From: Arruda, Kevin
To: Eligibility2019
Subject: Request for Comments, 2019 Revised Subject Matter Eligibility Guidance
Date: Thursday, January 10, 2019 3:30:50 PM

Hello,

My comments are with respect to software patents.

"a patent claim or patent application claim that recites a judicial exception is not "directed to" the judicial exception if the judicial exception is integrated into a **practical application** of the judicial exception"

In general I think the exceptions of "mathematical concepts" and "abstract ideas" are perilous waters with respect to software patents. Software is pure applied mathematics, and it is entirely possible to reduce ***any*** software program to a mathematical algorithm. The same can be said of "abstract ideas", since very nearly all software's function is by nature an abstract concept, and can be re-implemented an infinite number of ways to produce the same "net result" function. While that probably supports the judicial exceptions at face value, I think that simply tying these things to some practical application is still a dangerously low of a bar for an invention. While it is still a novel and potentially meritorious idea to proclaim, "this software invention defined by practical application X could also be used in practical application Y", it is too easy in this way to "cover" a unduly large range of potential innovations via pure speculation. E.g., what if I were to go down the list of every nearly applicable software patent, simply substitute the practical application as an automobile rather than a generic computer, and apply for all new patents? Sure this would be expensive in both lawyer and application fees, but I don't think financial barrier should be what makes this unreasonable or an unlikely scenario.

I am not a patent expert or lawyer, so hopefully that made some useful sense. Aside from that, in my practical experience (12+ years as a software engineer), what I've learned is this:

- Vague software patents and "patent trolls" have both stifled innovation, and essentially extorted billions from successful companies
- Patents have created a "cold war" between huge companies that works exactly like the doctrine of mutually assured destruction. It is not that, e.g. Microsoft and Apple do not infringe on each other's patents, but rather that they both "infringe" on so many of each other's patents that neither dares to assert this infringement which would likely become a millennium-length battle of lawsuits and counter-suits. Is this really the situation patents were intended to create?
- Per the above, innovative startups have no chance to enter the market. Any technology startup doing anything with software will be subject to numerous existing patents, all too often targeted by "patent trolls" who contribute nothing to the economy or society. Even worse, if a large patent-portfolio company decides the startup is a potential competitor, they can simply flip through their portfolio, find something that looks relevant, and crush the startup financially. This situation is not theft of ideas… it is a situation where too many ideas are considered "owned".
- There is a huge problem in the game software industry ($100s of Billions) where it is far too

easy to entirely steal a game simply by changing the graphics. Look at Zynga – infamous for simply stealing small developers games and beating them to market via superior financial resources. Look at PlayerUnknown Battlegrounds and Fortnite and the newest Call of Duty – clearly the "battle royal" game-mode was immensely valuable, but across them there is a clearly a "first" and clearly others that stole and profited from that "abstract" idea. This is because graphics/art are far easier to protect, which is correct, but the gameplay cannot really be protected as abstract, despite the fact that is obviously has immense value compared to graphical assets. This is akin to me making a "new" version of the Monopoly board game just by changing the name, along with the graphics and property names on the board. Surely you'd agree the actual gameplay of monopoly is a novel and valuable invention, but the gameplay concept is by definition "abstract". This is a difficult situation, and is counter to other arguments about patentability of "abstract" ideas, but it is a problem.

With respect to software patents, I do not have the answers, but I think that patent law must evolve further if the function and intent of patents can work for software in the future and our country in the future. Software technology moves too fast with respect to patent durations. Software by nature builds on previous abstract ideas to create new ones – this is actually how it moves exponentially faster over time. Software patents should have award periods that take this into account. 10 years is an eternity in the software industry, but would be a far more appropriate patent lifetime. This would keep innovation competitive, ensure continuous freedom to invent, while still preserving a reasonable period for an inventor to protect & profit from a novel software invention.

There is also the issue that it is practically impossible to discover "real" software theft and patent infringement – which is copying source code. Due to the nature of software, derivative binaries created from stolen source code can easily be made to differ in such a way that it is truly in-practice impossible to prove it was created from a stolen invention. This might actually support an argument that there should be no patents at all for software, but I don't think we're ready for that situation in the context of our current industry.

Thanks for your time, and thanks for taking the initiative to improve our patent system.

Sincerely,

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