Introduction

In 2020, US officials announced that Huawei Technologies had the ability to secretly access mobile phone networks through “back doors” originally designed and intended for use by law enforcement agencies. Although all telecommunications companies are required to provide law enforcement with this access, they must also ensure that they themselves lack this access. Huawei, however, built its equipment so as to allow itself access and thus have the ability to obtain personal and sensitive information from anyone worldwide who uses its equipment. That itself is troubling, but what is of even greater concern is that a number of US economic and military partners, including the UK and Germany, have permitted their countries’ 5G networks to be built out using Huawei equipment. This is therefore a matter not only of cybersecurity but also of national security.

Concerns of this type will likely intensify as standardized technology spreads into even more areas. Technology standards have already been incorporated in a number of important industries, including telecommunications, artificial intelligence, biotechnology, and more. Our future contains the internet of things (IoT), 5G and beyond, autonomous driving cars, biofuels, personalized medicine, agrotechnology, and more. While we appreciate the impact these technologies have and will continue to have on our daily lives, we sometimes fail to recognize that these standardized technologies constitute key components of our national security. From military applications—surveillance and reconnaissance, command and control, and logistics—to healthcare and to food and other supply chains, the safety of the US and its citizens relies on technologies and standards. But the same technologies that protect us also have the potential to expose the US to a wide range of vulnerabilities.

One way to defend against these vulnerabilities is to encourage US companies to compete and lead in these
important technology areas, some of which are subject to standardization, and US companies must be active participants in standards development organizations (SDOs) by contributing technology and being involved in the decision-making. To control the future of these technologies requires controlling the standards. China, which knows this, has therefore sought to place Chinese nationals into leadership positions within SDOs as well as increase both the number of Chinese companies actively participating in SDOs and the level of these companies’ technological contributions to SDOs. The US, on the other hand, has recently adopted laws and policies that render investing in these technology areas and participating in SDOs unattractive. While we certainly do not want a country whose government actively dictates how companies within that country operate, we also need to be wary of a government that opts for policies that force companies to stop engaging in what should be desirable behavior.

National security requires US leadership in important technological fields. US leadership in standardization and in these fields requires laws and policies that incentivize companies to invest time and money in research and development as well as in SDO participation. If US companies choose not to develop innovative technology or actively participate in SDOs, standards will be set and controlled by others, leaving our technological “back doors” open to countries who wish to do us harm. Therefore, it is time to adopt laws and public policy that recognize the importance of US leadership in critical areas of technology and in SDOs by encouraging investment in research, development, and standardization. Our national security depends on it.

US Leadership Will Increase Levels of Technology-Related Security

National security relies on technology, much of it standardized. Consider, for example, how extensively the US military relies on 5G technology. From commanding troops in combat to controlling reconnaissance drones, to targeting smart munitions, and more, the Department of Defense (DOD) relies on a wide array of innovative telecommunications products and networks. However, technology’s role in national security is broader than simply enabling military communications. Other areas reliant on technology and also impacting national security are agriculture, biofuels, personalized medicine, artificial intelligence, self-driving vehicles, and many others, some if not all subject to standardization.

To protect our “back doors,” we must ensure the integrity of the science and standards that lie at the heart of these important areas. Products and networks underlying our security system cannot be built on foundational technologies that are prone to vulnerabilities or other failures. As the DOD has stated with respect to 5G implementation, it is imperative that the systems of the US and those of its allies and partners are “robust, protected, resilient, and reliable.” One way to achieve this is to support US companies that play leading roles in SDOs and drive innovation in these areas. Through active participation in the development and standardization of these technologies, US companies can steer the direction of their underlying science, advise on reliability and robustness, and be aware of potential vulnerabilities.

On the flipside, the US must be vigilant with respect to threats posed by economic and military adversaries seeking to exploit weaknesses in these important areas of technology. Just as national security requires that US companies remain leaders in innovation and standardization, other countries seek to also dominate the market and rise to prominence in SDOs in order to steer the science and standards to technologies they can later manipulate. If the US loses its status in these fields, the resulting systems may face attack through unauthorized network or data access, malicious software, or other types of threats. Losing their dominance as innovators and SDO participants may also cause US companies to lose market share to foreign companies that willingly and intentionally allow their products and networks,
which are then sold to both US allies and partners as well as adversaries, to contain security vulnerabilities.

**Threats to US Leadership in Key Technologies**

For the sake of national security, US companies must remain at the forefront of efforts to develop and standardize important technological areas such as 5G, IoT, artificial intelligence, agrotechnology, and more. Dating back to at least the Cold War, the US has had a technological edge over its military and economic rivals. For example, US leadership in the development of multiple generations of core mobile telephony standards—2G, 3G, 4G, LTE, and 5G—has permitted these companies to ensure the security and integrity of the products that constitute the backbone of our modern communications systems. The importance of US leadership in communications can hardly be overstated; as noted in a Congressional Research Service paper, “5G is a critical strategic technology [and] nations that master advanced communications technologies and ubiquitous connectivity will have a long-term economic and military advantage.”

Our leadership in other important technological areas is also well known.

Unfortunately, this leadership faces threats that are both internal and external. Whereas previously a small number of US companies invested heavily in the overwhelming majority of research and development in important technologies, these companies are no longer the only players in their fields. Backed by their nations’ leadership, Chinese and Korean companies are now moving into the forefront, both in the innovation and standardization of these key technological areas. At the same time, the US is making participation by US companies in these same activities less attractive. Both of these factors will make it difficult for the US to maintain a leadership role and may, in fact, imperil our national security.

**Other Countries Seek Technological Leadership**

US leadership in technology is due to the research and development efforts of innovative US companies that have excelled in important technological fields and have allowed their best engineers, scientists, and managers to participate in all aspects of standardization within these fields. These companies have themselves borne the costs of doing so, but, historically, their investments have been rewarded in the marketplace. In contrast, governments of other countries play a greater role in the companies that operate within their borders. For example, China supports various companies developing technology in these key areas and plans to occupy leadership roles in important SDOs. Moreover, if these efforts fail, its court systems have instituted unfair antitrust investigations and anti-suit injunctions that allow a Chinese court to prohibit non-Chinese companies from pursuing patent infringement and other claims in courts outside China. Each of these actions is helping to prop up China as a new leader—at the potential expense of US national security.

Over the last few years, President Xi of China has repeatedly pledged support for technological innovation in key areas. Identifying these as core technologies, China has “doubled down on funding of strategically important industries, such as semiconductors and AI.” Moreover, the country is cultivating a group of “specialized and innovative” enterprises and manufacturing “champions” to achieve technological breakthroughs. Due to the connections between the Chinese government and state-owned companies and financial institutions, China can provide a “complete value package” for its own companies while making it nearly impossible for non-Chinese companies to compete. China plans to invest an estimated $150 billion in its domestic semiconductor industry between 2014 and 2030 and spent $400 billion through 2020 on 5G infrastructure and development under a five-year economic plan intended to place China at the forefront of that technology. Due to these and similar initiatives, China’s rank in the Global Innovation Index rose from 43rd in 2010 to 14th in 2020.

China has also made clear its aspirations to control critical standards in areas essential to national security. In 2020,
the country released a 15-year plan titled “China Standards 2035.” Focusing on such key technologies as IoT, cloud computing, big data, 5G, and artificial intelligence, the plan calls for increased Chinese participation in the “formulation of international standards.” Of course, the greater the role that Chinese companies play in various SDOs, the more power China has to shape the future of any particular technology and the greater the likelihood that it will have increased access to “back doors” and other data.

Finally, in areas where China is not leading through innovation, it wields legal power against foreign companies and in support of domestic industries. Over the past few years, China (and other foreign governments) has subjected US companies to antitrust investigations that do not follow basic rules of law, such as the provision of basic due process. Moreover, these suits are actually efforts by these countries to force the transfer of US patented technology to their own domestic companies or to insulate these companies from US competition. Chinese, Korean, and Taiwanese antitrust authorities have brought some 30 investigations against 60 foreign companies in industries ranging from the life sciences to telecommunications. Chinese policy also grants anti-suit injunctions on behalf of its domestic companies in order to hamper enforcement of foreign companies’ intellectual property rights.

**The US Government Is Devastating Innovative US Companies**

Rather than a government-led system that picks winners and losers, the United States has a free market system supported by property rights. In particular, patent rights of innovative companies, especially those that participate in standards development in key technology spaces, have been a key driver of the US innovation economy from the Industrial Revolution through today’s mobile revolution.

Patented technologies incorporated into the standard of a high-tech product or service are termed *standard-essential patents*, or SEPs. For instance, engineers at companies like Qualcomm, Ericsson, and InterDigital invested billions of dollars in research and development over decades to create the digital transmission technologies that have since been standardized and are now known to consumers of Apple iPhones and Samsung Galaxy smartphones as 2G, 3G, 4G, and so on. The ability of these companies to patent their innovative technologies and then license these SEPs to companies such as Apple and Samsung that wish to implement a technology standard allows these companies to recoup their research and development costs and invest in further R&D.

Recent legal and policy developments, however, are poised to eviscerate the rights of SEP owners and so disincentivize companies from investing and participating in standards development. For example, SEP owners are discouraged or, in some cases, even prohibited from seeking injunctive relief against infringers—even those that willfully infringe on their patents. Not only does this encourage predatory infringement but it also sets the SEP owner at a disadvantage in license negotiations.

Although the “New Madison Approach” to SEP licensing instituted by Makan Delrahim of the Department of Justice Antitrust Division was a bright spot, the Biden Administration has signaled its full reversal. The New Madison Approach stated that antitrust remedies were not appropriate for disputes between SEP holders and implementers; that SDOs should not allow collective action by implementers to disfavor patent holders; that SDOs and courts should be hesitant to restrict SEP holder’s rights to injunctive relief; and that unilateral decisions not to license a patent should be *per se* legal.

Government entities are increasingly calling for injunctive relief to be unavailable to SEP owners, although these policy choices date back nearly a decade or longer. In 2013, the DOJ and the U.S. Patent and Trademark Office (PTO) issued
a policy statement strongly suggesting that injunctive relief was generally inappropriate in patent infringement cases involving SEPs. Specifically, the statement stated that, absent extraordinary circumstances, an injunction for infringement of an SEP “may be inconsistent with the public interest.” This notion, coupled with the idea that an SEP owner who has committed to licensing its patents on fair, reasonable, and non-discriminatory (FRAND) terms cannot suffer irreparable harm and is made whole by money damages, makes application of the eBay factors, for determining whether to award an injunction, a near slam-dunk for the infringer. The basis for this position, as described by the statement, is a concern over patent holdup, although the statement provided no evidence as to the existence and extent of patent holdup.

The previous administration shifted away from a near-categorical bar to injunctive relief for infringement of SEPs. The DOJ and PTO withdrew their support for the 2013 policy statement and, in December 2019 and in conjunction with the National Institute of Standards and Technology (NIST), issued a new policy statement on remedies for SEPs subject to FRAND obligations. This statement noted, “All remedies available under national law, including injunctive relief and adequate damages, should be available for infringement of standards-essential patents subject to a F/RAND commitment.” One stated purpose of this position was to encourage good faith licensing negotiations between SEP owners and companies wishing to make or offer standards-compliant goods or services. Although unstated, the policy was intended to make efficient infringement less attractive and reinvigorate a viable ecosystem for non-judicial transactions surrounding patent rights.

With the current administration, however, government policy has shifted back to disfavoring injunctive relief for infringement of SEPs. In July 2021, President Joseph Biden issued the “Executive Order on Promoting Competition in the American Economy,” where, among other things, he “encouraged [the Attorney General and the Secretary of Commerce] to consider whether to revise their position on the intersection of intellectual property and antitrust laws, including by considering whether to revise” the 2019 DOJ-PTO-NIST joint policy statement. In response, the DOJ issued a new Draft Policy Statement on Licensing Negotiations and Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments in December 2021. Despite significant evidence disproving the theoretical concerns about injunctions and the court decisions providing that all patent owners, including SEP owners, have a right to an injunction, the draft policy statement nonetheless asserts that injunctions should not be issued for SEP infringement: “Where a SEP holder has made a voluntary F/RAND commitment, the eBay holder has made a voluntary F/RAND commitment, the eBay factors, including the irreparable harm analysis, balance of harms, and the public interest generally mitigate against an injunction.”

This latest policy statement recognizes the importance of a viable ecosystem for patent licensing, acknowledging the value of “widespread and efficient licensing of SEPs” and recognizing that the “efficient negotiation of F/RAND licenses is likely to improve standardization efforts and support competition and innovation.” The agencies, however, fail to understand that efficient infringement is an attractive option where injunctive relief is unavailable and that efficient infringement is the antithesis of efficient licensing. In any case, where the government has come out repeatedly and strongly against the availability of injunctive relief, the likelihood of a court’s granting an injunction or of an SEP owner’s seeking injunctive relief is quite low.

If patents lose their value when they become part of a technology standard, innovative companies will cease either participation in standardization or investment in research and development in these technological fields. In either case, technology that is critical to US national security will not be developed by US companies—and that is a real problem.

Commentators, including former heads of the DOJ, PTO, and NIST from both sides of the political aisle have remarked...
on the effect the draft SEP guidelines will have on innovative US firms. One often-noted concern is the effect of the policy especially vis-à-vis China:

Insufficient protections for intellectual property will hasten China’s objective of dominating collaborative standard development in the medium to long term. Simultaneously, this will engender a switch to greater reliance on proprietary, closed standards rather than collaborative, open standards. These harmful consequences are magnified in the context of the global technology landscape, and in light of China’s strategic effort to shape international technology standards. Chinese companies, directed by their government authorities, will gain significant control of the technologies that underpin tomorrow’s digital goods and services.23

Comments filed by scholars at the Hudson Institute raised similar concerns, noting that a revision to the 2019 Joint Policy Statement “would undermine the ability of US companies to compete for leadership in next-generation technological standards” and “would result in a deeply mistaken concession to Chinese companies like Huawei, who are working steadily to replace as technological leaders in SDOs” companies from the US and its political and economic allies.24 Comments filed by academics, economists, and former government officials make the same point:

The Draft Statement proposals undermine the reliable and effective patent rights that provide the incentives to invest billions required by American innovators to create the technologies contributed to these standards and to deploy them efficiently via licensing-based business models in the global innovation economy. By weakening the innovation engine driving U.S. technological and economic leadership, global competitors like China will step in to replace the U.S., which it is already positioning itself to do.25

Improving Patent Policy to Regain Leadership and Enhance Security

US leadership in key technologies is being threatened not only by our adversaries but by US law and policy. Loss of leadership will likely expose “back doors” and other vulnerabilities in our national security. Controlling the actions of strategic competitors, especially those engaged with the US in a race for technological and economic leadership, is difficult (if not impossible). To ensure that the US wins this new twenty-first-century Cold War and protects its national security interests, it should sustain, or reestablish, the patent policies that initially enabled US companies to assume their technological leadership positions in the modern age.

The most important first step is to not hinder innovative US companies, particularly those that participate in SDOs or are otherwise involved in research and development in areas of technology key to our national security. Rather than adopting policies that actively weaken patents, particularly in the context of standardized technology, the US should consider restoring the availability of injunctive relief, regardless of whether a patent is an SEP or not, to eliminate a significant disincentive for our best companies to lead in standardization. Innovative companies have to know that they can exercise the exclusive right granted by a patent, because, otherwise, the appeal of participating in an SDO is lost. By restoring property rights to patents, innovative companies will have the requisite level of protection with respect to new technology to make investment in research and development, as well as standardization, viable.

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Endnotes


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