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Dear Director Iancu:

Thank you for your steps to restore value to US patents and overcome the battering and shattering of innovator hopes due to the flood of 101 rejections. Here in China where I work, I can see that China is planning to win the race on innovation in the knowledge economy as they support and encourage patents in many areas where patents are discouraged in the US due to the US abuse of 101 law.

I am an inventor whose patented system for enhancing security faced 8 or more years of delay due to the hostile attitude of the business methods section of the USPTO. After winning an appeal based on unreasonable prior art rejections (103), an unreasonable 101 rejection was then issued that required yet another appeal, ultimately resulting in victory and an allowance last year for a patent filed in 2007. Sadly, it had a sister patent and was thus under terminal disclosure, so the years of patent term adjustment count for nothing. US9959694 is the newly issued patent, with US7552467 as the first in the family. With the long-sought issuance of the main claims in US9959694, I finally had the courage and justification to invest in commercializing the system. But that should have happened 10 years ago.

Your extremely helpful actions to provide subject matter eligibility guidance will do much to reverse the damage to the US IP system, **if** this guidance is adopted and implemented by examiners and PTAB judges. There is evidence already that many still don't get it and are sticking with the old ways of rejecting many patents for allegedly being "abstract," a word the Supreme Court irresponsibly refused to define. But great progress can be made if we can ensure proper understanding and implementation of the guidance by examiners and PTAB judges. Here are some suggestions toward that end:

1. USPTO units with unusually high levels of 101 rejections need to be held accountable for the harm they may be doing to innovation. Examiner who, for example, allow less than 10% of the cases before them, while others with similar cases allow much higher levels, may need a "second pair of eyes" to see if improper rejections are routinely being made, especially if 101 is used as the hammer and everything seems to look like a nail to them.
2. The purpose of the guidance needs to be explicit and it should reflect the desired end, namely, to cease the improperly high level of rejections of patents in critical areas such as biotech and computer-related innovation. The goal of reducing the number of 101 rejections should be stated.
3. The guidance states that a claim is patent eligible if it does not recite an abstract idea (i.e. mathematical concept, etc.) "on its own or per se". For computer implemented inventions, it is a real possibility, and even likelihood, that some examiners will ignore the "on its own or per se" requirement and will interpret this as a claim being patent ineligible if it recites an element that uses a mathematical concept. All computer implemented inventions include elements that use mathematical concepts at some level. Therefore, some examiners will wrongly continue issuing 101 rejections for computer implemented inventions, whereas, this is clearly not the intent of the guidance.

It is critically important that the guidance or its training material **provides at least one example of a claim for a computer implemented invention that recites only a mathematical concept**

**that is not patent eligible** (i.e. a method comprising adding A and B to result in C). It is further critically important that the guidance or its training material **provides at least one example of a claim for a computer implemented invention that recites elements that use mathematical concepts, but do not recite mathematical concepts "on their own or per se", that is patent eligible** (i.e. a method comprising: receiving or generating a, b, and c using some process or analysis; generating data structure A including a, b, and c; accessing data structure B in a memory of a computer; evaluating data structure A and data structure B to determine at least partial match; causing the computer or a device controlled by the computer to perform some operation based on the determination).

4. The guidance mentions that:

"a judicial exception has not been integrated into a practical application: ... [if it] merely includes instructions to implement an abstract idea on a computer, or merely uses a computer as a tool to perform an abstract idea".

This language is clearly directed to fundamental business practices, organizing human activities, and other well-established human practices that use a computer merely as a tool (see the Supreme Court opinion in [\*Alice v. CLS Bank International\*](#), 134 S. Ct. 2347 (2014)). This language is clearly not directed to computer implemented inventions (i.e. artificial intelligence, robotics, autonomous vehicles and devices, image processing, databases, computer/video games, computer simulations, content processing, and many more) that arise out of or are inherently implemented on a computer. It is unimaginably irrational to attempt to make computer implemented inventions that arise out of or are inherently implemented on a computer patent ineligible simply because they are implemented on a computer.

Therefore, it is critically important to include in the new guidance or its training material an explanation that the language stating that "a judicial exception has not been integrated into a practical application: ... [if it] merely includes instructions to implement an abstract idea on a

computer, or merely uses a computer as a tool to perform an abstract idea" **applies only to fundamental business practices, organizing human activities, and other well-established human practices that use a computer merely as a tool and that computer implemented inventions** (i.e. artificial intelligence, robotics, autonomous vehicles and devices, image processing, databases, computer/video games, computer simulations, content processing, and many more) that arise out of or are inherently implemented on a computer are patent eligible as the patent law explicitly states.

5. It has been a long trend that many examiners routinely label all non-hardware elements of a computer implemented invention as abstract ideas with no, marginal, or incomplete analysis and label all hardware elements as "additional elements". The examiners then merely state that the "additional elements" are well-known and do not add anything to the abstract ideas. This initial misclassification of abstract ideas and "additional elements" then prevents examiners from ever analyzing whether non-hardware elements are well understood, routine, or conventional as required in step 2B of the *Alice/Mayo* framework, since the analysis of whether an element is well understood, routine, or conventional applies only to the "additional elements". This is an irresponsible practice and examiners who practice this should be identified and educated to

correct their practice. It is critically important to clearly **state in the guidance or its training material that only non-hardware elements that recite an abstract idea “on its own or per se” are abstract ideas and all other non-hardware elements are “additional elements”**.

6. It is often the case in computer implemented inventions that a data structure, combination of data structures, element including a data structure, process that operates on a data structure, process that uses a data structure, or other element related to a data structure provides crucial novelty and enables a novel system. It has been a long trend that many examiners routinely label data structures or anything related to data structures as abstract ideas with no, marginal, or incomplete analysis. Since many computer implemented inventions use data structures, these inventions were unjustly doomed to patent ineligibility right from the start.

In the guidance’s groupings of abstract ideas, the only one that has any relation to data structures is “Mathematical concepts—mathematical relationships, mathematical formulas or equations, mathematical calculations”. Since a data structure IS an arrangement—often very complex —of data stored in memory, a data structure IS NOT a mathematical relationship, mathematical formula or equation, or mathematical calculation. Hence, a data structure is not an abstract idea. Further, many data structures – especially complex ones such as trees, graphs, neural networks, variously linked nodes, variously linked data structures, etc.—are embodiments of a practical application described under prong 2 of the guidance as patent eligible. Therefore, it is critically important to clearly **state in the guidance or its training material that data structures are not abstract ideas and that inventions reciting data structures are patent eligible**.

7. It has been a recent trend to issue blanket 101 rejections with no, marginal, or incomplete analysis in art units dealing with artificial intelligence inventions. This is an irresponsible practice and examiners who practice this should be identified and educated to correct their practice. It is beyond belief that the United States would cripple itself by limiting innovation in a crucial field such as AI, especially in view of the heated global race for dominance in this field. It is critically important to **clearly state in the guidance or its training material that artificial intelligence inventions are patent eligible**.

Again, thank you for the desperately needed actions you are taking to restore IP rights and hope for American innovators. I hope your guidance will change the behavior of those who remain hostile to so many valuable inventions in the knowledge economy, the biotech space, and many related fields. May it be clearly and strongly implemented among all examiners and PTAB judges, and may its wisdom diffuse to other courts as well.

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