

# National Security Consequences of U.S. Patent (In)eligibility

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November 4, 2019

Since 1790, our patent system has served as an innovation engine propelling the United States to the vanguard of technological development, producing such revered names as Edison, Tesla, the Wright brothers, and countless others. Patents have encouraged exploration and discovery across the broad expanse of American ingenuity. This innovation has enhanced the quality of life for countless Americans and has ensured our global economic and security leadership for generations. That leadership is now in jeopardy.

For more than two centuries, our nation's Patent Act was interpreted to allow inventions to be patented across broad categories of subject matter. But starting in 2010, the Supreme Court issued a series of decisions that upended longstanding, well-settled law and narrowed the scope of patent-eligible subject matter. This included deciding that broad swaths of innovation are ineligible for patent protection due to their implementation in computer software. As a result, our federal courts now spin their wheels, unable to sort those inventions that can be patented from those that cannot.

Our stalled patent system poses not only a threat to our global economic leadership, but also to our national security. An examination of patent data related to three key technologies declared by the administration and/or Congress as critical to national security — artificial intelligence, quantum computing and 5G — reveals a disconcerting trend supporting this hypothesis.

The constriction of U.S. patent protection has been most keenly felt in AI-related patent applications. Last year, a whopping 88 percent of patent applications in one area of AI were rejected by the U.S. Patent Office due to

this constriction, representing a four-fold increase since 2014. Another area of AI research saw a 51 percent rejection rate, representing a ninefold increase from 2017 to 2018 alone (a huge increase, but to be fair, due in part to the significant increase in the number of AI-related patent applications year over year). The substantially limited access of U.S. inventors to patent protection for AI innovations will only serve to depress investment in AI research and development, frustrating American leadership in this discipline declared critical to our national security.

While quantum computing is still in its infancy, the available data covering software innovation for quantum computing is also troubling. From 2014 through 2018, 29 percent of quantum computing-related patent applications were rejected based on the Supreme Court's constricted view of patent eligibility. Worse yet, when looking at abandoned patent applications involving both AI and quantum computing, we see that 100 percent of these abandoned patent applications were rejected based on the Supreme Court's precedent. Given the potential of quantum computing to spur the development of new breakthroughs in science and technology, and its declared importance to our national security, we cannot ignore this trend in quantum computing patent rejections.

We also see excessive patent rejections in 5G telecommunications technology. In the years since the Supreme Court began to restrict patent-eligible subject matter, 20 percent of rejections of 5G patent applications have been based on a constricted view of patent eligibility. A similar phenomenon occurs with appealed 5G applications, as 50 percent of those appealed since the Court changed the law are based on that change.

This data indicates a disconnect between Congress and the White House, on the one hand, declaring AI, quantum computing and 5G as critical to our national security, and the federal courts on the other, saying many inventions in those technologies are ineligible for patent protection.

Thankfully, there is some movement in Washington, D.C., toward a legislative fix to this morass. I applaud the recent draft bipartisan bill from Sens. Tom Tillis (R-N.C.) and Chris Coons (D-Del.), the chairman and ranking member,

respectively, of the Senate Judiciary Subcommittee on Intellectual Property. Although not perfect — particularly the draft’s controversial changes to patent disclosure rules, which could unfairly harm patent holders — their draft legislation is a major step toward advancing our national security with intelligent reform. It has been said that it is better to light a candle than to curse the darkness. All three national security-critical disciplines — AI, quantum computing and 5G — require serious, hard, expensive innovation. All three disciplines should be championed as national priorities, permitted to light up as bright torches, and celebrated with equal access to patent protection as is enjoyed by other technologies. Otherwise the torch may be passed abroad to places like China and Europe.

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