

Patent Law Reform and Competition Policy: A Federal Trade Commission Perspective

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Before the IP Watchdog Institute Patent Masters Symposium
Washington, D.C.
March 25, 2019

Introduction

Good Afternoon. Thank you, Gene, and your colleagues from IP Watchdog for having invited me to address this great conference. Today I will focus on the interaction between patent law reform and competition policy, with particular regard to questions of patentability raised by proposals to reform Section 101 of the Patent Act (“Section 101”), which specifies what subject matter is patentable. My remarks are solely attributable to me, and should not be taken to represent the views of the Federal Trade Commission or of any individual Federal Trade Commissioner.

After briefly describing the interrelationship between patent law and antitrust law, I will highlight the role of the Federal Trade Commission’s policy interest in the structure of the law bearing on patentability. That interest is substantial, reflecting the reality that legal rules governing patents – and the use of patents in the economy – have a profound effect on the competitive process and innovation. In particular, I will focus on how Section 101 reform might enhance the vibrancy of competition. Let me caution that my remarks are meant to be a bit provocative and speculative, aimed at furthering a broader dialogue. I obviously cannot speak for the Patent and Trademark Office, which administers our patent law system.

The Patent-Antitrust Interface¹

¹ This section of my remarks draws heavily on Alden F. Abbott, *Key Patent Reforms Needed to Spur U.S. Innovation*, HERITAGE FOUNDATION LEGAL MEMORANDUM NO. 215 (Sept. 29, 2017), <https://www.heritage.org/sites/default/files/2017-09/LM-215.pdf>.

The U.S. patent system, rooted in the Constitution, plays a key role in American innovation and economic growth. The Intellectual Property Clause (IP Clause) of the U.S. Constitution authorizes Congress “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”² Constitutional history indicates that the Framers understood inventors as having a private property interest in the fruits of the innovations produced by their labor (a form of “intellectual property”) and provided a specific means for that interest to be protected through legislation enacted pursuant to the IP Clause.

Reflecting that understanding, and underscoring the importance of the patent-property interest, the first Congress in 1790 enacted a law providing for the issuance and protection of patents. Subsequent Congresses built on that initial law and expanded the scope of patent protection, and early Supreme Court jurisprudence manifests a clear and consistent understanding that patents are valuable property and merit great respect. Thus, the firm recognition and robust support of a patent system to encourage innovation is rooted in our constitutional system.

The importance of patents has not diminished over time. To the contrary, patents played a central role in supporting the industrial revolution in 19th-century America and were associated with key U.S. innovative breakthroughs in the 20th and early 21st century as well. Throughout these periods, litigation over the boundaries of patent rights played a central role in the sorting out of legal rights in new industries. Indeed, lawsuits went hand-in-hand with patent-enabled breakthroughs that allowed for the introduction and widespread adoption of new products that fundamentally transformed American industry (sewing machines in the 1800s; telephones,

² U.S. Const., art. I, § 8, cl. 8.

airplanes, and electrical equipment in the 1900s; and smartphones in the 2000s—just to name a few).³ Over the 1995–2015 period, patent licensing by academic and nonprofit institutions contributed \$1.33 trillion to U.S. gross industry output; \$591 billion to the gross domestic product; and supported 4,272,000 American jobs.⁴

While individual patents consistently have been the subject of legal disputes over time, patents as a whole have clearly been at the heart of successive waves of critically important American commercial innovation and continue to make enormous contributions to the American economy. Consistent with the American historical experience, published economic research, covering many countries and extended time periods, is broadly consistent with the proposition that robust national systems of patent protection spur innovation.⁵

Let me turn now to antitrust. Although they are not mentioned in the Constitution, the antitrust laws, similar to patent law, have long been seen as holding a special status in the federal statutory hierarchy. The U.S. Supreme Court, for example, famously stated that “[a]ntitrust laws in general, and the Sherman Act in particular, are the Magna Carta of free enterprise.”⁶

Properly understood, antitrust is not in conflict with patent law. Rather, applied in an appropriate fashion, antitrust law complements patent law to stimulate innovation. Antitrust does this by

³ See generally Adam Mossoff, *The Sewing Machine Patent Wars*, SLATE (Dec. 2013), http://www.slate.com/articles/technology/future_tense/2013/12/sewing_machine_patent_wars_of_the_1850s_what_they_tell_us_about_the_patent.html.

⁴ See Joseph Allen, *Academic Patent Licensing Helps Drive the U.S. Economy*, IP WATCHDOG (June 20, 2017) (discussing an economic study produced by academic experts), <http://www.ipwatchdog.com/2017/06/20/academic-patent-licensing-helps-drive-u-s-economy/id=84778/>.

⁵ See generally, e.g., Maureen K. Ohlhausen, *Patent Rights in a Time of Intellectual Property Rights Skepticism*, 30 HARV. J.L. & TECH. 103, 131 (2016) (summarizing economic studies and concluding that “voluminous evidence links stronger patents with greater R&D investment at the firm level and richer macroeconomic growth”).

⁶ *United States v. Topco Assocs., Inc.*, 405 U.S. 596, 610 (1972).

safeguarding a vigorous competitive process – a process that is vital to enabling the innovators who develop patents, and the parties with whom they transact, to thrive in the marketplace and benefit American consumers. The two federal antitrust agencies, the U.S. Department of Justice (DOJ) and the Federal Trade Commission (FTC), succinctly described the complementary nature of antitrust and intellectual property law (which includes patent law) in a joint report issued in 2007, stating: “antitrust and intellectual property are properly perceived as complementary bodies of law that work together to bring innovation to consumers: antitrust laws protect robust competition in the marketplace, while intellectual property laws protect the ability to earn a return on the investments necessary to innovate. Both spur competition among rivals to be the first to enter the marketplace with a desirable technology, product, or service.”⁷ This statement continues to reflect federal antitrust enforcers’ consensus view on the interplay of those two bodies of law.⁸

Since the late 1970s, mainstream American antitrust law (as reflected in U.S. Supreme Court decisions, enforcement policies, and scholarship) has emphasized the promotion of vigorous competition on the merits, with an eye to the ultimate goal of advancing consumer welfare. The focus has been on challenging only those business actions that harm the competitive process. Efficient business practices that harm individual competitors—but not the competitive process—have not been challenged. Indeed, efficient business practices by a monopolist that allows it to

⁷ U.S. DEP’T OF JUSTICE & FED TRADE COMM’N, ANTITRUST ENFORCEMENT AND INTELLECTUAL PROPERTY RIGHTS: PROMOTING INNOVATION AND COMPETITION 2 (Apr. 2007).

⁸ *See, e.g.*, Makan Delrahim, Assistant Attorney General, Antitrust Division, U.S. Dep’t of Justice, Remarks at the 19th Annual Berkeley-Stanford Advanced Patent Law Institute, Palo Alto, California 3 (Dec. 7, 2018), <https://www.justice.gov/opa/speech/file/1117686/download>; U.S. DEP’T OF JUSTICE & FED TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY 2 (2017) (2017 GUIDELINES), https://www.ftc.gov/system/files/documents/public_statements/1049793/ip_guidelines_2017.pdf.

maximize its profits are perfectly permissible, as the Supreme Court emphasized in its unanimous landmark 2004 *Verizon v. Trinko* decision.⁹

The antitrust treatment of patents has varied over the past century. The period from the 1940s through the 1970s was an era of patent skepticism, during which antitrust enforcers viewed patents as problematic “monopolies” and adopted a critical view of almost all patent holders’ contractual restrictions. From the early 1980s to the present, however, American antitrust enforcers generally have viewed patents in a much more favorable light. The enforcement agencies see patents as legitimate property rights that play an important roles in spurring innovation. As such, enforcers have recognized the right of patentees to seek to maximize the returns to their legally protected property interests, as long as patents are not deployed in a manner that undermines free market competitive forces.

The modern rejection of the notion that patents are problematic monopolies that merit special antitrust scrutiny is embodied in the consensus view of patent licensing found in the 1995 Antitrust Guidelines for the Licensing of Intellectual Property, issued jointly by the U.S. Justice Department (DOJ) and the U.S. Federal Trade Commission (FTC),¹⁰ the two federal antitrust agencies. The Guidelines explained: (1) for the purpose of antitrust analysis, the DOJ and FTC regard a patent as being essentially comparable to any other form of property; (2) the DOJ and FTC do not presume that a patent creates market power in the antitrust context; and (3) the DOJ

⁹ *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004) (“[t]he mere possession of monopoly power, and the concomitant charging of monopoly prices, is not . . . unlawful”).

¹⁰ U.S. DEP’T OF JUSTICE & FED TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (Apr. 1995), <https://www.justice.gov/atr/archived-1995-antitrust-guidelines-licensing-intellectual-property>. The 1995 Guidelines refer generally to “intellectual property,” which includes copyrights and trademarks as well as patents, but most such licensing that gave rise to antitrust scrutiny involved, and continues to involve, patents.

and FTC recognize that patent licensing allows firms to combine complementary factors of production and is generally procompetitive. The core findings and analysis of the 1995 Guidelines were reaffirmed in a 2017 revised version of the Guidelines,¹¹ also jointly released by the FTC and the DOJ.

The fact that antitrust and patent law work are now recognized to be complementary, does not, however, mean that business practices involving patents will never be challenged under the antitrust laws. As Professor Herbert Hovenkamp, author of the leading American antitrust treatise, points out:

[T]he antitrust LAWS and the federal intellectual property laws must be interpreted so as to accommodate one another. Importantly, the United States has both a patent policy and an antitrust policy, and neither should be interpreted in such a way as to disregard the other. . . . Simple legality under the patent laws cannot be decisive of an antitrust question, although *clear authorization* under the patent laws generally is decisive.¹²

In a similar vein, the 2017 FTC-DOJ Guidelines explain:

As with other forms of private property, certain types of conduct with respect to intellectual property may have anticompetitive effects against which the antitrust laws can and do protect. The exercise of intellectual property rights is thus neither particularly free from scrutiny under the antitrust laws, nor particularly suspect under them.¹³

¹¹ See 2017 GUIDELINES, note 8 *supra*.

¹² HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY 314 (5th ed. 2016) (emphasis in the original).

¹³ 2017 GUIDELINES, *supra* note 8, at 3.

In what way may patent-related transactions raise antitrust questions? The FTC will not hesitate to investigate agreements (including mergers) where it is alleged that patents are being used to reduce competition among technologies or products – that is, competition “not on the merits” that undermines the free market competitive process. Conduct not involving “competition on the merits” may arise in a wide variety of settings, including patent pools, standard setting, mergers, licensing, settlements of patent litigation, and a host of other transactions. The FTC has been an active enforcer in the patent-antitrust area.¹⁴ In investigating patent-related transactions, suffice it to say that the FTC fully takes into account transaction-specific efficiencies, including in particular dynamic competition that would be promoted by the conduct under assessment. A more detailed exploration of the antitrust analysis of patent issues is, however, beyond the scope of today’s remarks.

Patent Law Reform, Patents, and Competition

Leaving antitrust law behind, let me turn now to the law governing patents and the competitive process. The FTC has a vital interest in competition policy writ large, not just in antitrust enforcement, as exemplified by its long history of holding hearings and issuing reports on a wide variety of topics bearing on competition – including patent policy.¹⁵

¹⁴ For example, “[f]or over twenty years and on a bipartisan basis, the Commission has prioritized ending anticompetitive reverse-payment agreements in which a brand-name drug firm pays its potential generic rival to give up its patent challenge and agree not to launch a lower cost generic product.” *Oversight of the Antitrust Enforcement Agencies: Hearing before the Subcomm. on Reg. Reform, Commercial and Antitrust Law of the House Comm. on the Judiciary*, 115th Cong., Prepared Statement of the Fed. Trade Comm’n 6 (Dec. 12, 2018), https://www.ftc.gov/system/files/documents/public_statements/1433736/p180101_commission_testimony_re_oversight_house_12122018.pdf.

¹⁵ The FTC issued its first major report on the relationship between patent law and competition policy in October 2003, following two years of hearings. See FED TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER

A key way in which patents enhance competition is by serving as “beacons” for the investment capital that is vital to financing new products and processes and improving existing market offerings – and thereby promoting competitive vigor. Former U.S. International Trade Commissioner and George Washington University Law School Professor Scott Kieff has described this “commercialization approach” to patent law as engendering a procompetitive expansion of market offerings that also benefits smaller market participants:

The commercialization approach sees property rights in IP serving a role akin to beacons in the dark, drawing to themselves all of those potential complementary users of the IP-protected-asset to interact with the IP owner and each other. This helps them each explore through the bargaining process the possibility of striking contracts with each other. . . . Such successful coordination may help bring new business models, products, and services to market, thereby decreasing anticompetitive concentration of market power. It also can allow IP owners and their contracting parties to appropriate the returns to any of the rival inputs they invested towards developing and commercializing creations or inventions—labor, lab space, capital, and the like. At the same time, the government can avoid having to then go back to evaluate and trace the actual relative contribution that each participant brought to a creation’s or an invention’s successful commercialization—including, again, the cost of obtaining and using that information and the associated risks of political influence—by enforcing the terms of the contracts these parties strike with each other to allocate any value resulting from the creation’s or invention’s commercialization. In addition, significant economic theory and empirical evidence

BALANCE OF COMPETITION AND PATENT LAW AND POLICY (Oct. 2003),
<https://www.ftc.gov/sites/default/files/documents/reports/promote-innovation-proper-balance-competition-and-patent-law-and-policy/innovationrpt.pdf>.

suggests this can all happen while the quality-adjusted prices paid by many end users actually decline and public access is high. In keeping with this commercialization approach, patents can be important antimonopoly devices, helping a smaller “David” come to market and compete against a larger “Goliath.”¹⁶

In order for the commercialization approach to work well, however, patents should provide clear notice of what they cover and parties considering engaging in patenting activity should have a good idea of what is patentable. What happens when rules governing notice and patentability are defective?

A lack of clear notice generates uncertainty about the scope of the patent right subject to bargain – in other words, the patent beacon is defective and sheds an undesirably weak spotlight that may discourage potential transactors. A 2011 FTC report¹⁷ put forth recommendations for the courts and PTO directed at improving the notice function.

Confusion about what is patentable is particularly pernicious. It may discourage inventors from dedicating their efforts to technological fields where the availability of patents is in doubt – thus, patent beacons in those fields may never be generated in the first place.

¹⁶ Views of the Hon. F. Scott Kieff, Commissioner, U.S. Int’l Trade Comm’n, on the U.S. Fed Trade Comm’n’s and the U.S. Dep’t of Justice Antitrust Division’s Joint Guidelines for the Licensing of Intellectual Property 5 (Sept. 23, 2016) (footnote citation omitted), <https://www.justice.gov/atr/file/897081/download>.

¹⁷ FED TRADE COMM’N, THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICES AND REMEDIES WITH COMPETITION (MAR. 2011), <https://www.ftc.gov/sites/default/files/documents/reports/evolving-ip-marketplace-aligning-patent-notice-and-remedies-competition-report-federal-trade/110307patentreport.pdf>.

Confusion about what is patentable lies at the heart of recent discussions of reform to Section 101 of the Patent Act¹⁸ – the statutory provision that describes patentable subject matter. Section 101 plainly states that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the [other] conditions and requirements of this title.” This language basically says that patentable subject matter covers everything new and useful that is invented or discovered. For many years, however, the Supreme Court has recognized three judicially created exceptions to patent eligibility, providing that you cannot patent: (1) laws of nature, (2) natural phenomena, or (3) abstract ideas. Even with these exceptions, the scope for patentability was quite broad from 1952 (when the modern version of the Patent Act was codified) until roughly 2010.

But over the past decade, the Supreme Court has cut back significantly on what it deems patent eligible, particularly in such areas as biotechnology, computer-implemented inventions, and software. As a result, today “there are many other parts of the world that have more expansive views of what can be patented, including Europe, Australia, and even China.”¹⁹ A key feature of the changes has been the engrafting of case law requirements that patentable eligible subject matter meet before a patent is granted, found in other sections of the Patent Act, onto the previously very broad language of Section 101.

In a December 2016 speech, Senator Christopher Coons (D–DE) addressed the nature of the problem:

¹⁸ 35 U.S. Code § 101.

¹⁹ Gene Quinn, *Patentability Overview: When Can an Invention be Patented?*, IP WATCHDOG (June 3, 2017), <http://www.ipwatchdog.com/2017/06/03/patentability-invention-patented/id=84071/>.

Until recently, Section 101 of the Patent Act of 1952 acted as a coarse filter, with the remaining patentability requirements of Title 35 [the U.S. statutory patent provisions] doing the heavy lifting on whether a patent should issue. This arrangement let examination focus on whether the inventor had disclosed enough information and whether he or she had made a sufficient advancement in science or technology. Over the last eight years, however, a series of Supreme Court decisions on Section 101 have substantially moved the line on what is patent-eligible. These rulings have created uncertainty about the validity of previously issued patents, many of which companies have already relied upon to justify significant research and development investments. Our current problem appears twofold. First, courts are calling into question whether patents should be granted at all to inventions made in critical areas of our innovation economy, namely medical diagnostics and computer software. Second, the manner in which case law has been developing is creating profound uncertainty on what is and what is not patentable. Whether or not one gets a patent or that patent survives in court should not depend on which patent examiner your case is assigned to, or what judge you appear in front of. Such ambiguity has serious implications in the investment sector, where confidence is essential. If we are regularly seeing such levels of inconsistency, then we have an area where the jurisprudence is insufficiently clear, and which may necessitate congressional action to provide clarity and consistency.²⁰

²⁰ Sen. Chris Coons, A Few Thoughts on the Supreme Court’s Section 101 Jurisprudence, IP WATCHDOG (Feb. 8, 2017), <http://www.ipwatchdog.com/2017/02/08/thoughts-supreme-courts-section-101-jurisprudence/id=78166/>.

Senator Coons went on to summarize what he deemed the bad likely consequences of the newfound uncertainty regarding what is patentable subject matter: (1) reduced research and development, undermining American preeminence in emerging technologies; (2) direct harm to Americans, as lack of patentability slows the incentive to develop valuable innovative products (such as diagnostic tools for such costly and tragic diseases as Alzheimer's); (3) more reliance on trade secret protection instead of patent protection, inhibiting useful business collaborations and reducing the stock of innovation-inducing publicly available information; and (4) new ambiguity about what is patentable, yielding costly uncertainty for inventors, patent examiners, and judges.

Put simply, what is at stake is harm to the competitive process – both dynamic competition and economic efficiency. This harm is manifested in a slower and less effective introduction of new and/or improved marketplace offerings. It also is reflected in a reduced volume of valuable information available in the marketplace – and in higher uncertainty that tends to discourage mutually beneficial welfare-enhancing market transactions.

Over the last two years, patent scholars, trade associations, and the USPTO have devoted considerable attention to addressing the “Section 101 problem.” Those efforts are beginning to bear fruit, in terms of new PTO guidance and in farther-reaching discussions of possible statutory reform.

In January 2019, the PTO provided revised guidance for use by USPTO personnel in evaluating Section 101 subject matter eligibility.²¹ This revises the procedures for determining whether a patent claim or patent application claim is directed to a judicial exception (laws of nature, natural phenomena, and abstract ideas) under the USPTO's Subject Matter Eligibility Guidance in two ways. First, the 2019 Revised Patent Subject Matter Eligibility Guidance explains that abstract ideas can be grouped as, e.g., mathematical concepts, certain methods of organizing human activity, and mental processes. Second, this guidance explains that 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.

The revised guidance is a salutary development, but its net impact is yet to be determined.

Former Federal Circuit Chief Judge Paul Michel has pointed out:

Without doubt, the Section 101 Guidance will restore at least some of the much-needed clarity to patent eligibility. . . . An important question is whether the courts will follow or be persuaded by the Guidance. USPTO guidance on substantive issues of patent law is not controlling, and the courts will not be bound by it, as it may not be correct in all instances. But the courts should find the Guidance persuasive, at least. Given the years of jurisprudential confusion,

²¹ USPTO, 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019), <https://www.federalregister.gov/documents/2019/01/07/2018-28282/2019-revised-patent-subject-matter-eligibility-guidance>.

the courts ought to give serious weight to the USPTO’s careful consideration of these issues.²²

In other words, revised PTO guidance, while helpful, is by its nature limited in scope, being subject to the Section 101 limitations embodied in recent case law.

Some patent law experts argue that statutory change would be needed to deal with those limitations. In July 2018, the American Bar Association’s Section of Intellectual Property submitted a letter to PTO Director Iancu,²³ setting forth the joint views of the Section, the American Intellectual Property Law Association (AIPLA), and the Intellectual Property Owners Association (IPO) on Section 101 reform statutory reform principles. The letter stated that legislative change to Section 101 must involve the following:

- To avoid potential confusion between the patentability requirements of novelty expressed in Section 102 and patent eligibility under Section 101, the term “new” should be removed from the current version of Section 101.
- To clarify that patent eligibility under Section 101 should be found if an invention or discovery meets the statutory classes of eligibility contained in the current version of Section 101, Section 101 should provide that an invention shall qualify, not “may” qualify, if it meets those statutory classes.

²² Judge Paul Michel, *Is 2019 the Year Clarity Returns to Section 101? Judge Paul Michel Is Hopeful*, IP WATCHDOG, Jan. 24, 2019, <https://www.ipwatchdog.com/2019/01/24/2019-year-clarity-returns-section-101-judge-paul-michel-hopeful/id=105566/>.

²³ Letter from Scott F. Partridge, Chair, ABA Section of Intellectual Property Law, to the Honorable Andrei Iancu, Under Secretary of Commerce for Intellectual Property & Director of the United States Patent and Trademark Office (July 23, 2018), https://www.americanbar.org/content/dam/aba/administrative/intellectual_property_law/advocacy/101_joint_principles_letter.pdf.

- Congress must make clear that an invention qualifies for patent eligibility if it falls into one of the existing categories in current Section 101, i.e., if the invention is a useful process, machine, manufacture, or composition of matter, or any useful improvement thereof.
- Limited statutory exceptions to the qualification of an invention as patent eligible are appropriate provided those exceptions are written clearly and narrowly. These exceptions should be subject-matter neutral so as to not discriminate in favor of or against any field of invention that has been developed or may be developed in the future.
- Patent eligibility is to be determined based upon consideration of the claims of the patent or application as a whole, without ignoring or reading out any limitation recited in the claims. Patent eligibility is not to be determined based on “the gist of the invention” or an assessment of whether the claims define an “inventive concept.”
- Patent eligibility under Section 101 shall not be negated based on considerations of patentability defined in Sections 102 [a claimed invention must be “novel”], 103 [a claimed invention must be “non-obvious”] and 112 [a patent must be described clearly enough to “enable” its post-expiration use by the public], including whether the claims recite elements or subject matter that is considered “conventional,” “routine,” “well known,” “not unique” or that operates according to “known principles”, or the like.

I take no position on the specific recommendations in this letter, or on any other Section 101 proposals that may be given consideration. Whatever one's specific point of view, however, it is clear that whether (and, if so, how) Section 101 should be overhauled raises major public policy concerns about the nature of the competitive process and, indeed, the future of the American innovation-driven economy. The FTC will closely monitor developments in this space, as it does in all other aspects of the competition and patent policy interface.

Conclusion

Let me close by noting that the FTC is nearing the end of public of public Hearings on Competition and Consumer Protection in the 21st century.²⁴ This major example of what former FTC Chairman William Kovacic has dubbed "FTC policy R&D"²⁵ has involved significant oral presentations by experts reflecting a wide variety of viewpoints, and voluminous submissions by expert participants and members of the public. The Hearings materials will be carefully studied by FTC staff, and undoubtedly will inform future thinking by the Commission on its broad enforcement and policy mandates. I should note that session four of the "21st Century Hearings" (held from October 23-24, 2018) centered on IP topics, with a major emphasis on patents (although copyright issues also received some attention).²⁶

Stay tuned for future pronouncements by the Commission on IP and competition.

²⁴ Press Release, Fed Trade Comm'n, FTC Announces Hearings on Competition and Consumer Protection in the 21st Century (June 20, 2018), <https://www.ftc.gov/news-events/press-releases/2018/06/ftc-announces-hearings-competition-consumer-protection-21st>.

²⁵ See William E. Kovacic, *Measuring What Matters: the Federal Trade Commission and Investments in Policy Research and Development*, 72 ANTITRUST L.J. 861 (2005).

²⁶ See FTC Hearing #4: Competition and Consumer Protection in the 21st Century (Oct- 23-24, 2018), <https://www.ftc.gov/news-events/events-calendar/2018/10/ftc-hearing-4-competition-consumer-protection-21st-century>.

Thank you for your attention. I look forward to your questions.