low cost,” or whether we are willing to invest in the future. At their core, patents, and intellectual property in general, represent that investment.

The conflict between short-term thinking versus long-term investment has been raised again by the seemingly intractable patent infringement litigation playing out among participants in the smart phone industry. Some commentators have decried the litigation on the grounds that it will harm innovation. Others believe it will raise prices for consumers. And many assert that the smart phone patent wars show there is something wrong with the patent system, declaring that the root of the problem is inappropriately granted software patents. To be sure, there are principled counterarguments to these sweeping criticisms of patents generally and even software patents specifically. But this Article has a more modest purpose: to untangle the sometimes heated commentary surrounding the smart phone patent wars.

Unfortunately, such commentary rarely focuses on the facts. Instead, it veers into the kind of speculation described over 75 years ago by Pasquale J. Federico, the famous USPTO patent judge and initial drafter of the 1952 Patent Act:

Since the beginning of our country science and invention have been inextricably interwoven with the patent system. To endeavor to separate them in retrospect and examine each independently of the other would be futile, despite the fact that occasionally the comment is heard that our industrial progress would have been as great regardless of whether this country maintained a patent system. Such commentators predicate their remarks upon nothing stronger than idle conjecture and baseless assertion. No one can faithfully say what the in-

dustrial history of this country would have been without a patent system, but this much can be said, that with one it has been greater than that of any other country. As long as these principles apply, namely, that our industrial development is the greatest on the face of the globe, and secondly, that such development is and has been inseparably connected with the patent system, time consumed in speculating on the ability of one of these factors to survive without the other should be time wasted.¹

This Article will bring balance to the heated rhetoric, explaining why the best evidence available shows that the smart phone patent wars are not about low quality software patents or an ineffective patent system. In fact, to the extent the patent system needs fixing, Congress took a huge step 18 months ago through the landmark Leahy-Smith America Invents Act (“AIA”). The USPTO itself, in partnership with its user community, has already implemented a series of steps to improve patent quality and is diligently working on the remaining challenges facing software patenting. The real issue is the historical tension between the necessary long-term incentives that form the basis for the patent system, versus the desire of consumers to have products and services today at the lowest prices possible. These forces have always been in tension in the U.S. economic system, but we have chosen as a nation over the years to find the appropriate balance—to retain incentives for smart, creative innovators to invest in the next wave of technology to replace the ever-maturing present stock. In a globalized economy, that is the only path to renewal.

As we read the criticism about the patent system, much of which rests on little empirical evidence, we Americans must ask ourselves an important question: as regards our national innovation system, do we want today's innovations now on the cheap, or are we prepared to moderate what we take today with investment so that we and our children will have even more, and better, innovations to enjoy 5, 10, and 20 years from now? At stake is nothing less than a prosperous future, growing employment and standards of living, and increasingly longer and better lives for our citizens.

I. THE SOFTWARE PATENTS INVOLVED IN THE SMART PHONE PATENT WARS ARE PREDOMINANTLY VALID

The scale of the smart phone patent wars is indeed impressive. Newspapers have counted upwards of 1,100 lawsuits involving just the top litigants, such as Motorola, Microsoft, Apple, and Samsung. Many counterpart suits have been filed overseas. And particular focus has gone to the dozens of lawsuits where both sides are among the top litigants. Yet across the hundreds of lawsuits involving smart phones, several questions are rarely discussed. For instance, how credible are the lawsuits? How far have the lawsuits actually proceeded, and how many patents were actually involved? How many suits were purely tactical moves by companies? And, given the critics' focus on software patents, what technologies were actually covered by the patents involved? If the smart phone

1. Pasquale J. Federico, *Introductory*, 18 J. PAT. OFF. SOC'Y 11, 12 (1936).

wars are truly the costly, time-consuming result of bad software patents, aren't these the most relevant questions, and shouldn't these be the first ones deserving an answer?

To answer them, the USPTO examined the U.S. patents involved in some of the high-profile litigation among four major firms in the smart phone industry: Motorola, Microsoft, Apple, and Samsung. The Agency sought to better understand the substance behind the allegations that its failures may be at the root of these patent wars. The USPTO thus conducted an empirical analysis of "software patents" and the smart phone litigations, the results of which were subsequently published by Stuart Graham and Saurabh Vishnubhakat.²

After sifting through the data, the first fact that became evident was that many of the patents involved in the smart phone patent wars cannot fairly be characterized as software patents at all. Patent litigation often sees a high number of asserted patents winnowed down to a few truly controversial ones. And indeed, of the 133 patents initially asserted across thirteen lawsuits among Motorola, Microsoft, Apple, and Samsung, only 65, or fewer than half, both remain in controversy and are actually software patents. Of course, this is not surprising, as smart phones contain lots of innovation beyond software—displays, microprocessors, signal processing, signal transmission, compression GPS, and cameras, to list just a few.

Of the 65 software patents still involved in these litigations, thus far only 21 of them—less than 33%—have received court decisions of the type that provide some indication of their validity or likely validity. And of those, only 4 patents have had decisions indicating they are invalid or likely invalid. The remaining 17 software patents evaluated so far in these cases have been declared by a court to be valid or likely valid. That's an 80% favorable ratio—a far cry from the dire declarations and a rate of validity findings that compares favorably with other technology areas. So the U.S. federal district courts, which are the principal reviewers of USPTO decision-making, are finding in a clear majority of cases that USPTO examination of the software patents involved in the smart phone litigation has been completed properly.³

While this rate of affirmation by the District Courts is a good indicator that there is not a fundamental quality issue at the USPTO, the Office did not stop

2. Stuart J.H. Graham & Saurabh Vishnubhakat, *Of Smart Phone Wars and Software Patents*, 27 J. ECON. PERSPECT. 67 (2013).

3. With regard to reversal of agency decisions generally, it bears noting that a baseline rate of reversal is both healthy and inevitable. The USPTO examiner corps and Board are charged with making extremely close calls every day on matters of pure human judgment. When, in a close call, the Agency feels a certain position should be taken, we as a country should want the Agency to do just that—stand by its convictions and refer close calls to its reviewing court for guidance. Moreover, as the courts interpret the laws, it is not uncommon for these interpretations to change the patentability result for previously granted patents. As the USPTO has only very limited jurisdictional authority to "recall" issued patents in light of new interpretations of the underlying laws, those validity contests must take place in the courts, with patents being found invalid despite that, when earlier issued, they may have been entirely valid under the Laws as interpreted at the time.

there. USPTO staff dug deeper and asked further relevant questions, particularly in light of recent high-profile decisions, such as *In re Bilski*,⁴ that have implications for the patent-eligibility of software—related inventions and oblige the USPTO to look methodically at relevant patent issuance and subsequent legal treatment.

Foremost is the definitional question, what is a software patent? As any examiner can confirm, patent applications across virtually all major technology areas can include software elements and claims directed to software. Academics have been similarly unable to reach consensus on a workable definition, relying alternatively on patent classes, key word searches, and even brute-force reading of patent documents. The USPTO, like these researchers, has historically recognized that software is a technology that is widely used in products throughout the economy, and can be found in the electronics, automotive, and financial services industries, to name but a few.

The USPTO researchers' approach to defining this technology was to look at all U.S. patent classes and subclasses and determine which ones were likely to contain patent applications or issued patents containing some element of either general-purpose software or software that is specific to some form of hardware.⁵ As shorthand, this discussion refers to those applications or patents which fall into these classes and subclasses as "software" applications or patents, and to those which fall outside as "non-software." It is important to understand that this definition is one of convenience, and that some patents outside these classes will contain software elements, while some patents inside these classes will not.

With this definition, let us turn to further questions, including: how does the USPTO's rejection rate for software applications compare with that of applications in the other technologies? Are USPTO examiners' rejection decisions upheld by the USPTO Board of Patent Appeals and Interferences ("BPAI")⁶—the principal reviewer within the Office of patent examiner decisions—to *deny* protection? And does the USPTO's appellate reviewing court, the U.S. Court of Appeals for the Federal Circuit ("CAFC"), have a very different view of the Agency's rejection decisions compared with the BPAI? For instance, when the BPAI upholds examiner rejections, how does the federal court system treat those determinations?

As to the rates of final rejection by examiners, the data show that the USPTO historically rejected software applications at a higher rate than non-software applications: ten years ago in FY 2003, the rate of final rejection for software applications was 38.4%, 2.8 percentage points higher than for non-

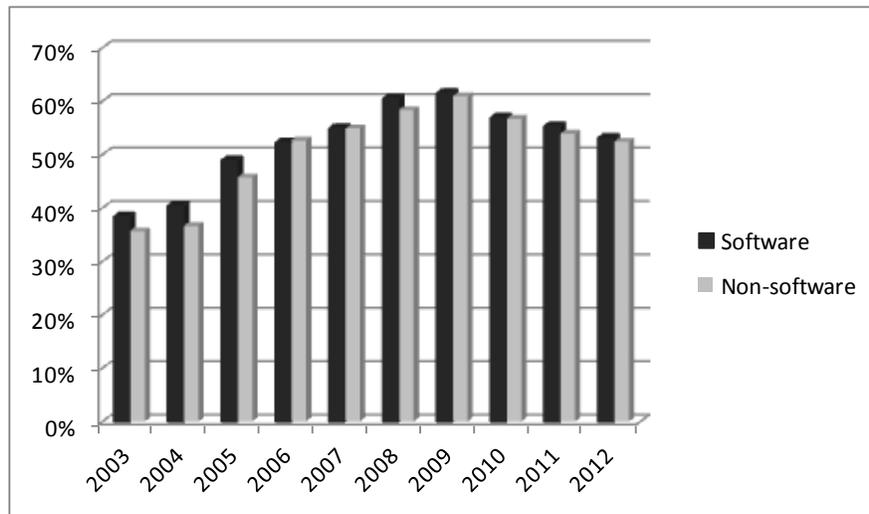
4. 545 F.3d 943 (Fed. Cir. 2008), *aff'd sub nom.* *Bilski v. Kappos*, 130 S.Ct. 3218 (2010).

5. See Graham & Vishnubhakat, *supra* note 2, at 75–76, n.7.

6. Under the AIA, the Board of Patent Appeals and Interferences was renamed the Patent Trial and Appeal Board to reflect the additional administrative proceedings for which it became responsible. See Pub. L. No. 112–29 § 7. The data analyzed for this study was based on past actions under the BPAI.

software applications. Over time, the final rejection rates for software and non-software applications both rose to over 60% by 2009. Since then, these rates have been declining to below 55%. During this ten-year period, the annual final rejection rates for software applications have been higher than for non-software applications, except in FY 2006, 2007, and 2010—when they were statistically equal. The most recent final rejection rate in FY 2012 for software applications was 53.1%, 0.7 percentage points higher than for non-software applications.⁷

FIGURE 1: USPTO EXAMINER FINAL REJECTION RATES, 2003-2012⁸



There are several different explanations that could account for these trends, particularly the recent decline in final rejection rates. One is that the USPTO's focus on compact prosecution, with more effective interaction between the applicant and the examiner, has resulted in resolution of more prosecution issues without the need for final rejections. Another is that the USPTO's guidelines, best practices, and outreach to the applicant community regarding obviousness, written description, and other examination issues have resulted in higher-quality applications being filed in the first place and leading to fewer final rejections. In other words, innovators are becoming more selective, and choosing only their most novel inventions to file with the Office. But the evidence does not support the explanation that fewer final rejections reflect low-quality examination by the USPTO.

Indeed, data from the USPTO's internal quality assurance review process on nearly 29,000 reviews over six years shows that, for both software and non-

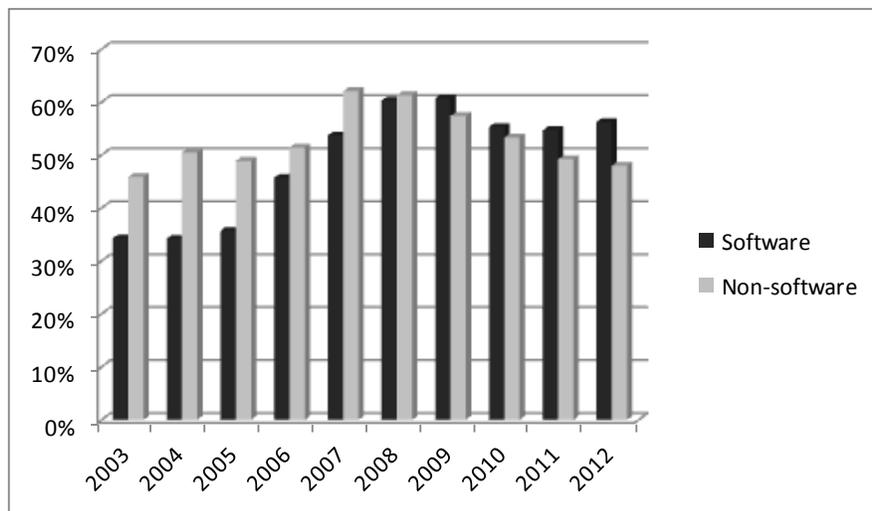
7. Except where noted, these differences are statistically significant at the 95% confidence interval.

8. Figure 1 is the author's representation of data included in Graham & Vishnubhat, *supra note 2*, at 76. Differences are significant for all years except 2006, 2007, and 2010, where differences are too small to be meaningful.

software applications, the overwhelming majority of allowances and final rejections correctly apply the patent laws and examination standards.⁹ Allowances across both software and non-software applications were correctly issued over 95% of the time each of the last six years. Final rejections across both software and non-software applications in FY 2012 were correctly issued about 96% of the time, up from 90% six years ago. Cumulatively over the same six years, allowances for software applications were correctly issued 96.8% of the time and for non-software applications 96.5% of the time. Final rejections for software applications were correctly issued 93.6% of the time and for non-software applications 93.5% of the time. These differences in allowance and final rejection are not statistically significant, meaning that software applications are getting the same quality examination as other technologies, and upon independent review are found to have correctly followed all laws and regulations a high percentage of the time.

As to appeals of examiner rejections, data from the last five years show that the BPAI affirmed (in whole or in part) USPTO examiners' rejections of software applications in 57.0% of cases, about 2.2 percentage points higher than the rate of affirmance for rejections across other technologies. This is a marked improvement from the five years before that, when the BPAI affirmed non-software rejections notably more often than software rejections.

FIGURE 2: BPAI AFFIRMANCE RATES FROM APPEALS OF EXAMINER FINAL REJECTIONS, 2003-2012¹⁰



9. See USPTO, Performance and Accountability Report, fiscal year 2012, at 14, 21–23, available at <http://www.uspto.gov/about/stratplan/ar/USPTOFY2012PAR.pdf>. The USPTO reports patent quality metrics in its annual report and monthly on its data visualization center at <http://www.uspto.gov/dashboards/patents/main.dashxml>.

10. Figure 2 is the author's representation of data included in Graham & Vishnubhakat, *supra* note 2, at 79. Differences are significant at the 95% confidence interval for all years except 2008 and 2010, where differences are too small to be statistically meaningful.

The USPTO BPAI's decisions can be appealed to the CAFC, and the study shows that, in the relatively few instances in which the court substantively evaluated the rejection of software applications, the CAFC upheld the rejection in 95.4% of cases.

These data from the Graham and Vishnubhakat article show that it is not possible to conclude the USPTO is soft on software patent applications. Their investigation of rejection rates shows that Office software application rejections are, in most cases, proper, as judged by comparison to other technology areas as well as the BPAI. And the work of USPTO examiners is being upheld by a wide margin in the U.S. federal court that reviews the Office's decision-making.¹¹

So the data simply do not support the statements some have made about the smart phone patent wars and the quality of software patents issued by the USPTO. Despite this positive data on the quality of issued software patents, the USPTO recognized that more could be done and that more needed to be done to address actual and perceived issues with software-related patents. So the Office continued its efforts aimed at improving the handling of software-related patents for the benefit of our country's future destined to be built on innovation—including software innovation. And that started with the Office's work to implement the most sweeping change to the patent system in generations—the AIA.

II. THE AMERICA INVENTS ACT ADDRESSES MANY CHALLENGING ISSUES INVOLVING SOFTWARE PATENTS

It is well known that the AIA was the product of major compromise, the time-tested American legislative process through which nobody gets their way, and everyone feels a mixture of satisfaction and disappointment. It is also well accepted that while the words Congress chooses for legislation are important, the work done by the executive branch agency charged with implementing the legislation is also important. Legislation that is shoddily implemented can do more harm than good.

On a fair analysis, the AIA in both substance and implementation does a lot—a lot—to address the technical challenges raised by software patents. Most important among the provisions of the AIA applicable to software are the new laws enabling individuals and companies of all sizes to inexpensively (in comparison to the costs of patent litigation, which can run into the millions of dollars), and quickly, challenge the validity of issued patents. These “post-grant” challenge options include post-grant review, *inter partes* review, and business method patents review. All three options are handled by panels of administrative judges, members of the USPTO's new Patent Trial and Appeal Board (“PTAB”). These judges are highly skilled in both technology and patent law

11. While the USPTO and others must continue seeking new means to divine “software” patents from others, with validity percentages and related data shifting accordingly, the ultimate conclusion is not a close call, as the Graham and Vishnubhakat data show.

issues, so complex software cases will receive thorough review. Moreover, all three options are statutorily mandated to be completed in one year, a speed that will save many millions of dollars in litigation costs and ensure resolution of validity disputes far faster than possible in any district court—a speed relevant to the software industry where product life cycles are often measured in months, not years. The regulations implementing all three options are built on a common streamlined platform to promote simplicity, speed, and cost-effectiveness—all critical to software innovators of all sizes who may want to contest patents.

Post-grant review allows for newly-issued patents to be challenged on all grounds, including basic eligibility and clarity—both of which frequently arise with problematic software patents. The new business method review procedure¹² will also be particularly helpful in the software area, as it enables a party sued or threatened with suit on any existing business method patent (no matter how recently issued) to challenge its validity under current law. This means that the PTAB can rely on recent Supreme Court and CAFC decisions that have tightened interpretations of the patent laws in ways helpful to the software area, reviewing previously issued patents with the benefit of the new interpretations. Also, in interpreting the meaning of “business methods” under the new review procedure, USPTO adopted an inclusive interpretation to ensure that business methods implemented in software are eligible for review. Since many of the more problematic software patents are drafted broadly to cover not just specific algorithms but the business problems they solve, it can be expected that the business method review procedure will be useful in addressing many patents that affect the software industry.

By way of both the multiple, comprehensive reviews Congress set up to enable efficient challenge of issued patents, and the USPTO's implementation of those processes, there is every reason to believe that problematic software patents can and will be significantly addressed by the AIA. And importantly, all three procedures went into effect very recently—September 16, 2012, one year after enactment of the AIA. We should give the AIA—the embodiment of the new patent system—time to work. It was crafted to address the very problems being identified.

While not as high profile as the post-grant challenge provisions of AIA, there is another feature of the legislation that goes a considerable way in improving the software-patents landscape—third-party submissions with commentary. It is a new right created in the AIA, allowing any member of the public to participate in the patent examination process by submitting documents and commentary for use by the USPTO's examiners. In this age where information is distributed globally among many different platforms, locating the relevant technical documents when examining software patent applications can be challenging. Because deep knowledge is commonly housed in the electronic records of software experts, it is no stretch to expect that this provision can be

12. Pub. L. No. 112–29 § 18.

very helpful in ensuring the USPTO's examiners have access to the most relevant documents when examining software patent applications, enabling them to do the best job possible in examining those applications.

The USPTO has implemented the third-party submission provision in a simple, streamlined, and open fashion, providing an Internet-enabled path for third parties to make submissions. Also, and with specific relevance to the software area, the Internet-based Q&A provider Stack Exchange has worked with the USPTO to create a new platform for discussing software patent applications. These applications are being identified by the software community itself as those most likely to benefit from prior art and commentary submissions. Stack Exchange brings with it an extremely successful, proven crowd-sourcing methodology for facilitating thoughtful discussions that culminate in precise, objective results. These efforts by Stack Exchange complement the USPTO's online prior art and commentary submission tool, and in fact Stack Exchange uses the USPTO tool to process submissions that come from Stack Exchange discussions.

So, while not a panacea, it is clear the AIA—in both legislative provisions and the USPTO's implementation—uses new and powerful ways to reach core issues highlighted by stakeholders concerned with software patent quality. It stands to reason that we need to give it a chance to work.

In the meantime, leading up to the enactment of the AIA in 2011, the USPTO took the view that it had the responsibility to do more. The Agency charged itself with proactively tackling the issues that undermine software patent quality while the AIA was being debated, during the intervening year between its enactment in 2011 and effectiveness in 2012, and while its implementation was getting underway in late 2012. Indeed, the USPTO did do more, and has subsequently continued to do more within its considerable operational and regulatory ambit to ensure that it issues only valid software-related patents.

III. FURTHER ISSUES WITH SOFTWARE PATENTS ARE BEING ADDRESSED BY THE USPTO AND AMERICA'S INNOVATION COMMUNITY

Among the core drivers of software patent quality, top on the list is the correspondence between the scope of the patent disclosure—the explanation of what was invented and how it works—and the scope of the patent claims—the boundaries of the legal protection provided to the patentee. For the patent bargain to work, to motivate innovation, legal protection must be commensurate with scope of disclosure. Otherwise an inventor who describes only one way to solve a problem may obtain patent coverage for many ways—or all ways—to solve the problem. Or worse yet, a patent that describes no clear problem-solution does society no good at all. The USPTO works every day to get this correspondence right.

While the disclosure-claim balance must be struck across all inventions in all fields, it has proven particularly difficult in the software area, where terminology has tended to shift and can be imprecise, and where functional language

is frequently used to describe ideas that themselves are inherently functional in nature (leading to a kind of “generalization on generalization” phenomenon). Moreover, during the 1990s while software patent filings were escalating, both the courts and the USPTO were primarily focused on other parts of the patentability equation, and not on policing tight correspondence between disclosure and claims. As a result, the importance of disclosure-claim correspondence did not receive as much attention as it does today, with a concomitant drift toward overbroad claims in software patents.

The situation began improving in the new century, with a gradually escalating focus on disclosure clarity and correspondence between scope of disclosure and scope of claims. The CAFC issued a series of decisions strengthening applicable requirements. And the USPTO took action by both increasing the time allotted to examiners for each patent application review and providing them with the training and tools to place more focus on disclosure requirements. This included issuing specific internal guidelines focused on examination of disclosure clarity and claim-disclosure correspondence. Subsequent measurement of patent examination actions showed an increase in the incidence of examiners raising these issues in their office actions.¹³ And the Office has continued with more training, measurement, and refinement to ensure further improvement.

At the same time, the USPTO worked with the intellectual property attorney bar, which is responsible for filing most patent applications, to ensure its full understanding of the requirements for patentability pertinent to this area. The Office developed a first-ever best practices program, which includes recommendations directed to disclosure clarity and disclosure-claim correspondence, and is continuing to work with stakeholders to finalize and commence its use. And the USPTO staff is currently in the midst of user community outreach aimed both at further refining best practices, as well as developing further initiatives to improve patent application disclosure clarity and disclosure-claim correspondence. While neither the courts nor the USPTO are “done” working to ensure overbroad software patents are not granted, and only properly scoped software patents are granted, it is clear that the USPTO recognizes the issues, progress has been made in addressing them, and more progress is in sight.

While claim-specification correspondence is important, another vital component in ensuring that only appropriate software patents issue is the strong application by examiners of the legal doctrine of obviousness. Obviousness gov-

13. The rate of non-final actions containing an indefiniteness rejection under 35 U.S.C. § 112, second paragraph, has risen since the first quarter of FY 2009. This rise coincides with the Office's issuance in September 2008 of two guidance memos reminding examiners of the proper use of indefiniteness rejections under § 112, second paragraph, and to focus on rejections under § 112, second paragraph, when examining means- or step-plus-function limitations under § 112, sixth paragraph. After the Office's issuance in February 2011 of the § 112 Supplemental Guidelines, § 112, second paragraph rejections rose again and to a greater extent than expected based on earlier trends—suggesting that the Guidelines led to increased use of this basis for examiners' rejections. Non-final rejections under § 112 had a compliance rate of 99% as determined by reviews in the USPTO Office of Patent Quality Assurance.

erns the circumstances under which a patent applicant's claim, judged against the body of relevant prior art documents predating a patent application, is merely obvious, or is an advance that merits patent protection. Here again, key court decisions during the last several years have significantly changed the law in a direction enabling tighter examination practices by USPTO examiners. The seminal case was the Supreme Court's 2007 decision in *KSR International Co. v. Teleflex, Inc.*,¹⁴ in which the Court held that references are combinable under essentially all circumstances where it would make sense for a skilled person to consider them together.¹⁵

The *KSR* decision, along with subsequent cases in the CAFC, have enabled USPTO examiners to more tightly examine software-related claims, taking advantage of the analogous nature of so much software and the ability of skilled programmers to draw from separate algorithms in creating new solutions. Software experts have long observed that programming is very incremental in nature, characterized by modest improvements and adaptations not worthy of patent protection. *KSR* gave the USPTO the tools it needed to recognize this valid observation and to implement it. The Office took advantage of the heightened standard by developing appropriate examination guidelines, educating examiners to use them, and ensuring usage. The result: more prior art available to apply, more appropriate ways to apply it, and software patents more accurately reflecting substantial innovation.

Thus, between heightened disclosure-claim requirements and heightened inventive content requirements, it is fair to say both the federal courts and the USPTO have taken steps to ensure only appropriate software innovation receives patent protection, and neither overbroad nor unclear claims are issued. More recently, the AIA created innovative tools allowing the Office to do even more. And as discussed in Section I, the recent track record concerning the validity of software patents in actual court decisions is strong.

Yet there remains even more opportunity for improvement. The focus now is in the area of litigation procedure, and discussions are already underway based on the re-introduced SHIELD Act¹⁶, which would create a loser-pays system applicable to non-practicing patentee plaintiffs. There may be additional opportunities to explore in liberalizing the interpretation of "exceptional circumstances" or replacing "exceptional" with a lower standard to cause courts to award costs and fees in more cases involving inappropriate allegations, animating offers of judgment under Fed. R. Cir. P. 68 by heightening consequences attendant their use, encouraging prompt decisions on summary judgment motions, and further streamlining discovery, to name a few.

Indeed, our patent system operates at the edge of the technological frontier by definition; it is not surprising that regular adjustment is necessary. Given all that has been done, and all that is underway, let us return to the question: why

14. 550 U.S. 398 (2007).

15. *Id.* at 420.

16. Saving High-Tech Innovators from Egregious Legal Disputes Act of 2013, H.R. 845, 113th Cong. (2013).

is there so much concern over the smart phone patent wars, and do they really signal that the patent system is broken?

IV. THE NATIONAL DEBATE OVER SOFTWARE PATENTS REFLECTS OUR AMERICAN COMMITMENTS TO INNOVATION AND TO STRUGGLING WITH HARD CHALLENGES AROUND INNOVATION

The U.S. has had a 230-plus year love affair with innovation. It started with our Constitution, in which our Founding Fathers made patents an affirmative right the government is required to grant to anyone who meets the legal requirements. Positioning the patent in the document that created our constitutional democracy sets a far different tone and culture than elsewhere in the world. In other countries, patents have been historically provided almost grudgingly, as an exception to a general rule against exclusive rights. Our Constitution, on the other hand, established a truly revolutionary concept, unprecedented to the point of being counter-intuitive. As Pasquale Federico observed:

A seventeen-year monopoly is an extremely broad and frequently highly valuable property right, and there must be very sound reasons to justify such a grant. That the framers of the Constitution were of the belief that the grant was warranted is obvious. They were legislating for the benefit of the people and not for the benefit of private individuals. In drafting the Constitution most of its clauses and provisions were directed toward safeguarding the liberties of the people, establishing the three branches of government, and a few were intended to promote the general welfare. In only one instance, however, was Congress given the authority to create private property rights to be conferred upon a certain privileged class of individuals, and by them to be held as any other private property or chattel. The rights were transferrable, monopolistic in nature, granted substantially without charge, and to a select few of the general public, namely inventors. The fact that these were the only private property rights created by the Constitution reemphasizes the need for finding ample justification for the granting of such valuable rights. Wherein is this justification to be found? The Constitutional clause says that the rights are conferred in order to promote the progress of science and useful arts, and herein lies the answer to the inquiry.¹⁷

And that love for progress, for invention, permeates our culture to this day—230-plus years later.

Our national love affair with invention has produced the strongest patent system in the world by any and all measures—respect paid to patents, ability to fund business development based on patents, transferability for value of patents, amounts paid for access to patents, even the values of court judgments on litigated patents. This does not make our system all good all the time of course, but in aggregate it has played a major role in encouraging large and persistent investments in innovation that in turn have created more world-leading products and businesses than any other source in the history of mankind. To put it simply, our country has a great patent system that substantially undergirds a

17. Federico, *supra* note 1, at 12–13.

great innovation-based economic engine.

A major component of greatness in any pursuit, indeed a responsibility that comes with greatness, is leadership in struggling with the toughest challenges. This means confronting complex issues having no simple answers, and dealing with them in all their complexity. The U.S. patent system is great not because it avoids risk by imposing categorical prohibitions or restrictions, but because it does precisely the opposite; it struggles with hard problems. Throughout our history, when faced with tough issues running to the core of balancing our patent system to maximize investment in innovation and its diffusion, we Americans have not chosen the easy way. We have instead sought to develop solutions to these issues that retained strong incentives to innovate. We created the examination system, the use of claims, the patenting of methods, the intersection with competition law, and the calculation of damages. We have chosen to struggle with hard issues. Courts have done this repeatedly for more than 200 years. Congress has done it repeatedly for more than 200 years. And we are a better country, with a better patent system, for the continued struggle. But what we did *not* do was abandon the valuable system that has brought us here.

Software provides a case study. The courts and Congress have been invited—begged, repeatedly—to declare software-related inventions unpatentable. That certainly would have lent clarity to the U.S. patent system, making it simpler for the USPTO and others to draw bright lines. But we as a society are fortunate that neither Congress nor the courts has taken that invitation. Because they realize that along with all that incremental engineering effort involved in programming, software is also the delivery vehicle for some of our world's most brilliant innovations. Would we really want a rule declaring automated language translation, or voice recognition, or GPS-based guidance, or video compression for delivery of online movies, or audio compression for mobile phone systems, unpatentable? They're all implemented largely or entirely through software. And with increasing amounts of human ingenuity being delivered through software, it would seem strange indeed to send a signal of discouragement and marginalization by declaring the very vehicle through which innovation is delivered to be unworthy of strong protection. So we continue to struggle, seeking the right balance.

Congress and the courts have recognized that software is a vehicle for expression, not unlike a language. The issue is not whether patents should be permitted in Spanish versus English versus Chinese. And as discussed earlier in this Article, the issue isn't patent quality—plenty has been done, and is being done about that. We are making progress in the struggle, moving toward the right balance. So what more can be done, should be done, to sensibly address the din over the smart phone patent wars?

V. AMERICA MUST CONTINUE TO SEEK A BALANCE BETWEEN SHORT-TERM CONSUMER INTERESTS AND LONG-TERM INVESTMENTS REQUIRED FOR INNOVATION

What this current spate of litigation is actually about is our continuing national effort to find the proper balance between the desire of consumers to have today's products at the lowest possible prices, and the need to invest in the future by providing incentives attractive enough to induce capital to flow to the risky business of invention over all the other human activities vying to attract capital in a competitive market.¹⁸

Indeed, America runs on competition, and competition is one of the great drivers of innovation, bringing better products to more people at lower prices. And we have a strong preference for competition in this country—competitors slugging it out in the marketplace will bring superior outcomes. But as our Founding Fathers recognized, when it comes to new technology, an unfettered market can kill the incentives to innovate. Absent some protection for embryonic technologies, these technologies will die in the crib, and never get to the market.

Patents help solve this problem, giving innovators limited protection, for a limited time, so that innovative people have incentives to put in the long, hard, and risky efforts to pursue their great ideas in the first place. We see this system operating successfully time and time again in the modern world. Without patents, many entrepreneurs would not innovate; many new startups would not get funding from investors to grow and hire workers; and many young companies would have no means of entering markets dominated by incumbent firms selling last generation products.

This is not new. The patent system has always engendered bipolar reactions. Going back to the dawn of the industrial revolution, we have celebrated the inventors of the steam engine, the cotton gin, the telegraph, the sewing machine, the light bulb, the airplane, to name a few examples, while simultaneously decrying the patent disputes that followed them. Americans love inventors, and we love invention. We just don't love paying for it.

But that is what our system for incentivizing invention—our patent system—is all about. It is a giant national investment engine, through which we forgo lowest possible prices for a period of time in order to get more great products, services and medical treatments in the future. The patent system is a continuing, ongoing, perpetual investment in our individual and our nation's future.

While our desire as consumers for low prices is natural and understandable,

18. The same discussion is underway currently in the area of genetic research. There the very important desire of patients to have access to affordable tests for cancer is pitted against the need for incentives to attract the massive investments needed to fund genetics and cancer research and treatment development. *See, e.g., Ass'n for Molecular Pathology v. U.S. Patent and Trademark Office*, 689 F.3d 1303 (Fed. Cir. 2012), *cert. granted in part*, 133 S.Ct. 694 (Nov. 30, 2012) (No. 12-398).

consider an America in which we optimized to short-term thinking. Would we be happy with less innovation, even at the margins? Surely the answer must be no. Consider also a world in which someone you care about is suffering from a disease for which there is no cure. How much would you be willing to pay for a cure? Probably a lot; perhaps everything you have. If our country's short-term thinking decreases incentives to invest in perfecting cures for diseases, even at the margins—say 10%—are you prepared to confront the person who is suffering because their disease is the one that did not get addressed, and explain that their suffering is necessary so that you could have cheaper access to previously invented treatments? Can you dismiss this example as inapplicable to software innovation, knowing that much modern life sciences innovation that relies on large-scale data processing is dependent on software innovation?

Far from signaling dysfunction in the U.S. patent system, the current spate of litigation actually testifies to its strength. Our patent system isn't cheap, and it isn't perfect, but it has contributed mightily to bringing more innovation to the world than any other incentive system in history. And when a powerful incentive system causes major technological advances spawning major breakthrough products, competition reasonably and understandably enters the space, providing choices, alternatives, follow-on innovation, and price competition. All of this is good. And it is also reasonable and understandable that whoever made the major technological advance or the major breakthrough product would have done their best to protect it from copying, and would be concerned with the prospect of competitors quickly entering the market with copies, and would take action to address perceived copying. This same dynamic has been occurring for hundreds of years, every time a technological advance enables a breakthrough product and competitors enter the space.

We've been down this road before. In fact, we've been down this road again and again and again. Each time there is a crisis, a deadlock is declared, calling into question the entire system, halfway down the road. But each time there is eventually a satisfactory endpoint. It is exactly how the system was designed to work. Our country gets the maximum possible amount of innovation, both breakthrough and follow-on incremental improvements. Incentives for major innovators and follow-on innovators are balanced, dynamically and continuously. The corpus of human knowledge is continually enhanced, captured, documented, and cataloged for all the world's benefit. Consumers receive a triad of benefits: a steady flow of wonderful new products and services, fast competition aimed at incremental innovation offering both choice and a measure of differentiated price competition, and eventual undifferentiated price competition when the exclusive rights expire. And the technology becomes available to everyone at zero cost. And the cycle repeats.

CONCLUSION

In his inaugural address to the Massachusetts Institute of Technology—one of the world's greatest generators of innovation—at the occasion of his installa-

tion as its 17th President, L. Rafael Reif stated:

I have no doubt that the people of MIT will continue their passionate pursuit of curiosity-driven, fundamental research. This work is extremely important in and of itself because it expands the body of knowledge. But it also handsomely returns the investment to society, by enabling real-world solutions that we cannot begin to imagine. Unfortunately, these days, important segments of our society do not seem to fully appreciate this connection. But if a society gives up on basic research, it is giving up on its future. Let me say this again: *If a society gives up on basic research, it is giving up on its future.*¹⁹

Much the same can be said about the patent system generally, and the debate sparked by the smart phone patent wars in particular. The patent system is all about expanding the body of knowledge for our mutual benefit. The investments made in the form of temporary exclusive rights reap very handsome returns for society. But if society gives up on the patent system—as it relates to any area of technological pursuit—it is giving up on its future. Let me say this again: If society gives up on any aspect of the patent system, it is giving up on its future. That result is just not something that we as Americans can afford.

19. L. Rafael Reif, Inaugural Address (Sept. 21, 2012), *available at* <http://president.mit.edu/speeches-writing/inaugural-address> (emphasis in original).