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PROTECTING REAL INNOVATIONS BY IMPROVING PATENT QUALITY

HEARING

BEFORE THE

SUBCOMMITTEE ON INTELLECTUAL PROPERTY

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TUESDAY, JUNE 22, 2021

UNITED STATES SENATE,
SUBCOMMITTEE ON INTELLECTUAL PROPERTY,
COMMITTEE ON THE JUDICIARY,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:46 p.m., in Room 226, Dirksen Senate Office Building, Hon. Patrick J. Leahy, Chair of the Subcommittee, presiding.

Present: Senators Leahy [presiding], Coons, Hirono, Tillis, and Blackburn.

OPENING STATEMENT OF HON. PATRICK J. LEAHY, A U.S. SENATOR FROM THE STATE OF VERMONT

Chair LEAHY. We'll come to order, and I was just saying to Senator Tillis I'm sorry we're starting a little bit late, but we had a vote right at 12:30, and so far as we have to vote in person, took a bit, but he's younger. He got here quicker.

I note that patents are a powerful tool for innovation. During an exchange for disclosing how an invention works, the public grants an inventor a limited monopoly to produce and sell an innovative product, which is a great part of our legal system.

If you're protecting a genuine innovation, that can attract the funding necessary to build a business, provide legitimacy to somebody who might be a nontraditional inventor to help create American jobs. Good quality patents provide more certainty to small businesses and inventors so they can defend their invention from infringers. Given the power that patent conveys ensures the U.S. Patent and Trademark Office issues the highest quality patents possible is, of course, what our Founders intended when they wrote the Constitution.

There is another side to the patent quality coin, one that can result in serious consequences for our economy and society at large, if the system produces patents that never should have been issued in the first place. Vermonters faced these consequences firsthand when an out-of-State company asserted poor-quality patents against dozens of Vermont small businesses and nonprofits.

We're a small and close-knit State, but Vermont mobilized in force against the company. They realized what was happening, and they came together. They—this company which held patents covering the common activity of scanning a document, an email, something that everyone of us has done at some time or another.

Testifying about Vermont's experience will be Bridget Asay. I've had the pleasure of speaking with her earlier this year. She's going to be with us remotely. She led the Vermont attorney general's lawsuit against the company abusing these patents and did a superb job. But Vermont's experience is just one case study of what could happen when poor-quality patents infect the system.

We're going to hear other examples today, including the disturbing story of how the disgraced Silicon Valley company Theranos and its founder, Elizabeth Holmes, obtained hundreds of patents for an invention we now know was fraudulent. But it becomes even worse than that. Not only do those patents for an imaginary invention still exist, some were issued even after the public knew about the fraud. What's more, they've been asserted against actual inventors and innovators who are working on steps that can be taken to curb COVID–19.

Think about it for a moment. Here we have the whole world, not just the United States, but we're scrambling to respond to a devastating global pandemic. Millions of lives at stake. Genuine medical technology designed to help us understand the virus' spread was nearly blocked by patents for a fake invention. Actually, I wonder if it wasn't for the bad publicity that came up, these patents might have successfully thwarted real innovators, cost actual lives. We should all be outraged by this, but we also should make sure the law is such it can't happen.

We think about patent quality. We should also keep in mind that 52 percent, more than half, of the U.S. patents are issued to foreign entities, even more than likely transferred to foreign entities after they're issued. We don't know how many patents are ultimately owned by foreign entities, because PTO does not require the patent owner tell the public, who might be on the hook for infringement later on if the patent was sold.

There is a real risk that foreign companies build portfolios of poor-quality patents and weaponize them, and use them not to help their country, but to stifle American innovators. We have to improve patent quality. Getting patent quality right is real stakes. I'm proud of the work we did 10 years ago in the Leahy-Smith America Invents Act, addressing patent quality after patents have been issued. The post-grant procedures we put in place have to invalidate some of the patents that were asserted against Vermonters last year.

I respect the Supreme Court's decision yesterday in the *Arthrex* case, which touched on these proceedings. I am confident the PTO, the Patent Trial and Appeal Board, will contribute to be able to perform the duties that Congress gave them under the Leahy-Smith Act.

The focus of our hearing today is on improving patent quality at the outset before a patent's issue. Preventing poor-quality patents from ever issuing is just as important as eliminating bad patents later. In fact, I'm—in many ways, it's more important.

I know that Senator Tillis shares my concern about patent quality. He has expressed himself eloquently on this. I hope I can work with him. This should not be a partisan issue. I hope we can work together and find ways to protect. I yield to Senator Tillis.

OPENING STATEMENT OF HON. THOM TILLIS, A U.S. SENATOR FROM THE STATE OF NORTH CAROLINA

Senator TILLIS. Thank you, Chairman Leahy. I want to thank you for holding today's hearing, and I really do appreciate your long-term commitment to ensuring patent quality. There's no—there's clearly a reason why the biggest patent quality reform in more than 60 years bears your name.

A strong patent system promotes——

Chair LEAHY. Incidentally, if I could interject. I did not name it after myself. It was the Republican Chairman in the House who named it to me. I was just—it was one of the most happy moments I've had because he did it.

Senator TILLIS. It just proves that on issues of intellectual property, we can come together on a bipartisan basis.

A strong patent system that promotes and protects American inventions is critical to our economic success, our job creation, and global competitiveness, but a strong patent system isn't judged by how many patents we issue. It's instead judged by the quality of those patents and their ultimate strength.

If we think of each patent issued by the USPTO as a brick upon which we're building our innovation infrastructure, then our job, and that of the USPTO, is to ensure that those bricks are strong. Good, quality patents must stand the test of time, the scrutiny of the courts, and used as intended to support and not limit innovation.

This type of quality control is going on—is ongoing, and it's an iterative process. Patent quality isn't an issue that's stuck in time or is fixed and then never readdressed. In 2019, when I was Chairman of the Subcommittee along with my colleague, Senator Coons, who was then Ranking Member, we held a hearing to address how Congress can help prevent the issuance of poor-quality patents.

Since then, the USPTO has made many improvements to address patent quality concerns, including improvements to its quality control process, prior art searches, and how patents are assigned to examiners.

Yet there's always room for further improvement and innovation, whether by enhancing technology used for prior art searches, increasing collaboration domestically and internationally, or helping to ensure clarity in written descriptions.

One way Congress can assist in these efforts, for example, is to eliminate fee diversion. This would allow the USPTO to devote resources to hiring more examiners, improving training, and making sure that patents are of the highest quality. Congress should also look at ways to improve the USPTO's examination procedures as it relates to scope, written description, and enablement.

There are simply too many over-broad patents being issued, especially in the software and financial services spaces. If we could simply reduce that over-breadth, we could solve a lot of problems.

Finally, I think Congress should consider creating a gold-plated patent. In my mind, such a patent would undergo a more rigorous, more costly examination process to make sure it is truly new, innovative, and properly scoped. In return for doing so, we would guarantee the gold-plated patent holder that their innovation would be virtually impossible to challenge.

I'm curious to hear from the witnesses on your thoughts about creating such a patent. I'm also interested in hearing from today's witnesses about their own ideas, no matter how big or small, to improve patent quality in our intellectual property system.

With that, I want to thank you all for being here today. I look forward to your opening comments and your testimony. Thank you, Mr. Chair.

Chair LEAHY. Thank you, Senator. Here's the witnesses. We'll have Bridget Asay. She's a Vermont attorney. She's practicing with Stris & Maher. She's a member of the American Academy of Appellate Lawyers. Before she joined the law firm she's with now, in 2017, she worked in the Vermont attorney general's office for 18 years. She actually became Vermont's first solicitor general and did a tremendous job as such. She graduated from Harvard University and Yale Law School.

We'll have Julio Garceran, chief intellectual property counsel with Cree, Inc., a semiconductor manufacturer located—headquartered in Durham, North Carolina. Nothing parochial in this hearing. The two lead witnesses. He has also participated in all aspects of patent practice. Previously a corporate counsel at a large multinational telecommunications company as a litigator. Patent prosecutor. Intellectual property law firm. Graduated from the University of Miami, the Florida State University College of Law.

Troy Lester is vice president patents for Acushnet Company, a golf industry leader, manufacturer of Titleist. I always mispronounce that. Another famous brand. He has been responsible for their patent portfolio for over 20 years, participates in the patent policy working group of Global Innovation Policy Center, U.S. Chamber of Commerce, and received his JD and BS in mechanical engineering from Arizona State University.

Jorge Contreras is a professor of law at the University of Utah, S.J. Quinney College of Law, serves as senior policy fellow at the Program on Information and Justice and Intellectual Property, American University College of Law. A graduate of Rice University and Harvard Law School.

We will—Ms. Asay could testify first, and she'll be on one of these big computer screens, which I have nothing to do with. People who actually know what they're doing are going to put her on.

STATEMENT OF BRIDGET ASAY, PARTNER, STRIS & MAHER, MONTPELIER, VERMONT

Ms. ASAY. Thank you, Senator. Should I begin?

Chair LEAHY. We hear you. We don't see you yet. Ah, there you are. Hi. Good to see you.

Ms. ASAY. Thank you, Senator Leahy.

Chair LEAHY. You're making me jealous. You're probably in Vermont.

Ms. ASAY. I am. I am in Montpelier, Vermont today.

Chair LEAHY. I'm jealous. Go ahead.

Ms. ASAY. Thank you all, Members of the Committee, and Senator Leahy. My name is Bridget Asay. I'm an attorney practicing with Stris & Maher, and before joining the firm, I spent 18 years

working for the Vermont attorney general's office, where I served as Vermont's first solicitor general.

Thank you for the opportunity to testify today about a concrete example of the problems associated with low-quality patents.

In 2013, when I was working for then Vermont Attorney General Bill Sorrell, our office received complaints from a number of small businesses, including two nonprofit agencies, that had received letters accusing them of patent infringement and referencing imminent litigation. One of these organizations operated on State and Federal funding to bring home care to developmentally disabled Vermonters. Another provided fiscal agent services to Vermonters with disabilities to assist them with daily living tasks.

We later learned that about 75 Vermont businesses and nonprofits received these letters. The letters were sent under the names of a veritable alphabet soup of 40 different entities, with names like BarMas, LLC and HarNol, LLC. Regardless of name, the content was basically the same. What I'll call the first letter listed four patents and a pending application and said that the targeted businesses likely had infringing systems.

What were these patents and infringement claims about? The letter described as the basis for infringement a typical office network with a server, computers running Outlook, and a scanner that permitted scanning a document directly to an employee email address as a PDF attachment. Pretty common office equipment.

The letter said that the fair price for a license was $1,000 per employee, meaning easily $10,000 or more, even for a relatively small business. Follow-up letters came from a law firm. A number of the targeted businesses received a letter that included a copy of a legal complaint and said that the company would sue if they did not receive a response within 2 weeks.

This didn't just happen in Vermont. These letters were sent to small businesses across the country. The FTC conducted an investigation involving MPHJ Technology Investments, LLC. The owner of the patents and the documents from the FTC matter can be viewed on their website. The FTC alleged that over 16,000 small businesses nationwide were contacted.

Back in Vermont, these businesses weren't targeted because of any product they manufactured or sold. These were not software or tech companies. They didn't make scanners, and they weren't experienced in patent law. Receiving a letter like this puts a small business in a very difficult position. They don't know if the litigation threat is real. The amount of money is significant, but probably a lot less than they'd have to pay to defend a lawsuit.

Patent law is specialized, so lawyers that handle their routine matters are not necessarily going to give advice on patent infringement. Patent lawyers are expensive, and consulting with one might cost as much as paying for the license.

The Vermont Attorney General's Office filed a consumer protection lawsuit against MPHJ. That case alleged straightforward consumer protection claims. We did not contest the validity of MPHJ's patents because that's a matter of Federal law. I think the history of our State litigation is relevant because it highlights the point I made earlier, that most businesses can't take on the risk of litigation in this area.

That case was filed in State court, removed to Federal court, remanded to State court, appealed to the Federal circuit, which upheld the remand, removed a second time to Federal court, remanded a second time, and appealed a second time to the Federal circuit, all in all lasting four years before it was settled. It took substantial resources to pursue that litigation. It was a lot for our office, which is small by national standards. A small business could not sustain that kind of litigation. The costs would be ruinous.

As I mentioned, our litigation did not contest the patents because that's not a consumer protection matter. There were proceedings brought by large scanner corporations, and I provided citations to some of these proceedings in my written testimony.

Ms. ASAY. I'll just cite one example. The first letter that I referenced before referenced a pending patent application, that patent issued in 2013, and 4 years later in 2017, the Federal circuit upheld a decision, invalidating the claims in that patent. That one proceeding took 4 years. There were several other proceedings, and again, it took cases like *HP*, *Xerox*, and *Ricoh* to pursue those cases. A small nonprofit serving disabled Vermonters could never do that.

As Vermont's example shows, there are real costs when low-quality patents are issued. I hope the Committee will consider concrete actions to improve patent quality.

Thank you for the opportunity to testify today.

[The prepared statement of Ms. Asay appears as a submission for the record.]

Chair LEAHY. Thank you very much, Ms. Asay. It's good to have you with us. Mr. Garceran from Durham, North Carolina.

STATEMENT OF JULIO GARCERAN, CHIEF INTELLECTUAL PROPERTY COUNSEL, CREE, INC., DURHAM, NORTH CAROLINA

Mr. GARCERAN. Hello. Good afternoon. I would like to thank Chairman Leahy, Ranking Member Tillis, and distinguished Members of this Subcommittee on Intellectual Property for the opportunity to present my views today on patent quality. My name is Julio Garceran. I'm the chief intellectual property counsel for Cree, Incorporated. Cree is a compound semiconductor company based in Durham, North Carolina.

Cree was founded in 1987 as a startup out of North Carolina State University and backed by North Carolina State University patents. Cree is an American success story, and patents were critical to that success. Throughout its history, Cree has been at the forefront of silicon carbide and gallium nitride materials and devices. Cree started the LED lighting revolution and is now leading the transition from traditional silicon to more energy-efficient and robust silicon carbide.

Unlike some influential companies that rely on other mechanisms to protect their technology, Cree relies heavily on patents. Once Cree's products are sold in the marketplace, would-be competitors can obtain those products, reverse engineer them, and indiscriminately copy those products. Cree's patent portfolio is essential for preventing such behavior. Therefore, Cree, like domestic manufacturers and innovators, needs a strong patent system.

Why are we here talking about improving patent quality? Low-quality patents hurt business. The high cost of patent litigation fuels a business model where patent trolls bring patent litigation, not to legitimately enforce a patent's technological scope, but to squeeze legal settlements from companies. The high cost of patent litigation can also create an incentive for low-quality patent-owners to file patent litigation against smaller competitors, not to recoup compensation for the use of patented technology, but to burden the competitor with increased spending.

These costs are better spent on more productive endeavors, like research and development, and can be very detrimental to a small business. With increased patent quality, companies can at least make a rational business decision based on the technological merit of the patent. Increasing patent quality would hopefully lead judges to more confidently and consistently entertain making early case dispositive rulings.

Low-quality patents also create an uncertain business environment. Patent quality adds certainty surrounding the validity and legitimate technological scope of the patent. An inventor or venture capitalist can be more confident in investing money in a new venture that owns or licenses high quality patents. When the Cree founders were trying to raise money, Cree's licenses to the North Carolina State University patents were critical.

In my view, there are various practical steps that can be taken to increase patent quality. First, keep USPTO revenues in the USPTO. Diverted USPTO revenues could fund improvements to the examining force and the infrastructure of the USPTO.

Increase the use of 35 U.S.C. § 112 in examining patents. The outcome of a patent litigation typically hinges on the meaning of a single or a handful of claim terms. In some instances, the meaning of the claim term is ambiguous. In other instances, the meaning of the claim term is relatively clear, but the low-quality patent specification does not support a broad meaning for the claim term.

Section 112 is supposed to ensure that claim terms are clearly defined, reflect the invention that was actually possessed by the inventor, and are enabled by the patent's specification. However, Section 112 rejections are generally considered nonsubstantive and are not pushed at all during patent prosecution.

Finally, adjust examiner incentives. Examiner incentives need to be adjusted to make quality a priority. The current count-based system appears to encourage quantity over quality.

In conclusion, efforts to improve patent quality should not weaken the patent system or result in overly narrow patents. However, American businesses are being hurt by the significant costs and uncertainty caused by patents of dubious quality. Instead of continuing to waste the resources of our Nation's industries on low-quality patents, we need to implement ways to improve patent quality on the front end. Thank you.

[The prepared statement of Mr. Garceran appears as a submission for the record.]

Chair LEAHY. Thank you very much. Next we have Lester—Mr. Troy Lester, vice president of patents, Acushnet Company, Fairhaven.

STATEMENT OF TROY LESTER, VICE PRESIDENT OF PATENTS, ACUSHNET COMPANY, FAIRHAVEN, MASSACHUSETTS

Mr. LESTER. Hello, everyone. Thank you, Chairman Leahy and Ranking Member Tillis and Members of the Intellectual Property Subcommittee, for allowing me to discuss the importance of improving the quality of patents. Patent law is extremely important to our economy, and we need to get it right. We want to fuel innovation, not stimulate litigation.

Good patents, patents that are directed to new innovations and that stand up to scrutiny, help promote further innovations and promote a company's research spending. Overly broad patents do not teach anything and stifle innovation.

For more than 20 years, I've led the patent group at Acushnet Company, the owner and steward of golf's leading brands, Titleist and FootJoy. We have manufactured golf balls in the United States since 1935. We are extremely proud to manufacture in the United States. Doing so allows us to control our manufacturing processes. However, manufacturing in the United States also subjects us to bad patents.

We understand the value in possessing good patents and believe in the patent system. We have obtained about 2,700 golf-related patents over the last 20 years. Acushnet has licensed and purchased good patents from individual inventors. When we conduct freedom top rate searches, patents will be discovered, and we'll have the opportunity to obtain rights and use the ideas. Acushnet has successfully asserted good patents when necessary. I would much rather spend money asserting a sound patent than one that is likely to be invalid.

Conversely, Acushnet has been sued by patent trolls. Patent assertion entities take resources that could otherwise be better allocated toward research and development, improving manufacturing facilities, and creating jobs.

Patent litigation abuse is not just an Acushnet problem. There are numerous entities that send letters to over 1,000 various companies, demanding a license fee. However, litigation abuse only addresses half the problem of overly broad patents. Bad patents often stifle innovation without ever being asserted because they create barriers for companies to create products or implement process improvements.

Companies like Acushnet often avoid implementing technology altogether in the presence of a weak patent because we know that juries can be completely—be completely unpredictable when faced with a claim of invalidity. We recently canceled a multimillion-dollar order for equipment made by another U.S. manufacturer because an invalid patent issued.

More importantly, bad patents generally do not teach anything new and thus are antithetical to the system's purpose. It is inevitable that there will be some bad patents that issue, however, because they stifle innovation, we should try to reduce them.

As a starting point, I would recommend resources be set aside for additional examiner review. When Acushnet reviews an invention disclosure, several attorneys review it and determine what the invention is. The examining process could be improved by a similar

approach. Moreover, approximately 10 years ago, the Patent Office was forced with a significant backlog of applications. Examiners increased the number of cases being examined, and training of new examiners decreased from 6 months to 6 weeks. In other words, there was a focus on an increase in the quantity of cases, but not on an improvement in the quality of cases.

More importantly, I believe improvements in the implementation of Section 112 are imperative. Section 112 requires the claims to particularly point out and distinctly claim the subject matter the inventor regards as the invention. Section 112 should make inventors claim their actual invention, like a golf club configuration, and not the base properties resulting from their experimentation, like golf club frequency. Similarly, Section 112 should require claims to use the same language that is in the specification.

Finally, steps should be taken to reduce the continuation abuse practice. There are applications with hundreds of claims that date back to the 1970s and 1980s. I know of golf club cases that have about 100 priority claims.

In closing, valid patents encourage and protect innovation and are critical to our economy. Overly broad patents, in contrast, stifle innovation and spur litigation. Litigation abuse harms companies and our economy. Bad patents also create roadblocks that prevent companies from innovating and making new products and creating jobs.

I think, with improvements, we can begin course correcting. We need to get it right. Thank you.

[The prepared statement of Mr. Lester appears as a submission for the record.]

Chair LEAHY. No, thank you very much. That was very helpful. Now, we have Professor Contreras, who's actually here with us. Go ahead, Professor.

STATEMENT OF JORGE CONTRERAS, PRESIDENTIAL SCHOLAR AND PROFESSOR OF LAW, S.J. QUINNEY COLLEGE OF LAW, UNIVERSITY OF UTAH, SALT LAKE CITY, UTAH

Professor CONTRERAS. Thank you. Chairman Leahy, Ranking Member Tillis, and distinguished Members of the Committee, my name is Jorge Contreras, and I am a professor of law at the University of Utah.

As Chairman Leahy alluded to in his introduction, on March 9th, 2020, 2 days before the World Health Organization declared COVID–19 to be a global pandemic, a patent assertion entity named Labrador Diagnostics—oops, sorry. Should I? I'm sorry. Technical difficulty. Even live, these happen. Patent assertion entity—thank you.

On March 9th, 2020, 2 days before the World Health Organization declared COVID–19 to be a global pandemic, a patent assertion entity called Labrador Diagnostics sued a company that was about to release one of the first diagnostic tests for COVID–19. The most surprising thing about this suit was the source of the patents asserted. They were just two of more than close to 1,000 patents originally held by Theranos, the defunct blood analysis company exposed by journalist John Carreyrou of the Wall Street Journal.

According to these and other reports, Theranos never finished developing the tests that it sold to Walgreens and others for millions of dollars. As a result, Theranos founder, Elizabeth Holmes, the lead inventor on both patents, is currently under Federal indictment for multiple counts of criminal conspiracy and fraud.

The Theranos patent litigation highlights a disturbing reality. More than a few issued patents cover inventions that were never made or, at least, never worked. Why does this matter?

Commenting on a widely-derided U.S. patent claiming an antigravity driven spaceship, one senior PTO advisor opined that it doesn't cause any problems because the patents are useless. It seems that the prevailing view, both at the PTO and among some patent attorneys, is that patents on nonexistent and impossible inventions are mere curiosities. Unfortunate, but ultimately harmless.

The recent assertion of the Theranos patents offers stark evidence to the contrary. Here are just a few examples of the very real harms that can flow from these bad patents.

First, a bad patent can act as prior art, preventing later inventors from getting a patent they deserve after actually developing the claimed technology.

Second, the holder of a bad patent can enforce the patent against others who are more successful at developing the technology. This doesn't just happen in court. In fact, this morning, I read a news story about the settlement of a case in the Northern District of Illinois relating to a, quote, "bogus patent" used by a pet supplements company to gain the Amazon takedown procedure for competitive products.

Third, even if a bad patent can eventually be invalidated in court, and not all can, patent litigation is costly, and many defendants may prefer to settle, leaving the bad patent on the books to be used against others.

Fourth, the existence of bad patents can itself chill new research and innovation, thus reducing market entry, technology development, and competition.

More than half a century ago, the Supreme Court recognized in *Lear v. Adkins* the threat that invalid patents posed to the market and identified the important public interest in permitting full and free competition in the use of ideas, which are in reality a part of the public domain. In short, bad patents allow unscrupulous actors to put fences around not yet invented technologies that should be available to the public.

For all of these reasons, we need to try harder to prevent the issuance of bad patents. To that end, I suggest the following reality checks to help the PTO more closely align patent allowances to technical realities and to deter fraudulent behavior before the PTO.

First, increase vigilance for inoperable inventions. At the examination stage, the PTO should check inventor names against lists of retracted papers, criminal indictments, securities investigations, disciplinary proceedings, and other forms of behavior that might cast doubt on the assertions made in an application. The PTO could also flag other questionable applications, such as miracle cures, cold fusion, and interstellar spacecraft.

Second, demonstrate reduction to practice. If an application is flagged as potentially problematic, the PTO should be able to get a third-party verification that the claimed invention has actually been reduced to practice or that reduction to practice is both feasible and likely, perhaps resulting in some of the gold plating that Senator Tillis mentioned earlier.

Third, involve the public. In many technical areas, competitors, academics, and other members of the public are more likely to appreciate the technical challenges faced by a given invention. Thus, the PTO should revive and expand the limited peer-to-patent program, which enlisted expert volunteers in the examination process from 2007 to 2011. In addition, the PTO's preissuant submission procedure should be expanded to permit members of the public to raise enablement concerns without the expense or formality of a full inter partes review.

Fourth, enhance penalties for fraud. Other than unenforceability of the patent in question, there is no explicit penalty for fraud, either private or administrative, under the Patent Act. Accordingly, the penalties for seeking to procure a patent for fraud, or to enforce such a patent, should be expanded to include both criminal sanctions and substantial fines.

It is in everyone's interest to eliminate bad patents. I hope that these modest suggestions can help us achieve this important goal, and I thank you for giving me the opportunity to testify today.

[The prepared statement of Professor Contreras appears as a submission for the record.]

Chair LEAHY. Thank you all very much. Ms. Asay, you explained in your testimony that the Vermont Attorney General's Office heard from two nonprofits that were threatened by the entity asserting low-quality scan to mail patents. I believe they demanded as much as $1,000 per employee to settle. What type of impact would a settlement of $1,000 per employee have on the ability of these nonprofits to support the communities they were serving?

Ms. ASAY. As you well know, Senator, things operate often on a much smaller scale in Vermont, and the impact of facing a financial demand for 10 or 20 or 25 thousand dollars for a small nonprofit working in a community, it could be substantial. Even having to involve counsel to assess the letters that a nonprofit receives and decides how to act is money that could have gone to other services and instead had to be spent to fend off these kinds of claims.

Chair LEAHY. You know, I think about all of the work that goes into this. You did some research looking into the status of MPHJ's patents to determine whether any of the claims, any of the claims asserted against Vermonters, were still valid today. I use Vermont as an example because this could be any State. Did it take significant work to learn the status of the patents?

Ms. ASAY. It did. I spent a fair amount of time going back and, you know, I have a law degree and I have access to Westlaw, which is a paid legal research service, and it took me a fair amount of time to track back through the litigation on multiple different patents and determine the outcome. It was not an easy task, and I think not something that a layperson, you know, working at a nonprofit or small business could easily have done.

Chair LEAHY. Most small businesses don't have a large legal department that can take time to do this. I wonder if you had a claim that was invalidated, either at the PTO or in the court. What if the status of that claim were clear on the face of the patent? Would that help?

Ms. ASAY. Yes, I think that would help. I think transparency is a terrific goal in this area, and it's my recollection that back in 2014, when this issue of patent enforcement was something that State attorneys general were learning about, that there was a bipartisan coalition of State attorneys general that joined in some letters and some suggestions about reforms, and that they, in particular, focused on the need for transparency, the importance for people to know who they were dealing with and the status of the patents that they were being faced with.

Chair LEAHY. You could almost say that makes common sense.

Ms. ASAY. Yes, yes, Senator.

Chair LEAHY. Professor Contreras, you mentioned that Theranos had almost 1,000 patents. I'm still boggled by these numbers considering what it was for a company. They later sold that to a holding company. I understand that Elizabeth Holmes was indicted for fraud in 2018. But then, isn't it true the PTO continued to issue patents in the name of Theranos and with Elizabeth Holmes as a named inventor into 2020, 2 years after she was indicted for fraud? Is that correct?

Professor CONTRERAS. Yes, Mr. Chairman, that is correct. One of the two patents that was asserted against BioFire, the medical testing company in Utah that I mentioned, was issued in January of 2020, which was 2 years after the criminal indictment.

Chair LEAHY. The indictment—everybody knows she hadn't actually invented the diagnostic method she claimed. Is there any real basis on which she should have gotten those patents?

Professor CONTRERAS. My opinion is that the patents should not have been issued, and that's why I'm here testifying before you, Mr. Chairman. I do believe that the PTO—there are signals that the PTO should be aware of and should respond to when applications come down the pike for inventions that are not actually reduced to practice as they need to be.

Chair LEAHY. We had some talk about where fees are. I'd ask Mr. Lester. The PTO was funded by user fees, and those fees are set by the PTO. Now, the application fees are low and maintenance fees incurred after a patent issued are comparatively high. Many companies game that system. They apply for a huge number of patents rather than focusing on securing the highest quality ones. Then, years later, many of these patents are abandoned before maintenance fees are paid. It seems almost like a Ponzi scheme.

I wonder if increasing upfront application fees might help mitigate that kind of gaming. My time is really up, but I ask you one question. I'll spend all this for the record. Would you be comfortable with a tradeoff of paying more up front for your patent applications and paying less in maintenance fees later?

Mr. LESTER. Senator, from my experience, the recent increases in maintenance fees made us seriously scrutinize every patent in our portfolio. From every quarter, we review all of the patents that have maintenance fees, and we particularly scrutinize the ones

that have the third maintenance fees. The increase in cost obviously made us streamline our portfolio to stay in budget, and, as a patent attorney, the only cases you regret are the ones you abandon.

An increase in examination fees would have a similar effect in that it might deter application filings, and thus, kind of stifle the objective of applications of teaching new technologies. High maintenance fees allow applications to be filed and teach, but then frees up technologies so that others can still use them. However, I understand that this is much more difficult for the Patent Office to budget.

Another thought would be that continuation applications really don't teach anything new. They are literally the same application filed again and again. That is how a lot of these entities file thousands of applications. With the many problems arising from continuation applications and the continuation applications accounting for, I believe, about 25 percent of the pending cases, an increase in continuation filing fees might be a prudent approach.

Chair LEAHY. Thank you. Senator Tillis.

Senator TILLIS. Thank you, Mr. Chairman. Mr. Lester, Mr. Garceran, can you share any experience with responding to assertions based on fraudulent patents in your current positions?

Mr. GARCERAN. I guess I'll start. This is Julio Garceran. I have had some experience with—I wouldn't say it was fraudulent, just bad patents, that they had no business asserting those patents against our products, and we had that, on multiple occasions, that we had to spend money to respond to them. In fact, we used certain threats under Section 285, saying that if they came after us and actually sued us, we would seek attorney's fees.

We also used the Anti-Abusive Patent Assertion Act that is enacted in some States, such as North Carolina, and threatened them with that, also. We've had success in warding off the more serious and egregious violations, but some of the ones that I think are less so, they won't go away as easily.

Senator TILLIS. Mr. Lester.

Mr. LESTER. Yes, unfortunately, we've had our share of nonpracticing entities asserting patents against us. Innovatio asserted patents against us for using the Wi-Fi. They stated that we had three manufacturing plants in Massachusetts. They must have Wi-Fi, therefore you infringed. Helferich asserted patents relating to sending out tweets, and he offered a license for $15 per 1,000 tweets. If you have a million followers and you send out a tweet, that's going to cost you $15,000.

The most egregious is probably Eclipse. Eclipse was an entity that had a number of patents. In fact, they had a number of patents invalid in 2014, and they still received two more patents in 2015 after those cases had been invalid.

Those types of situations—they got on our website, ordered a golf club, said, "Well, that golf club, you must keep track of it in your warehouse, therefore it's a mobile thing. Then you sent us an email back saying that you would ship it to us." That is standard practice of anyone sending out products to somebody, and we were very, very fortunate.

In doing our due diligence, we found out that Federal Express had settled with them. We went to Federal Express, thinking they would have much better prior art than we would on this type of technology. They did, but they also had an agreement with Eclipse that they wouldn't file any cases against Federal Express customers. The next day, Federal Express happily sent Eclipse a letter saying that they were in breach of contract, and the following day, the case was dropped.

You know, we were again very fortunate that we had the means to be able to go out and look for all of that information. It took months and it took a lot of resources, but again, we were on the very fortunate side of that.

Senator TILLIS. This is happening every single day. I have a question for—Mr. Lester, maybe for you, also—but Professor Contreras and Mr. Garceran. We've, over the years, heard a lot of stakeholders being concerned with patents being issued that do not appear to satisfy the enablement or written descriptions found in Section 112. We think that maybe the interpretation or the application of Section 112 is inconsistent within the USPTO. What's your view? What should we do if you agree that its application and its interpretation is inconsistent—what suggestions would you have as a matter of statutory changes to correct that, not only for the USPTO but for the court's application of 112? Mr. Contreras, we'll start with you.

Professor CONTRERAS. Thank you. I'm happy to start, and thank you for the question, Senator. I do agree with you. I think that a lot of these problems do arrive under Section 112 enablement, which has really two prongs. There is the adequacy of the written description. Do you actually enable somebody to make the invention? There's a lot of litigation with respect to that prong.

I think the more important prong, and where we see the bigger problem, is did you actually reduce the invention to practice yourself before getting those claims? This is where I think we see a lot of, quote-unquote, "wishful thinking" being issued patents.

I do think that the examination process can be made more stringent in order to try to catch those unpracticed, non-enabled inventions before patents are issued, by doing things like having triggers within the PTO to alert examiners when there are particularly suspect inventions that are coming down the pike, getting outside expert reviews.

I know that the PTO staff is limited and stretched very thin, but we could enlist the aid of outside peer reviewers, as we do in the scientific community with journal articles, to attest to whether or not an invention is reduced to practice, or likely to be reduced to practice before it's issued.

Then there's the idea of peer-to-patent, which was tried out on a very limited basis from 2007 to 2011, but which enlisted members of the public, experts, university people, competitors to look at prior art with respect to patents that were in the application process. That could be used to deal with enablement, as well as prior art, and I think in a very useful way.

Senator TILLIS. Mr. Garceran, do you have anything to add?

Mr. GARCERAN. Yes, I'd like to add that I do think that the enablement standard is not applied early enough. I think we do

have the laws on the books, but usually it takes for litigation for them to be applied, and we really need the examiners to have some incentives put in place, or at least some training or something, but incentive where they need to be examining using an enablement standard to show proof that the invention the inventor is trying to obtain, they actually have, and they actually possess the invention, and they're teaching society how to use the invention, and how to get the invention. That is not currently pushed very significantly at all in the examination stage.

Senator TILLIS. Thank you all. Mr. Chair, thank you. I just want to reinforce I believe that there are a lot of people in the USPTO that do a good job. I do think a part of this is resources. That's why I feel strongly that we should end fee diversion, reinvest in information technology, reinvest in more resources.

Mr. Contreras, you mentioned in the one case dating back from last year that having examiners have access to information sources that they're not using today. I think you were talking about criminal records, et cetera. I think that we should also take a look at better collaboration and use of information for prior art searches, all the way from, let's say, collaborating with the whole of government, the FDA and other resources that may be helpful to have a more fulsome set of data as they're going through the examination process.

Thank you all for being here. Thank you for letting me go over, Mr. Chair.

Chair LEAHY. Thank you, Senator Tillis. You and Senator Coons led this Committee so well, and I have the honor of following Senator Coons, and I yield to him.

Senator COONS. Thank you, Mr. Chairman, Ranking Member. Thank you to the panel for this conversation. I'll follow-up on the comments just made, just more broadly recognizing that a decade on, the America Invents Act deserves the reexamination, the discussion it's having today.

Patent quality really matters, and making the investments and making the changes in the system that can improve patent quality is an important thing for us to have done. Mr. Chairman, I'll congratulate you again on the America Invents Act, which I think was critically needed at the time to significantly improve patent quality at a moment when the patent system was improvidently granting a very wide range of patents, and there were a lot of challenges and issues to look at.

I'll also agree, I think with both the Ranking Member and the Chairman and a number of the witnesses, that we need to invest. If we're going to have the best quality patents in the world, we need the best examiners. We need to end fee diversion. We need to make sure that investments that companies are making in the system actually produce improvements.

We need to invest in modernizing the technology, and in providing ways that we get the best-in-class examiners who are actually not just capable, competent, even masters of the fields in which they're conducting examinations. I think there's a lot of work to do that we can all agree on to improve patent examination and patent quality.

I do want to make sure that the pursuit of patent quality as such is not used as an excuse to weaken enforcement mechanism protections for all patent owners. Let me just ask of the panel a few questions, if I might.

The USPTO's 2020 Performance and Accountability Report concluded that examiners are correctly applying the statutory patentability criteria about 93 percent of the time. Is this a relevant and effective gauge of the quality of patent examination, and what's your perspective on this analysis? If I might, Mr. Garceran and Professor Contreras, and then the other members of the panel who are not physically with us.

Mr. GARCERAN. I'll say 93 percent sounds like a pretty good grade. I don't know what the exact parameters that went into that grade, but I do think, as we've been talking about, and while we're having this meeting, there are clearly some issues with patent quality.

Again, I agree with some of the testimony here and some of the statements that the use of Section 112, especially enablement and written description type of examining standards, if they are consistently used, that could lead a lot to improving patent quality on the front end.

Senator COONS. Thank you. Mr. Contreras—Professor Contreras.

Professor CONTRERAS. Thank you, Senator. Yes, so I don't doubt those statistics at all, but I would point out that the rules, the examination rules, don't actually require that the examination look into the actual reduction to practice of patents. To do that would be difficult because, of course, examiners don't have the ability to test apparatus. We don't submit working models anymore to the Patent Office, so that is very difficult.

We also have doctrines like constructive reduction to practice. Simply filing a patent application is good enough to count as reducing the invention to practice, and prophetic examples that appear in lots of patent applications, particularly in the biopharma sector, where they describe experiments that are just hypothetical. Those hypothetical experiments that were never conducted are good enough to demonstrate reduction to practice.

I think changing some of those rules might actually help in grounding some of the issuances in inventions that are actually real and reduced to practice.

Senator COONS. Mr. Lester, if you might, and then Ms. Asay.

Mr. LESTER. Yes, very quickly, I'd like to add for example, in the *Eclipse* litigation, those claims were directed to sending signals to a bus or a taxi to see when it was going to arrive at your stop. All right? The claims were directed to a mobile thing. That is the situation where something was taken completely out of context and then asserted against thousands of people for selling things on the internet.

The application of 112 and reducing that to what is actually the invention in the application would go a long way to stopping these overly broad patents.

Senator COONS. Ms. Asay.

Ms. ASAY. Thank you. I would just reiterate what other witnesses have said about the importance of strengthening the examination process to improve the quality of issue patents. Thanks.

Senator COONS. Ms. Asay, a great deal has changed in patent law and its actual practice and application since you were litigating the issues with MPHJ Technologies and the infringement letters you were describing, now more than 5 years ago. Do you have a sense how prevalent the demand letter practice you were describing is today, 5 years later?

Ms. ASAY. I can say that when I was researching and trying to prepare for today, I did see that—and I don't have any personal knowledge of this, but I did see that the attorney general of Washington State has recently filed a consumer protection action addressing demands by a nonpracticing entity. Although I didn't pursue that further, it does look like there has been renewed interest from at least one State attorney general.

I do—I think in the time when we were litigating this, back in 2013 and 2014, this became an issue of consumer protection that registered for many attorneys general who were hearing from small businesses about the challenges of being a small business in the tech field and trying to develop a product and develop a company and dealing with patent infringement litigation.

I definitely encourage States attorneys general again, the National Association of Attorneys General, to perhaps again engage on this topic, because I know that they're often contacted—contacted when problems arise, and really have kind of a boots-on-the-ground understanding of what is going on.

Senator COONS. I would agree that I, too, heard a lot about this as a concern 7 and 8 years ago, and I think there have been significant changes and shifts in law and practice that have largely addressed it. I'll simply close—I know I'm over my time, Mr. Chairman, by saying that ending PTO fee diversion and making sure that we're investing in high quality patents and in examinations that are properly incentivized, properly structured, is the right way for us to move forward in a way that we can all support. Thank you.

Chair LEAHY. Thank you very much. Senator Blackburn.

Senator BLACKBURN. Thank you, Mr. Chairman, and thank you to our witnesses that are here in person and joining us virtually. I represent Tennessee, and as you probably are well aware, the auto industry is there. We have a lot of patent holders. In this, we have many individuals that have single patents. I think Ms. Asay, I want to come to you with this. Talk a little bit about the process that an examiner goes through when reviewing a single patent, and is that standardized, or are there noted outstanding issues and differences with the consistency of a patent quality? Because many of our people file and they have a single patent for a single process, especially when it comes to the auto industry.

Then my follow-up on that would be, how can the USPTO best streamline the review process so that it is more consistent and so that individuals that do these single patent filings have an idea of consistency through the process?

Ms. ASAY. Thank you, Senator. I'll be quite upfront that I'm not an expert in the patent examination process. When we heard about the concerns that arose in Vermont, we really came at this from a consumer protection standpoint and tried to understand what was happening and why these demands were being made and how

businesses could respond to them. I think, you know, what we kept hearings, over and over again, was the cost of patent litigation, how difficult it is, how expensive it would be, and the challenges that particularly small entities face on that end of it.

I certainly agree that improving patent quality at the outset is an important step in preventing the kinds of problems that we were seeing on the other side, after patents have issued and are being used by nonpracticing entities. I would defer to the other witnesses to——

Senator BLACKBURN. Okay.

Ms. ASAY [continuing]. Speak more to the examination process.

Senator BLACKBURN. Mr. Garceran.

Mr. GARCERAN. Yes, thank you. I would say we need to spend more resources into the USPTO because I think streamlining it would be difficult, whether it be for a single inventor or a big company that has multiple patents. I think it's—I think they're doing their best. I think that they're a little stretched for time. I think that one of the solutions would be increase resources to the USPTO so they can have better training, better standard training, so that everyone's operating kind of in a similar fashion, and there's not inconsistency between the examining force. I think that would go a long way.

Senator BLACKBURN. Okay. Mr. Contreras.

Professor CONTRERAS. Yes, thank you, Senator. I mean, one thing that I know that the PTO does, and I would encourage them to do to an even greater degree is offer fee discounts for small inventors and small businesses. When we talk about fees and fee diversion, I completely agree with the sentiments of Senator Coons and Senator Tillis that we should give the PTO the resources it needs, but I do think that large companies can bear much of that burden, and we don't need to burden small inventors with this.

That being said, I do think that we need to apply the same degree of scrutiny to inventions that are applied for by every applicant. It is the case that in some cases, patent assertion entities scoop up patents from small inventors with the promise of ready cash payment, so that they can then be——

Senator BLACKBURN. Patent controls. Yes.

Professor CONTRERAS. In less complimentary terms, yes. We've heard about some of the problems that that creates.

Senator BLACKBURN. Right, let me ask you this. Then, what about the two-tier system like Germany has, where you can get the petty patent, or the smaller patent, or the gold-plated patent? Talk a little bit about that and that impact.

Professor CONTRERAS. That's actually a really interesting idea, and a number of countries have this. Petty patents, utility models, they're called, where anybody can get it. In China, they do this, and, in fact, it's become de rigueur for college applications to the top Chinese universities that your child should have a few patents to put on their application to show just what a brilliant person they are.

Those have some value, and a lot of industries, I can see value if you're trying—if it's a relatively straightforward industry, a mechanical device. We've had important patent cases revolve around things like key chains and tennis shoe designs. Absolutely. There's

no need for the type of examination you would have for a drug or for a semiconductor device.

I think this is certainly something that we should look into.

Senator BLACKBURN. Thank you. Thank you, Mr. Chairman.

Chair LEAHY. Thank you very much, Senator Blackburn. Senator Hirono.

Senator HIRONO. Thank you, Mr. Chairman. Mr. Garceran and Mr. Lester, you both spoke about the need for the PTO to better enforce Section 112 in the examination process. Are there changes to the statute to Section 112 you think are necessary, or is it an issue of priority at the PTO as they do the application examinations?

Mr. GARCERAN. I would say, in my opinion, it's a matter of prioritizing at the USPTO and making sure that they're doing that. It may be that the USPTO, and maybe the judicial system, needs some more explicit guidelines because Section 112 was not very long. It's just a few words. There is a lot of common law out there to explain what that means, and I don't see there being any problem with that common law, it just needs to be used in the examination process early on at the USPTO.

Senator HIRONO. For example, some of the factors that they're supposed to review, whether it's a patentable subject matter, anticipation, obviousness. Those are areas that maybe are easier for the examiner to ascertain, and maybe you would suggest that they prioritize the written description or the enablement parts of Section 112?

Mr. GARCERAN. I think they can obviously do the prior art searching and things like that, and that's essential and needs to be done. You can look at a claim and if it's very broad in the way it's being applied, or there is—I think it just needs to be prioritized. I don't think it has to be done in every single case, but it needs to be done, especially when you're dealing with a very overly broad patent or something where it's clear that the whole scope of the patent may not be enabled here. I really need to push this issue if I'm an examiner.

Senator HIRONO. Is that the part that relates to the written description as being overly broad, or more attention should be paid to that aspect of a patent application?

Mr. GARCERAN. It would be—I think both written description and enablement——

Senator HIRONO. Okay.

Mr. GARCERAN [continuing]. Which they're very related——

Senator HIRONO. Yes.

Mr. GARCERAN [continuing]. But I think it would apply to both.

Senator HIRONO. What about you, Mr. Lester? Do you agree?

Mr. LESTER. I completely agree. I believe that the Patent Office has the capability and the foresight to be able to do it, I think it just needs to be part of their process to take a look at the application when it's filed, look at what is trying to be claimed, and then look at the specification and say, is this really supported? I think that's something that can be done. If we have a very good Director in the Patent Office, he can set the parameters for it, and this would be an easy thing to implement.

Senator HIRONO. Maybe more resources to the PTO, such as—I think we're all in agreement that we should end the PTO fee diversion. For both of you once again, too often, efforts to address claims of so-called bad patents weaken patent rights. Innovators who paid their application fees and prosecuted their patents often, over a period of years, now have to survive sometimes multiple challenges before the PTAB before they can try to enforce their patents against infringers.

I hear from many small inventors who are abandoning the patent system because getting a patent just isn't worth their time and investment. Both of your companies rely on patents to protect your investments and to prevent competitors from simply copying your respective technology. What have your experiences been with the PTAB?

Mr. GARCERAN. I would say initially, a lot of the IPRs that were filed, you would get multiple IPRs against your patents, and it was a tactic that's used and a tactic that can be used very effectively if you're a small inventor who does not have the resources to pay for such serial IPRs or reexaminations. However, more recently in the last few years, I think the PTAB has been very good about if an IPR has been filed, they won't institute on some follow-on IPRs because they, I guess, caught wind of this. I've seen, at least anecdotally, my understanding is that PTAB has put an end somewhat to that practice.

Senator HIRONO. Would you agree, Mr. Lester?

Mr. LESTER. We've had a significant amount of experience in the PTAB with interparty reexaminations, and I've found that PTAB is extremely good at reviewing patents and providing well thought out evaluations of the validity. Right now, of the IPRs that are being filed, I believe only 50 percent of them are actually initiated, which shows that they're taking a very good look at the patents and the prior art that's being cited to determine if this should be really going forward or not.

What I believe is happening is that when an entity files 300 litigations, they will end up with a lot of IPRs filed against them. When you have an entity that is filing one litigation and pursuing their claims against somebody that practices in that field, most likely they're going to end up with one IPR. If that patent is valid, it's going to survive the IPR. It might not even get initiated, and I think that's the way the system really is intended to work. I think there is an issue with the abuse of the IPR really when there's a lot of litigation going on.

Senator HIRONO. Thank you. Mr. Chairman, with your permission, I'd like to ask just one short question for Ms. Asay. Vermont passed the first State law against bad faith patent assertion in 2013, and you were with the attorney general's office, and you testified that you looked at these issues, these kind of litigation from a consumer protection standpoint, and I think that is very appropriate for the attorney general's office to focus on. Since then, more than 30 States have passed similar laws. What has been the impact of these laws been on stopping clear abuses of the patent system like MPHJ, Ms. Asay?

Ms. ASAY. I could not find any record that the Vermont law has been used yet, although it may have been and I just didn't find it.

I did do some research to try to see how these laws have played out, and it looks like they've been asserted occasionally. I believe one of the other witnesses mentioned that their company may have used the North Carolina statute successfully, so he may have something further to say.

In the research that I did, I didn't find a lot of evidence that the laws are being used that frequently and that the claims were surviving motion practice. As I said earlier, I do see that the State of Washington has recently filed a new lawsuit that does rely in part on a statute like that out in the State of Washington. Perhaps there will be some further litigation.

There have been questions raised about preemption of these statutes in a number of courts.

Senator HIRONO. When we were dealing with the issue of patent trolls and the hundreds, sometimes thousands of demand letters being sent to often small businesses who paid up, it seemed to me that it was really more a consumer protection issue, and that is why the Stronger Patents Act, a bill I've cosponsored in multiple Congresses include provisions that would similarly police bad faith patent assertion. Thank you, Mr. Chairman.

Chair LEAHY. Thank you very much. Senator Tillis, you said you have no further questions. We'll keep the record open for a week for questions from Members of the Committee.

I want to thank everybody who appeared personally and virtually. This is a complex subject, but it's one where, I think, we have some pretty common concerns, and I appreciate all of the advice we got here today. Thank you very much.

Also when you view your testimony, if any of the people who testified find that there was something they wanted to add to it, please do so, and we'll include that in the record.

Thank you. Senator Tillis.

Senator TILLIS. Just briefly, two things. I walked over to your staff before we started the hearing to thank them for the positive feedback I'm getting from my staff and working together on this. I consider this a journey. I'm not a patent attorney. I'm a management consultant. I think we have a problem, and it involves people, technology, and infrastructure. We welcome your feedback. Consider this a dialog, not just a once and done encounter and working with—I think I speak for the Chair in working with both of our offices on good ideas for legislation as it moves forward. Thank you, Mr. Chair.

Chair LEAHY. Thank you. Over the years, I've learned far more about patent law than I ever did in law school, or in practice, or from the days when I was a prosecutor. I've been—found very helpful some of the things that Ms. Asay has done in Vermont, but I found it very helpful the testimony from everybody here, so thank you very much. Maybe we should do a hearing in Durham and one in Montpelier.

[Laughter.]

Thank you. Thank you all. We stand in recess.

[Whereupon, at 3:59 p.m., the hearing was adjourned.]

[Additional material submitted for the record follows.]

A P P E N D I X

Miscellaneous submissions:

Senate Judiciary Subcommittee on Intellectual Property
June 22, 2021
Protecting Real Innovations by Improving Patent Quality
Testimony for Bridget Asay, Esq.

Good afternoon. My name is Bridget Asay and I'm an attorney practicing with the firm of Stris & Maher. Before joining Stris & Maher, I spent 18 years working for the Vermont Attorney General, and was appointed Vermont's first solicitor general. Thank you for the opportunity to testify today about a concrete example of the problems associated with low-quality patents.

In 2013, when I was working for then-Vermont Attorney General Bill Sorrell, our office received complaints from a number of small businesses, including two nonprofit agencies, that had received letters accusing them of patent infringement and referencing imminent litigation. One of these organizations operated on state and federal funding to bring home care to developmentally disabled Vermonters. Another provided fiscal agent services to Vermonters with disabilities to assist them with daily living tasks. We later learned that about 75 Vermont businesses and nonprofits had received these letters – and thousands more had been sent to businesses nationwide.

The infringement letters were sent under the names of a veritable alphabet soup of 40 different entities with names like BarMas, LLC; FanPar, LLC; HarNol, LLC, and JamVor, LLC. Regardless of name, the content was basically the same. A series of three escalating letters were sent to targeted businesses (although not all businesses received all three). The first letter listed four patents and a pending application, and said that the targeted businesses "likely" had infringing systems.

What were these patents and infringement claims about? Here's what the letter described as the basis for infringement: a typical office network, with a server, computers running Outlook, and a scanner that permitted scanning a document directly to an employee email address as a PDF attachment. Scanners with this functionality, as you'll recall, were common office equipment in 2013.

The targeted businesses were told that they should enter into a licensing agreement because they were "almost certainly" using a covered system. The letter suggested that "[m]any" businesses had obtained licenses. The "fair price" for a license, it said, was $1000 per employee – meaning easily $10,000 or more even for relatively small businesses.

Follow-up letters came from a law firm and threatened litigation. A number of the targeted businesses received a letter that included a copy of a legal complaint, and said that the company would sue if they did not receive a response within two weeks.

This didn't just happen in Vermont. These letters were sent to small businesses across the country. The FTC conducted an investigation and eventually filed a complaint against MPHJ Technologies, the owner of the patents. The FTC's complaint alleged that MPHJ's subsidiaries (the alphabet soup entities) contacted over 16,000 small businesses. Further, according to the

FTC, MPHJ's subsidiaries sent letters threatening suit, with draft complaints, to over 4800 businesses in all 50 states – sometimes sending out hundreds of those letters on the same day.[1]

These businesses weren't targeted because of any products they manufactured or sold. These were not software or tech companies. They didn't make scanners. And they weren't experienced in patent law. According to the FTC's complaint, MPHJ contacted companies with fewer than 100 employees in fields like building maintenance, lawn and garden services, and veterinary services.

Receiving a letter like this puts a small business in a very difficult position. They wouldn't know if the litigation threat was real. The amount of money demanded is significant – but probably a lot less than they would have to pay to defend a lawsuit. And patent law is a complex, specialized field. Lawyers that handle employment issues or real estate for small businesses don't give advice on patent infringement. Patent lawyers are expensive, and consulting with one might cost as much as paying for the license.

In May 2013, the Vermont Attorney General's Office filed a consumer protection lawsuit against MPHJ Technologies. As is typical in consumer enforcement cases, the AG filed suit in state court. The complaint alleged straightforward consumer protection claims: that the letters sent to Vermont businesses and nonprofits were deceptive and constituted an unfair trade practice. The AG did not contest the validity of MPHJ's patents – that's a matter of federal law. Rather, the AG's lawsuit alleged that the letters contained statements that were false, deceptive, and likely to mislead the recipients – including the threat of imminent litigation and representations about other businesses obtaining and paying for licenses.

I was the lead attorney in that litigation until I left the AG's office in late 2016. I'd like to briefly describe the history of that litigation,[2] because it highlights the point I made earlier: most businesses cannot take on the risk of litigation in this area. The AG's office had three attorneys working on the case, which lasted for four years. It was filed in state court, removed to federal court, remanded to state court, appealed to the Federal Circuit, which upheld the remand; removed a second time to federal court, remanded a second time, and appealed a second time to the Federal Circuit, which again upheld the remand. MPHJ also filed a separate lawsuit against the Attorney General in federal court. I was also originally named as a defendant in that case, but that claim was later dropped. The cases were settled in 2017. It took substantial resources to

[1] FTC documents may be reviewed here: https://www.ftc.gov/enforcement/cases-proceedings/142-3003/mphj-technology-investments-llc-matter.

[2] *See, e.g., Vermont v. MPHJ Tech. Invs., LLC*, 803 F.3d 635, 640 (Fed. Cir. 2015); *Vermont v. MPHJ Tech. Invs., LLC*, 763 F.3d 1350 (Fed. Cir. 2014); *MPHJ Tech. Invs., LLC v. Sorrell*, 108 F. Supp. 3d 231 (D. Vt. 2015).

pursue this litigation – indeed, it was a lot for our office, which was small by national standards. A small business could not sustain that kind of litigation – the cost would be ruinous.

As I mentioned, our litigation did not contest the patents, because that is not a consumer protection matter. There were, however, proceedings brought by large scanner companies like HP and Ricoh. I did some research preparing for today, looking specifically at the patent claims referenced in the letters. Of the five patents described there, I was able to find information about four – and for those four, none of the claims specifically referenced in the letters survived review.[3] But those legal proceedings continued at least until 2017—four years after Vermont businesses and nonprofits received these letters. It took HP, Xerox, and Ricoh to pursue those cases. A small nonprofit serving disabled Vermonters could never do that.

As Vermont's example shows, there are real costs when low-quality patents are issued. I hope the Committee will consider concrete actions to improve patent quality.

Thank you for the opportunity to testify today.

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[3] The typical first letter referenced claims 12 and 15 of the '381 Patent. Those claims, and all but one claim of the '381 Patent were later invalidated, as noted in *HP Inc. v. MPHJ Tech. Invs., LLC*, 817 F.3d 1339, 1341 (Fed. Cir. 2016). That letter also referenced claims 1-5 of the '426 patent, as "illustrative" claims. Those claims were held unpatentable. *Ricoh Americas Corp. & Xerox Corp. v. MPHJ Tech. Invs. LLC.*, No. IPR2013-00302, 2014 WL 6617696, at *1 (P.T.A.B. Nov. 19, 2014) ("For the reasons that follow, we determine that Petitioner has met its burden of proving, by a preponderance of the evidence, that claims 1-5 and 7-11 of the '426 Patent are unpatentable. Petitioner, however, has not demonstrated by a preponderance of the evidence that claim 6 of the '426 Patent is unpatentable."). The letter also referenced a pending patent application, which issued as the '173 patent in July 2013, after Vermont filed its lawsuit. All claims in the '173 patent were invalidated, as affirmed by the Federal Circuit. *See MPHJ Tech. Invs., LLC v. Ricoh Americas Corp.*, 847 F.3d 1363, 1364 (Fed. Cir. 2017). Finally, the letter referenced claims 1, 8, and 15 of the '410 patent. Those claims were held unpatentable in 2015. *Ricoh Americas Corp., Xerox Corp., & Lexmark Int'l, Inc. v. MPHJ Tech. Invs., LLC*, No. IPR2014-00539, 2015 WL 4932669, at *1 (P.T.A.B. Aug. 14, 2015) ("This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). We conclude for the reasons that follow that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4, 6-9, 11, 13-16, 18, 20-23, 25, 27, 28, 34, 35, 37, 39-42, 44, 46, and 47 of the '410 patent are unpatentable.").

U.S. SENATE COMMITTEE ON THE JUDICIARY
SUBCOMMITTEE ON INTELLECTUAL PROPERTY

Protecting Real Innovations by Improving Patent Quality

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Patent Reality Checks
Eliminating Patents On Fake, Impossible And Other Inoperative Inventions

Abstract

The recent assertion of patents originally held by Theranos, the defunct blood analysis company whose founders are under federal indictment for fraud, highlights the existence of patents that claim non-existent and inoperative inventions. While such patents may ultimately be subject to validity challenges in court, their issuance nevertheless has harmful effects on markets and innovation. I propose several modest administrative and legislative measures directed toward the elimination of patents on inoperative inventions including (1) increasing PTO efforts to detect potentially inoperable inventions, (2) heightening examination requirements, including a certification of enablement, for certain inventions, (3) enabling greater public input into the examination process, and (4) increasing penalties for fraudulent conduct before the PTO. In addition to addressing inoperative inventions, some of these reforms could help to alleviate broader enablement concerns that have been identified by scholars over the past decade. Given the serious consequences that these issues have on markets and innovation, such measures merit serious consideration by the PTO and Congress.

Mr. Chairman and distinguished members of the committee: thank you for the opportunity to testify before you today. My name is Jorge Contreras and I am a professor of law at the University of Utah with a secondary appointment in the Department of Human Genetics. In addition to my JD degree, I hold an undergraduate degree in electrical and computer engineering, and prior to entering academia I spent seventeen years practicing transactional intellectual property law at a major international law firm. As an academic, I have written extensively on issues surrounding intellectual property quality, transactions and licensing. As such, I am intimately familiar with the topic of today's hearings.

Introduction

On March 9, 2020, two days before the World Health Organization (WHO) declared COVID-19 to be a global pandemic, a little-known patent assertion entity (PAE) named Labrador Diagnostics sued BioFire, a medical device manufacturer that was about to release a diagnostic test for COVID-19.[1] Labrador alleged that BioFire and its French parent bioMérieux infringed two U.S. patents[2] that claimed various features of microfluidic testing devices. In addition to monetary damages, Labrador sought to enjoin the manufacture and sale of the infringing devices in the U.S.

It was bad enough that Labrador sued one of the first companies to develop a COVID-19 test just as the disease was taking hold in the United States.[3] But even more surprising was the

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[1] Labrador Diagnostics LLC v. BioFire Diagnostics, LLC, No. 1:20-cv-00348 (D. Del. filed Mar. 9, 2020). The suit also named as a defendant BioFire's French parent company, bioMérieux S.A. For additional discussion of the case see Jorge L. Contreras, *Patent Fakes – How Fraudulent Inventions Threaten Public Health, Innovation and the Economy*, BILL OF HEALTH (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3663477.

[2] U.S. Pat. Nos. 8,283,155 and 10,533,994.

[3] Press coverage of the lawsuit sparked a backlash that quickly persuaded Labrador's parent company, Fortress Investments, to end the lawsuit against BioFire and bioMérieux and to offer royalty-free licenses to anyone conducting COVID-19 testing. *See* Craig Clough, *Fortress Offers IP Rights to Fight COVID-19 After Backlash*,

source of the patents that Labrador asserted. They were two of more than one thousand patents originally assigned to Theranos,[4] the now defunct blood analysis company founded by Stanford dropout Elizabeth Holmes in 2003. Holmes, who left the company in 2018 after settling charges brought by the Securities and Exchange Commission (SEC),[5] is currently under federal indictment for multiple counts of criminal conspiracy and wire fraud.[6] Holmes is named as the lead inventor on both patents asserted by Labrador.

But as journalist John Carreyrou first reported in 2015,[7] Theranos never produced the blood testing devices that brought it to national prominence and enabled it to raise hundreds of millions of dollars from investors and business partners. If this is true, one might reasonably ask how a company that never developed its claimed technology, and went to great lengths to conceal its failures, could have obtained hundreds of patents protecting that technology. In other words, how could the U.S. Patent and Trademark Office (PTO) issue multiple patents for a technology that was, at a minimum, incomplete, and at worst, fraudulent?

LAW360 (Mar. 17, 2020, 5:14 PM EDT) https://www.law360.com/articles/1254102/fortress-offers-ip-rights-to-fight-covid-19-after-backlash.

[4] Richard Lloyd, *Theranos back to the fore with Fortress assertion campaign against diagnostics business*, Intell. Asset Mgt., Mar. 10, 2020, https://www.iam-media.com/litigation/theranos-back-the-fore-fortress-assertion-campaign-against-diagnostics-business

[5] Securities & Exch. Comm. (SEC), Press Release: Theranos, CEO Holmes, and Former President Balwani Charged With Massive Fraud, Mar. 14, 2018. In her settlement of the securities fraud charges brought by the SEC in March, 2018, Holmes agreed to pay a $500,000 penalty, be barred from serving as an officer or director of a public company for 10 years, and return a significant portion of the equity she received from Theranos. She did not, however, admit guilt to the charges.

[6] United States v. Holmes, Indictment (N.D. Cal., filed Jun. 14, 2018).

[7] See John Carreyrou, *Hot Startup Theranos Has Struggled With Its Blood-Test Technology*, WALL ST. J., Oct. 16, 2015. Carreyous's book BAD BLOOD: SECRETS AND LIES IN A SILICON VALLEY STARTUP (2018), and Alex Gibney's film THE INVENTOR: OUT FOR BLOOD IN SILICON VALLEY (HBO 2019) offer a compelling account of the sordid Theranos affair.

A. Three Flavors of Inoperative Invention

The Labrador litigation sheds light on a disturbing reality about patents: more than a few of them cover inventions that were never made, or at least never worked. These non-existent inventions are referred to as "inoperative",[8] and for lack of a better term, I call the patents that cover these inoperative inventions as "bad" (as in rotten, not evil) patents. I divide the world of inoperative inventions into three basic categories: Fakes, Fictions and Mistakes.

Fakes – some claimed inventions are simply fraudulent – their inventors know that they don't work, yet they seek patent protection anyway. Theranos is only one of numerous examples of this practice. Another involved the claim by the Korean research team led by Dr. Hwang Woo Suk that it had created a human embryonic stem cell line derived from a cloned human embryo. Shortly after publishing this stunning finding in the journal *Science*, it was revealed that Hwang had falsified key data.[9] Despite his conviction for fraud and embezzlement, Hwang's biotech company continued prosecution of patents on the cell line and succeeded in getting at least one U.S. patent issued.[10] And as recently as last week, STAT reported that the CEO of Athira Pharma was placed on leave for allegedly falsifying data in four scientific papers that formed the basis for the company's patents on treatments for Alzheimer's and other neurodegenerative diseases.[11]

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[8] *See* Manual of Patent Examining Procedure (MPEP), § 2107.01, Part II, "Wholly Inoperative Inventions; 'Incredible' Utility" (9th ed., Rev. 10.2019, last revised Jun. 2020).

[9] *See* Barry Fox, *Disgraced cloning pioneer could keep his patents*, NEW SCIENTIST, Jan. 18, 2006, https://www.newscientist.com/article/dn8601-disgraced-cloning-pioneer-could-keep-his-patents/.

[10] U.S. Pat. No. 8,647,872, Human Embryonic Stem Cell Line Prepared By Nuclear Transfer Of A Human Somatic Cell Into An Enucleated Human Oocyte (Issued Feb. 11, 2014). *See also* Andrew Pollack, *Disgraced Scientist Granted U.S. Patent for Work Found to be Fraudulent*, N.Y. Times, Feb. 14, 2014

[11] Olivia Goldhill, *Athira Pharma CEO placed on leave amid allegations of altered images in her research papers*, STAT, Jun. 17, 2021, https://www.statnews.com/2021/06/17/athira-pharma-ceo-placed-on-leave-amid-allegations-of-altered-images-in-research-papers/ (referencing U.S. Pat. No. 8,598,118 assigned to Washington State University and exclusively licensed to Athira).

Fictions – rather than perpetrating fraud, some inventors honestly, but incorrectly, believe that they have made an important new discovery. These applicants have claimed inventions from cold fusion and panacea cures to warp drive and flying saucers. But not all fictional inventions are so farfetched. As Professor Janet Freilich has recently observed, a full 17% of the experiments described in recent U.S. chemistry and biology patents were never performed.[12] Rather, they were made up to illustrate potential, hoped-for uses of a patented invention. Surprisingly, these so-called "prophetic examples" are perfectly legal and can help to establish additional protected uses of a patented invention, even if those uses do not in fact work.

Mistakes -- The problem of patents covering non-existent technologies does not end with applicants who are fraudulent or overly-creative. The PTO also receives a large number of applications from inventors who believe that they have made a legitimate discovery, only to find out later – sometimes after their patents have issued -- that they did not actually discover what they claimed, or anything at all. The problem arises, in part, from "gun jumping" – claiming a discovery before it is validated.[13] Of course, such mistakes occur in science as well. The difference is that in science, when a published finding is revealed to be incorrect or based on flawed or incomplete data,[14] the scientific paper making the claim can be retracted or

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[12] Janet Freilich, *Prophetic Patents*, 53 U.C. DAVIS L. REV. 663, 668 (2019). Over the past fifteen years, numerous scholars have criticized the practice of using prophetic examples in patent applications. *See id.* at 666-67 n. 10 (collecting literature).

[13] Numerous scholars have identified this problem. *See, e.g.*, Mark A. Lemley, *Ready for Patenting*, 96 B.U. L. REV. 1171 (2016) ("In an important class of cases—those in which the inventor has an idea but does not yet know if it will work—the patent system encourages the inventor to patent first and figure it out later, if at all"); Lisa L. Ouellette, *Pierson, Peer Review, and Patent Law*, 69 VANDERBILT L. REV. 1825, 1832 (2016) ("in practice, patents often are awarded too early"), Mark A. Lemley et al., *Life After Bilski*, 63 STAN. L. REV. 1315, 1330-31 (2011) (introducing "gun jumping" terminology), Christopher A. Cotropia, *The Folly of Early Filing in Patent Law*, 61 HASTINGS L.J. 65 (2009) ("The United States patent system is intentionally structured to encourage patent filing early in an invention's development.")

[14] Some retractions result from the uncovering of scientific fraud or other unethical practices – these fall under the category of "Fakes", discussed above. In the category of "Mistakes", I address retractions resulting from the discovery of experimental design flaws, lapses in data or other inadvertent, yet invalidating, occurrences.

corrected. The same is not true of patents, which, as Professor Freilich has observed, seem impervious to subsequent corrections of technical understanding.[15]

B. Why Bad Patents Matter

Why does any of this matter? Some have argued that no harm is done by patents on inoperative inventions. Commenting on one 2005 patent claiming an improbable antigravity-driven spacecraft, a senior PTO advisor opined that "It doesn't cause any problems because the patents are useless."[16] Similarly, one patent attorney said of Dr. Hwang's fraudulent stem cell technology, "Does it really matter if the man made up his results? Let him try and sell it."[17] The prevailing view, both at the PTO and the patent bar, seems to be that patents on non-existent and impossible inventions are mere curiosities: unfortunate but ultimately harmless.

But Labrador's suit against BioFire is stark evidence to the contrary. The following are examples of the very real harms that can flow from bad patents.

1. A bad patent can act as prior art preventing later inventors from getting a patent they deserve after actually developing the claimed technology.[18]
2. The holder of a bad patent can enforce the patent against others who are more successful at developing the technology (i.e., a bad patent isn't necessarily an unenforceable

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[15] Professor Freilich and Soomi Kim studied patents matched to disclosures in scientific papers, which are common in the biotechnology field. They report in a forthcoming article that retraction of the underlying paper had little or no effect on the examination, issuance or later citation of those patents, notwithstanding the withdrawal of the scientific claims underlying them. Janet Freilich & Soomi Kim, *Is the Patent System Sensitive to Information Quality?* (working paper, 2021). This phenomenon is well-illustrated by the case of Dr. Hwang, who continued to cite two retracted *Science* papers in his patent application, which was eventually granted.

[16] Philip Ball, *Antigravity craft slips past patent officers*, 438 NATURE 139 (2005) (quoting Alan Cohan, an adviser at the PTO Inventors Assistance Center).

[17] Fox, *supra* note 9 (quoting George Schlich, a patent attorney and counsel for Stem Cell Sciences).

[18] This outcome may have occurred with respect to one of Theranos's patents. *See* Freilich & Kim, *supra* note 15, at 1.

patent). Exacerbating this problem: an issued patent is presumed to be valid,[19] making it nontrivial to challenge when asserted.

3. Even if a bad patent can eventually be invalidated in court (and not all can), patent litigation is costly, especially for small and medium sized enterprises (SMEs). Some may prefer to settle infringement claims rather than incur the cost of litigation, leaving the bad patent on the books for assertion against others.[20]
4. The existence of bad patents can itself chill new research and innovation, thus reducing market entry, technology development and competition.

More than half a century ago, the Supreme Court recognized in *Lear v. Atkins* the threat that bad patents pose to the market and innovation and identified "the important public interest in permitting full and free competition in the use of ideas which are in reality a part of the public domain."[21] In short, bad patents allow unscrupulous actors to put fences around not-yet-invented technologies that should still be part of the public domain.

Just imagine what might have happened in the early twentieth century if the Patent Office had allowed German aviation pioneer Otto Lilienthal, French-born engineer Octave Chanute or Sir Hiram Maxim, the English inventor of the machine gun, to patent the idea of a fixed-wing piloted aircraft before Wilbur and Orville Wright had actually reduced this monumental

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[19] 35 U.S. Code § 282 ("A patent shall be presumed valid ... The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.")

[20] This preference is, in fact, the motivating business rationale behind many patent suits brought by PAEs. *See, e.g.*, Mark A. Lemley & A. Douglas Melamed, *Missing the Forest for the Trolls*, 113 COLUM. L. REV. 2117, 2126 (2013) ("a growing number of trolls are interested in quick, low-value settlements for a variety of patents. These plaintiffs do not want to go to trial and are thus not particularly interested in the quality of their patents or whether they are infringed. Rather, they rely on the high cost of patent litigation—a median of $5.5 million for substantial cases that go to trial, by one recent estimate—to induce the parties they sue to settle for small amounts of money rather than pay millions to their lawyers.")

[21] Lear v. Atkins, 395 U.S. 653 (1969).

achievement to practice?[22] Would the historic flight at Kitty Hawk have happened? Maybe not, and American technological progress might have suffered.

For all of these reasons, there is a strong societal interest in preventing patents on fraudulent, imaginary and non-existent inventions from being issued and released into the market.

C. Existing Methods to Address Inoperative Inventions

The threat of inoperative inventions is well-known, and several existing legal mechanisms have been used, with differing degrees of success, to prevent their patenting.

1. Inequitable Conduct. Every patent applicant has "a duty of candor and good faith in dealing with the [PTO], which includes a duty to disclose … all information known to that individual to be material to patentability."[23] The failure to comply with this duty of candor is referred to as inequitable conduct, and the PTO's rules provide that "no patent will be granted on an application in connection with which fraud on the [PTO] was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct."[24] While these rules are necessary, few cases of inequitable conduct are identified or pursued during

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[22] *See* DAVID MCCULLOUGH, THE WRIGHT BROTHERS 28, 32 (2015).

[23] 36 CFR § 1.56(a).

[24] 36 CFR § 1.56(a).

prosecution.[25] Such cases are difficult for examiners to identify,[26] and because prosecution is largely an *ex parte* proceeding, examiners are not aided by opposing parties with broad discovery powers. Even when potential inequitable conduct is identified during prosecution, most cases relate only to an applicant's failure to disclose prior art that could preempt some or all of its claims.

Cases of outright fraud involving the patenting of inoperative inventions appear to be much rarer.[27] And even when such cases emerge, the PTO appears to adopt a lenient approach that allows applicants to correct inaccurate or omitted statements without penalty.[28] For example, during the prosecution of an application claiming Dr. Hwang's discredited stem cell invention, the examiner noted that "a post-filing investigation … discovered that [the] applicant falsified data resulting from the claimed method," citing a news exposé titled "Disgraced Cloning Pioneer Could Keep His Patents".[29] Nevertheless, the examiner helpfully suggested that "A declaration filed under 35 U.S.C. § 1.132 attesting to data demonstrating … the claimed method

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[25] *See* 6A CHISUM ON PATENTS § 19.03[6][a] ("The question of fraud or inequitable conduct has been most commonly raised after a patent issues"). If a patent obtained through fraud is enforced, the infringer may raise inequitable conduct as an affirmative defense and, if successful, the patent will be held unenforceable. See Precision Instrument Mfg. Co. v. Automotive Maintenance Mach. Co., 324 U.S. 806 (1945) (patent obtained through fraud or inequitable conduct is not enforceable). In addition, an antitrust claim may be brought with respect to the attempted enforcement of a patent obtained through fraud. *See* Walker Process Equip., Inc. v. Food Mach. & Chem. Corp., 382 U.S. 172, 177 (1965) ("the enforcement of a patent procured by fraud on the Patent Office may be violative of § 2 of the Sherman Act provided the other elements necessary to a § 2 case are present.")

[26] This is among the many problems that arise from what Professor Freilich identifies as examiners' failure to "dig" adequately into the information that they obtain about an application. See Janet Freilich, *Ignoring Information Quality*, 89 FORDHAM L. REV. 2113 (2021).

[27] Judge Randall Rader notes the expansion of the inequitable conduct doctrine from one originally directed to cases of "egregious fraud, perjury, and extortion" to its more common use today as an overarching mechanism for "eliciting prior art from a patent applicant". Randall R. Rader, *Always at the Margin: Inequitable Conduct in Flux*, 59 AM. U. L. REV. 777, 781 (2010). Judge Rader's sentiments have been echoed by numerous commentators. *See, e.g.*, David O. Taylor, *Patent Fraud*, 83 TEMPLE L. REV. 49 (2010) (arguing that the doctrine of inequitable conduct should be reduced to one of patent fraud).

[28] *See* CHISUM, *supra* note 25, at § 19.03[6][a][iii] (Curing Inequitable Conduct).

[29] Office Action, Application/Control Number 13/316,199 at 5 (Oct. 3, 2012) (citing Fox, *supra* note 9).

may be sufficient to overcome the above rejection."[30] Not surprisingly, Hwang supplied the suggested declaration and his claims were allowed without further inquiry.

2. Utility. Section 101 of the Patent Act requires that an invention be "useful" in order to be patented, and longstanding judicial precedent has established that inoperative inventions are not useful.[31] However, as explained by the PTO, "Situations where an invention is found to be 'inoperative' and therefore lacking in utility are rare, and rejections maintained solely on this ground by a federal court even rarer." [32] In order to meet this standard, an invention must be "totally incapable of achieving a useful result"[33] and it is seldom applied outside of facially "incredible" claims to inventions such as perpetual motion machines.[34]

3. Enablement. The most frequently-cited mechanism for avoiding the issuance of bad patents is the so-called "enablement" requirement under Section 112 of the Patent Act.[35] It provides that each patent application must contain sufficient detail to enable one skilled in the art to practice the invention. It is (supposedly) not enough to say, "it would be nice to run a DNA test for hundreds of different pathogens using a single drop of blood – and that's my invention!" The inventor must actually inform the PTO, and the world, how to make the claimed invention. The theory is that if the specification adequately instructs others how to make the invention, then we can assume that the inventor was able to make it, and the invention is not inoperative.

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[30] *Id*. at 6.

[31] *See* MPEP, *supra* note 8, at § 2107.01, Part II (citing Newman v. Quigg, 877 F.2d 1575, 1581 (Fed. Cir. 1989); In re Harwood, 390 F.2d 985, 989 (CCPA 1968)).

[32] *See* MPEP, *supra* note 8, at § 2107.01, Part II.

[33] Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1571 (Fed. Cir. 1992).

[34] *See* MPEP, *supra* note 8, at § 2107.01, Part II. *See also* Cotropia, *supra* note 13, at 75-76.

[35] 35 U.S.C. § 112(a) ("The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.").

There are two general ways that patents fail to meet the enablement requirement: the invention was never successfully reduced to practice, or the specification fails to describe the invention in sufficient detail. The latter of these stems from deficient drafting, often for inventions that do, actually, work, at least under some circumstances. This type of failure is often referred to as a failure under the "written description" requirement of Section 112.[36] I will focus not on written description problems, but on what I view as the more serious enablement problem: inventions that were never actually reduced to practice by their inventors.

The enablement requirement and its failings have been the subject of significant scholarly criticism in recent years.[37] The root of the problem is that a patent application must merely describe the steps involved in making an invention, but need not show, or even aver, that the invention will work or achieve the expected results. And the patent examiner who evaluates the application need not perform any tests to verify what the applicant claims. Examiners must simply take the written description provided by the applicant at face value, judging only that it discloses the invention in enough detail that someone "skilled in the art" would be able to produce it without undue experimentation. But that is simply an assessment of the application's level of detail, not its scientific or technical merit.

It is reasonable not to require an applicant to have created every possible variant of its invention before obtaining a patent. Some later experimentation and fine-tuning is expected before a patented device is ready for the market. Yet we may have gone too far in the direction of leniency. Today, applicants can seek patents before they have actually reduced *any* version of their invention to practice, including through the use of prophetic examples – experiments that were never conducted.[38] In a bizarre twist of logic, the filing of a patent application itself is

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[36] *See* Ariad Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1336, 1351 (Fed. Cir. 2010).

[37] *See, e.g.*, Ouellette, *Peer Review*, *supra* note 13; Lemley, *Ready, supra* note 13; Sean Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621 (2010); Cotropia, *supra* note 13.

[38] *See, e.g.*, Freilich, *Prophetic Patents, supra* note 12.

viewed by the courts and the PTO as a "constructive" reduction of the invention to practice,[39] a doctrine that has attracted significant criticism.[40] As observed by Professor Mark Lemley, "An inventor is better off filing a patent application as early as possible, before—or perhaps instead of— building a prototype or testing the invention… As against the inventor who went straight to the patent office, those who seek to build and test their inventions are at a disadvantage".[41]

Is any of this the fault of the PTO or its examiners? Probably not. We can't reasonably expect patent examiners to do their own confirmatory experiments – most of them work under intense time pressure; they don't have laboratories, equipment or reagents at their disposal to verify every applicant's assertions, nor even the luxury to read much of the scientific literature in the field. So what can be done?

D. Patent Reality Checks

The problem of bad patents is a broad and varied one, but one thing that can help to address it is a greater focus at the patent examination stage on whether claimed inventions are real. To that end, I offer a few modest "reality checks" to help examiners more closely align patent allowances to technical realities, and to deter fraudulent behavior at the PTO.

1. *Increase Vigilance for Inoperable Inventions*

At the examination stage, the PTO should check inventor names against lists of retracted papers,[42] criminal indictments, securities investigations, disciplinary proceedings, scientific misconduct allegations and other forms of behavior that could give rise to questions about the

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[39] *See* Frazer v. Schlegel, 498 F. 3d 1283, 1288 (Fed. Cir. 2007) ("The filing of a patent application is a constructive reduction to practice of the invention disclosed therein.").

[40] *See, e.g.*, Seymore, *supra* note 37, at 628-30 (referring to constructive reduction to practice as a "legal fiction" and proposing alternatives); Cotropia, *supra* note 13, at 120 (proposing the abolition of the doctrine in favor of actual reduction to practice).

[41] Lemley, *Ready, supra* note 13, at 1178-79.

[42] Such lists are easily accessed via scientific watchdog sites such as retractionwatch.org.

assertions made in an application.[43] The PTO could also flag other questionable applications such as miracle cures, cold fusion and interstellar spacecraft.[44] Finally, as Professor Freilich has suggested, when examiners conduct an initial search concerning an application, they should seek information published both before and *after* the priority date of the application. Post-priority information may not be relevant for prior art purposes, but it could identify retracted papers as well as public allegations and controversy surrounding a particular invention.[45] An application flagged for any of these reasons could be subject to heightened examination (see below).[46]

2. ***Demonstrate Enablement***

If an application is flagged as potentially claiming an inoperative invention, an examiner should be able to request verification that the invention has actually been reduced to practice and adequately enabled. This verification could come in several forms. First, as several scholars have previously suggested, applicants could be required during prosecution to provide more information about the enablement of their inventions, either as a general rule or upon request of

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[43] See Contreras, *Patent Fakes*, *supra* note 1. Professor Freilich suggests that certain examiner searching tasks could be augmented with artificial intelligence. *See* Janet Freilich, *Ignoring Information Quality*, 89 FORDHAM L. REV. 2113, 2154-55 (2021).

[44] From 1994 to 2015 the PTO operated a "Sensitive Application Warning System" (SAWS) that flagged and delayed prosecution of unlikely inventions including panacea cures for conditions ranging from AIDS to baldness. It is unclear why this program was eliminated. *See* Joe Mullin, *USPTO ends "warning system" for outlandish patents*, ARS TECHNICA, Mar. 5, 2015, https://arstechnica.com/tech-policy/2015/03/uspto-ends-program-for-patents-that-could-create-unwanted-media-coverage/.

[45] *See* Freilich, *Information Quality, supra* note 43, at 2146-47.

[46] The PTO's reintroduction of an application monitoring system such as SAWS (see note 44, *supra*) could also have the benefit of triggering heightened review of enabled yet stupefyingly obvious inventions, such as the notorious dog toy shaped like a stick. U.S. Pat. No. 6,360,693, "Animal Toy" (Issued Mar. 26, 2002). *See* Jorge L. Contreras, *Silly Patents, Common Knowledge and the Elusive Prior Art of Everyday Life* (2015) (abstract available at https://law.depaul.edu/about/centers-and-institutes/center-for-intellectual-property-law-and-information-technology/programs/ip-scholars-conference/Documents/ipsc_2015/abstracts-papers-presentation/ContrerasJ_abstract.pdf).

the PTO.[47] Yet this approach may be of limited value when inventors are less than forthright, as might occur with respect to fraudulent inventions. Thus, a more effective approach may be to require an applicant to demonstrate the practice of its invention to a third party auditor or peer reviewer, or to convince the reviewer that reduction to practice is both feasible and likely.[48] Among the benefits of such a review and certification, in addition to preventing the issuance of bad patents, is the possibility of giving patents that have received a positive certification a *presumption of enablement* if their validity is later challenged under § 112.[49] This gives the applicant an incentive to seek such certification, assuming that its invention is real.

3. ***Involve the Public***

Over the years, commentators have observed that members of the public (academics, industrial researchers, software developers, etc.) are more likely to appreciate the technical challenges faced by a given invention than examiners. As such, numerous proposals have been made to enable members of the public to offer input to the PTO with respect to particular patent

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[47] See Freilich, *Information Quality, supra* note 43, at 2145 ("Instead of requiring examiners to further dig into the quality of evidence in patent applications, the system should ask applicants to provide additional support for their statements"), Lemley, *Ready, supra* note 13, at 1191 ("We could, for instance, impose a stricter test for disclosing the invention to the world on an inventor who cannot point to working examples—perhaps requiring her to explain the principles behind her invention if she cannot prove that it works in practice" (thanking Josh Sarnoff for this suggestion)), Seymore, *supra* note 37, at 642-43 ("the examiner should have the authority to request working examples"). Professor Seymore also notes the PTO's seldom-exercised authority to request a *physical* working model of an invention. Seymore, *supra* note 37, at 642 n. 103.

[48] Unlike others, this proposal would not require every applicant to reduce its invention to practice. *See* Cotropia, *supra* note 13, at 120 (proposal "requiring all applicants to actually reduce their invention to practice -- that is, actually implement the invention and observe that it works for its intended purpose-before receiving a patent"). *But see* Lemley, *Ready, supra* note 13, at 1188 ("In some fields, such as semiconductor manufacturing, designers may not be able to actually build and test their inventions without a great deal of time and money—money that inventors may not be able to pay.") Rather, it would only be imposed in situations in which the likelihood of a non-existent invention is high.

[49] For a discussion of a proposed annotation system, see Jorge L. Contreras, *Shepardizing Patents*, Patently-O, Jun. 16, 2021, https://patentlyo.com/patent/2021/06/contreras-shepardizing-patents.html.

applications.[50] Between 2007 and 2011, the PTO and New York Law School operated a pilot program called "Peer to Patent", which allowed "citizen-experts" to review selected patent applications (mostly relating to computing, software and business methods), to identify and rate prior art, and to offer other input to the examination process.[51]

And, since the effectiveness of the America Invents Act in 2012, Section § 122(e) of the Patent Act has permitted members of the public to submit to the PTO prior art pertaining to any patent application for six months after its publication,[52] and Section § 311 has permitted members of the public to bring an *inter partes* review (IPR) proceeding to challenge the novelty or nonobviousness of an issued patent within nine months of its issuance.[53]

Curiously, however, neither of these procedures allows challenges to the *enablement* of a patented invention.[54] Therefore, what is needed is an expansion of the pre-issuance submission procedure under 35 U.S.C. § 122(e) that permits members of the public to raise enablement concerns with the PTO throughout the prosecution of a patent application, without requiring the expense or formality of a full IPR proceeding.[55]

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[50] *See, e.g.*, Ouellette, *Peer Review*, *supra* note 13, at 1842 ("it is worth experimenting with a robust peer review system to solicit input from those of extraordinary skill in the field of an application"), Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 614-15 (1999) ("We need to design a system that better taps into patent validity information, much of which is in private hands.")

[51] *See* Naomi Allen et al., Peer to Patent: First Pilot Final Results (2012). *See also* Ouellette, *Peer Review, supra* note 13, at 1839-40 (describing program).

[52] 35 U.S.C. § 122(e).

[53] 35 U.S.C. § 311.

[54] These omissions have previously been pointed out, respectively, by Ouellette, *Peer Review*, *supra* note 13, at 1840-41, and Janet Freilich, *The Replicability Crisis in Patent Law*, 95 INDIANA L.J. 431, 475 (2020).

[55] Professor Ouellette proposes a more extensive peer review system for patent applications. Ouellette, *Peer Review*, *supra* note 13, at 1842-43. Professor Freilich has questioned the usefulness of expanding the scope of IPR proceedings because these proceedings do not give members of the public effective discovery mechanisms, as do litigation proceedings; though with targeted discovery, she agrees that such proceedings might be more useful. Freilich, *Information Quality, supra* note 43, at 2144. In addition, an early draft of the Endless Frontier Act, S.1260

4. ***Enhance Penalties for Fraud***

As noted in Part C.1, above, the principal penalties for inequitable conduct and fraud before the PTO are rejection of a patent application and unenforceability of an issued patent.[56] Claims under antitrust law and state fraud statutes may also be available. However, there is no explicit fraud remedy, either private or administrative, under the Patent Act.

In many cases, the remedy of patent unenforceability may be sufficient to deter an applicant from intentionally omitting relevant prior art references – the type of conduct most frequently challenged under the inequitable conduct doctrine.[57] However, merely rendering a patent unenforceable when it was procured through fraudulent means seems unduly lenient, particularly when compared to penalties for fraud in the context of other regulated industries.[58]

Accordingly, the penalties for fraud on the PTO should be expanded in the case of inoperative inventions (i.e., these procured through deception beyond the simple omission of prior art references) to include both criminal penalties and substantial fines.[59] Similar penalties, as well as civil punitive damages, should also be available against entities responsible for the post-

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(May 2021), would have expanded the grounds under which a person may initiate an *ex parte* reexamination under 35 U.S.C. § 302 to include "credible evidence that any claim was obtained through fraud." See Dennis Crouch, *Recordation Requirements and a Certificate of Unenforceability*, Patently-O, May 25, 2021, https://patentlyo.com/patent/2021/05/recordation-requirements-unenforceability.html#comments.

[56] *See* Part C.1, *supra*.

[57] Indeed, many observers view this remedy as excessive in the context of prior art omissions. *See, e.g.*, Aventis Pharma S.A. v. Amphastar Pharms., Inc., 525 F.3d 1334, 1349 (Fed. Cir. 2008) (Rader, J., dissenting) (referring to the unenforceability remedy as an "atomic bomb"); Christopher A. Cotropia, *Modernizing Patent Law's Inequitable Conduct Doctrine*, 24 BERKELEY TECH. L.J. 723, 725-26 (2009) (describing widespread concern with remedy).

[58] Penalties for securities fraud include prison sentences and fines of up to $5 million.

[59] *See* Taylor, *supra* note 27, at 89-90 (proposing awards of attorneys' fees against parties unable to prove allegations of inequitable conduct), Kyle R. Kroll, *Prosecuting Inequitable Conduct*, 102 MINN. L. REV. HEADNOTES 49 (2018) (proposing various mechanisms for criminal prosecution of patent inequitable conduct).

issuance enforcement of such patents.[60] Such enhanced penalties are likely to reduce the chance that applicants will seek patents on inoperative inventions and that they and their assignees (patent assertion entities, in particular) will seek to enforce them.

Conclusion

Patents are being issued for non-existent and inoperative inventions. While some of these patents may ultimately be subject to validity challenges, the issuance of such patents nevertheless has harmful effects on the market and innovation, as demonstrated by the ill-timed lawsuit against one of the first COVID-19 test vendors. Rather than waiting for these patents to be challenged in costly litigation, the PTO should exercise greater efforts to weed out bad patents before they are issued. Over the years, scholars have proposed various approaches to improving the utility and enablement doctrines under patent law. I join them with a few modest proposals specifically directed toward the elimination of patents on inoperative inventions, including (1) increasing PTO vigilance to detect potentially inoperable inventions, (2) heightening examination requirements, including a certification of enablement, for questionable inventions, (3) enabling greater public input into the examination process, and (4) increasing penalties for fraudulent conduct before the PTO. The first two proposals could be implemented through PTO administrative rulemaking, while the latter two would require modest adjustments to the Patent Act. In addition to addressing inoperative inventions, some of the above reforms could also help to alleviate the broader enablement concerns that have been identified by scholars over the past decade. Given the serious consequences that these issues have on markets and innovation, such measures are worth serious consideration by the PTO and Congress.

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[60] *See* Kenneth R. Spector, *Remedies for Fraud on the Patent Office*, 41 UNIV. CHI. L. REV. 775, 785-87 (1974).

Biographical Information

Jorge L. Contreras is a Presidential Scholar at the University of Utah, a Professor of Law at the University of Utah S.J. Quinney College of Law, and an Adjunct Professor in the Department of Human Genetics at the University of Utah School of Medicine. He also serves as a Senior Policy Fellow at the Program on Information Justice and Intellectual Property at American University Washington College of Law. Before entering academia, Professor Contreras was a partner at the international law firm Wilmer Cutler Pickering Hale and Dorr LLP, where he practiced transactional and IP law in Boston, London and Washington DC. His academic research focuses, among other things, on intellectual property, antitrust law, technical standards and science policy. He is the author or editor of eleven books and has published more than 100 scholarly articles and chapters. His forthcoming book *The Genome Defense: Inside the Epic Legal Battle to Determine Who Owns Your DNA*, tells the story of the landmark Supreme Court case *Association for Molecular Pathology v. Myriad Genetics*, which ended the practice of gene patenting in the United States. Professor Contreras currently serves as Chair of the Art Law Section of the American Association of Law Schools (AALS), Co-Chair of the Interdisciplinary Division of the American Bar Association's Section of Science & Technology Law, and a member of the American Antitrust Institute's Board of Advisors. He has previously served as Co-Chair of the National Conference of Lawyers and Scientists (NCLS), and a member of the National Academy of Sciences (NAS) Committee on IP Management in Standard-Setting Processes, the National Institutes of Health (NIH) Council of Councils, and the Advisory Councils of the National Human Genome Research Institute (NHGRI) and the National Center for Advancing Translational Sciences (NCATS). Professor Contreras was one of the founders of the Open COVID Pledge, an open framework for the contribution of intellectual property to the COVID-19 response. He is the recipient of numerous awards and honors, including the University of Utah's Distinguished Research Award (2020). He is an honors graduate of Harvard Law School (JD) and Rice University (BSEE, BA), and clerked for Chief Justice Thomas R. Phillips of the Texas Supreme Court.

Testimony of

Julio A. Garceran
Chief Intellectual Property Counsel
Cree, Inc.

Before the
U.S. Senate Committee on the Judiciary
Subcommittee on Intellectual Property

Hearing on

Protecting Real Innovations by Improving Patent Quality

June 22, 2021

I. Introduction

Good Afternoon. I would like to thank Chairman Leahy, Ranking Member Tillis and distinguished members of the Intellectual Property Subcommittee for the opportunity to present my views regarding patent quality.

My name is Julio Garceran. I am the Chief Intellectual Property Counsel for Cree, Inc. Cree is a publicly traded compound semiconductor company (NASDAQ:CREE) based in Durham, North Carolina with about 3500 employees and a patent portfolio of about 2150 worldwide patents. Cree was founded in 1987 as a start-up out of North Carolina State University. Cree was financially backed by friends and family along with the maxed out personal credit cards of its founders, and Cree's technology was backed by North Carolina State University patents.

Cree is an American success story, and patents were critical to that success. Throughout its history, Cree has been at the forefront of silicon carbide and gallium nitride materials and devices. Cree started the LED lighting revolution with the advent of the first commercial lighting class LED, and Cree is now leading the transition from traditional silicon to the more energy efficient and robust silicon carbide, which is critical to the country's global leadership in driving the rollout of high-growth technologies like electric vehicles (EVs) and 5G wireless infrastructure. Cree's patents also help position the United States in a place of leadership in such important technologies.

I have been at Cree for almost sixteen (16) years. When I started, Cree employed about 1350 employees and grew to over 6000 employees at its peak, with 3 distinct lines of business: LED Chips and Components; LED Lighting and Wolfspeed Compound Semiconductors. When I joined, Cree had a patent portfolio of about 270 issued U.S. patents which grew to almost 2500 issued US patents. In the last 3 years, we have sold off both the LED Chips and Components business and the LED Lighting business, allowing Cree to focus all of our attention on growing our Wolfspeed business. Cree will be changing the corporate name to Wolfspeed later this fall to reflect this new focus.

Unlike some influential companies that rely on other mechanisms to protect their technology, Cree relies heavily on patents to protect its innovations. Once Cree's products are sold in the marketplace, would-be competitors can obtain those products, reverse engineer them and indiscriminately copy the innovative structures and features in those products. Cree's patent portfolio is essential for preventing such behavior. Therefore, Cree, like other domestic manufacturers and innovators, needs a strong patent system to protect its innovations from those unwilling to commit the substantial resources that are required to stay at the forefront of technology. The United States needs a strong patent system to protect those willing to invest in innovation.

With my almost 30 years of intellectual property (IP) legal experience as an attorney at a large IP firm, a corporate counsel at a large multinational corporation to Chief IP Counsel at Cree, I have been involved in all aspects of patent practice and have found myself on both sides of the patent debate. I have managed Cree's substantial patent portfolio using high

quality patent counsel to procure the patents with inventions conceived by scientists at the very forefront of their field. In fact, the Institute of Electronics and Electrical Engineering (IEEE) periodically publishes a Patent Power Scorecard which ranks the patent portfolios of companies worldwide regardless of size. At one point, Cree's patent portfolio ranking in the IEEE Patent Power Scorecard was Top-10 in the world!

We have successfully enforced our patents to prevent the unauthorized use of our technology by competitors. We have done so by pursuing licensing discussions and filing patent infringement suits in the United States district courts and in the United States International Trade Commission (ITC). We have also had to defend ourselves against patents of low quality.

II. Why Are We Talking About Improving Patent Quality?

A. Low-Quality Patents Hurt Business

The high cost of patent litigation fuels a business model where "patent trolls" bring patent litigation, not to legitimately enforce a patent's technological scope, but to squeeze legal settlements from companies. This business model bets on companies preferring to settle patent disputes for significant amounts that are below patent litigation costs. Such a business model results in legitimate industries wasting significant resources to settle patent disputes involving low-quality patents. Smaller businesses are especially vulnerable to such practices because they cannot afford to divert resources to pay for low-quality patents.

The high cost of patent litigation also can create an incentive for low-quality patent owners to file patent litigation against smaller competitors, not to recoup compensation for the use of patented technology, but to burden the competitor with increased spending. These costs are better spent on more productive endeavors, like research and development, and can be very detrimental to a small business.

Cree has been involved in patent litigations and litigation threats involving patents of low quality as well as patents that are not of low quality, but the patent owner is unreasonably, and in some cases willfully, overreaching on the scope of the patent. In some cases, Cree has been able to ward off such lawsuits by threatening to seek attorney fees, damages or sanctions against the patent owner. Unfortunately, in other cases, Cree has had to spend millions of dollars in legal fees along with the hidden costs and distractions of litigation before a resolution is reached.

With increased patent quality, companies can at least make a rational business decision based on the technological merit of a patent, rather than being forced to pay settlement fees to avoid the exorbitant costs of patent litigation.

Increasing patent quality would hopefully lead Judges to more confidently and consistently entertain making early case dispositive rulings, such as early summary judgment motions coupled with early claim construction on a dispositive term. Disposing of baseless or at least unreasonable patent litigation early will reduce the specter of spending millions of dollars in costs and distractions before getting any certainty as to the outcome of the patent litigation.

Additionally, Judges may be more willing to grant a victorious party the award of legal fees or even sanctions, for example under 35 U.S.C. section 285 or F.R.C.P. Rule 11, against a patent owner (or their attorneys) who knew or should have known that their claims were unreasonable or baseless. High-quality patents should enable patent owners or presiding Judges to more clearly understand the merits of the patent litigation and enable Judges to confidently identify and more consistently punish egregious behavior, thereby deterring unreasonable or baseless patent litigation.

B. Low Quality Patents Create an Uncertain Business Environment

With increased patent quality, companies or investors can confidently make rational business decisions based on the merits of a patent. Patent quality adds certainty surrounding the validity and legitimate technological scope of the patent. The small business can intelligently decide whether to continue litigating because they are confident in the outcome. An investor or venture capitalist can be more confident in investing money in a new venture that owns or licenses high quality patents because the validity and scope of those patents is clear.

When the Cree founders were trying to raise money after the friends and family network dried up, the Cree licenses to the North Carolina State University patents were critical. Angel investors and venture capitalists want to know that the company is backstopped by high quality patents to protect the company's innovations.

I applaud the efforts of this Subcommittee for seeking ways to improve patent quality and inherently strengthen the patent system. However, before I move on to some specific suggestions on how to improve patent quality, I caution against efforts to improve patent quality being used to weaken the patent system by making it more difficult to obtain a patent or forcing inventors to overly narrow their patent scope. Increased patent quality should mean producing valid patents with a scope that clearly defines their broadest inventive contribution to society.

III. Ways to Improve Patent Quality

In my view, there are various practical steps that can be taken to increase patent quality.

1. Keep USPTO Revenues in the USPTO

Diverted USPTO revenues could fund improvements to the Examining force and the infrastructure of the USPTO. The USPTO serves the highly valuable function of protecting and thereby incentivizing innovation. It needs to at least retain its revenues to make sure it can operate in the world-class manner that the cutting-edge innovators of our country deserve. These funds can be used to:

a. Attract the brightest and best technical minds to be patent examiners with more competitive salaries and incentives, enabling increased hiring requirements
b. Fund headhunting and recruiting events for potential examiners, especially those currently in industry
c. Improve and standardize training materials and update these materials more frequently, e.g. after important PTAB or judicial decisions

d. Improve technical training
e. Improve searching tools
f. Improve infrastructure.

2. Increase use of 35 U.S.C section 112 in Examining Patents

The outcome of a patent litigation typically hinges on the meaning of a single or handful of claim terms. In some instances, the meaning of a claim term is simply ambiguous or indefinite, and the patent owner will argue for an interpretation that supports infringement but avoids the prior art.

In other instances, the meaning of a claim term is relatively clear, but the low- quality patent specification does not support a broad meaning of the claim term. The uncertainty surrounding the proper scope of the claim occurs because the low-quality patent owner is typically arguing for a broader claim interpretation; however, the inventor either 1) did not actually contemplate the invention for which the patent owner is now advocating, or 2) the patent specification does not enable someone of skill in the art to practice the broader scope being sought.

35 U.S.C. Section 112 provides that the patent specification shall contain a written description of the invention … in such full, clear, concise, and exact terms as to enable any person skilled in the art … to make and use the [invention].” Section 112 is supposed to ensure that claim terms are clearly defined, reflect the invention actually possessed by the inventor and are enabled by the patent specification. However, section 112 rejections are generally considered “non-substantive” and are not pushed during patent prosecution. As a result, these issues don’t get resolved until trial (when the patent has a presumption of validity on an issue that was not substantively examined), when the outcome is uncertain and after millions of dollars in legal fees and years of uncertainty and distraction. By dealing with some of these issues during the patent examination process, much of this waste and inefficiency may be avoided. Accordingly, some changes that could be implemented include the following.

a. Current 112 standards for enablement and written description should be more heavily enforced pre-grant, thereby encouraging more detailed disclosures at filing and clearly setting out the scope of the claims before the patent issues.
b. Patentees should be required by the patent examiner to use the "full, clear, concise, and exact terms" in their claims consistent with the patent specification, and as patent prosecution evolves, the examiner should require the patentee to resolve any ambiguity, consistent with the patent specification, that arises with the claim terms being relied upon for patentability.
c. In fact, we should consider requiring definitions of important claim terms, e.g. glossary of terms, in the patent specification and/or during prosecution.
d. In Office Actions or Reasons for Allowance, the examiners should provide their interpretation of important claim terms or clarify the patentable subject matter, not just a recitation of the entire claim, and the patentee should be given an opportunity to respond.

I believe that ensuring that patent examiners more rigorously enforce section 112 standards by requiring more clear definitions and clarifying the scope of those terms will result in higher quality patents. When the scope of patents is clear, businesses can make sound and more efficient business decisions. If the decision is to defend against a high-quality patent in litigation, then the litigation process should also be more efficient because judges should feel more comfortable in resolving dispositive issues early in the process and punishing those who bring baseless or unreasonable litigation.

3. Adjust Examiner Incentives/Programs

The responsibility for improving patent quality will fall on the patent owners to write more robust patent applications and on the patent examiners to implement the standards that lead to improved patent quality. Examiner incentives need to be adjusted to make quality a priority. The current count-based system appears to encourage quantity over quality. If patent examiners are incentivized to produce high quality patents, then the result will be more high-quality patents. The following are certain actions that can be taken to improve patent quality.

a. Quality metrics should be established, e.g., metrics promoting use of section 112 rejections and providing clear interpretation of claim terms.
b. Supervisor patent examiners (SPE) and Primary Examiners (PE) should have quality-based metrics, including incentives for examiner training, mentoring and feedback gathering.
c. Examiner interviews should be encouraged and made easier to initiate from either side as an efficient way to prosecute patents. However, interview summaries need to clearly document the interpretation of important claim terms, patentable subject matter and arguments for patentability.
d. Training/cooperation with other searching authorities, e.g., EP, WPO, JP, KR
e. Increased technical training opportunities with industry
f. Decrease the time required to obtain an issued patent. This will likely require more investment in the PTO, but a goal of 1-2 years for the time from filing should be the goal. The fact that it can sometimes take 4-5 years seems unreasonable.
g. Examiner Review/Feedback mechanism
    1. Supervision and review of Examiners within the Examining Corps is inconsistent and poorly understood by applicants and patent counsel. The USPTO should articulate more clearly how Examiners are reviewed and provide clear internal and external feedback procedures and accountability.
    2. Examiner general performance (allowance rate, feedback from patent bar, PTAB decisions, pre-appeal decisions, judicial decisions, etc.) should be tied to advancement/compensation.
h. Incentive for successful Pre-Appeal Brief Request for Review process (which rarely results in change of rejection). After a final rejection, an applicant can abandon the application, file a request for continued examination (RCE) or appeal the rejection. To avoid the extra cost and time associated with a full appeal, the applicant can request for a pre-appeal brief review. The request only requires up to five pages of argument but no amendments. After the request is filed, the examiner and two conferees review the arguments and decide whether to allow the application, reopen prosecution or to proceed with a full appeal. The pre-appeal program allows the

applicant to avoid the full appeal process which has higher office fees, attorney fees and long delays. While a great tool for improved efficiency in principle, the program does not seem to be utilized successfully with any frequency.

i. Incentive for successful After Final Consideration Program (which again is a good concept that is not consistently implemented). The After Final Consideration Program was introduced to again improve efficient patent prosecution through increased collaboration between the examiner and the applicant. In response to a final rejection, the applicant files a request for consideration under the program with an amendment to at least one independent claim that does not broaden the scope of the claim in any aspect. If the examiner's review does not result in an allowance of all the claims, then the examiner is to request an interview with the applicant. This program has led to some improvement in patent allowance efficiency, but it should be used more to increase patent prosecution efficiency, including increased quality.

j. Reduced incentive for Examiners to provoke stream of requests for continued examination (RCEs) - anecdotally, I have heard that Examiners have seemed to reduce the numbers of RCEs filed due to changes in incentives.

IV. Conclusion

Patent quality brings clarity to a patent's scope which should equate to the inventor's inventive contribution to society. Patent owners should be rewarded for their time, effort and investment in obtaining patented technology. Efforts to improve patent quality should not weaken the patent system or result in overly narrow patents. However, American businesses are being hurt by the significant costs and uncertainty caused by patents of dubious quality. Instead of continuing to waste the resources of our nation's industries on low quality patents, we need to implement ways to improve patent quality on the front end.

Thank you.

PROTECTING INNOVATION BY IMPROVING PATENT QUALITY

Troy R. Lester

Thank you Chairman Leahy, Ranking Member Tillis, and members of the Intellectual Property Subcommittee for allowing me to discuss the importance of improving the quality of patents. Patent law is extremely important to our economy, and I am grateful for this opportunity to evaluate the intellectual property ecosystem. We need to ensure that patents foster innovation, and not, in contrast, create inefficiencies and significant transaction costs.

I am providing my testimony on behalf of my employer, Acushnet Company, where I have been for over 20 years, and where I am the Vice President Patents. Acushnet Company makes Titleist and FootJoy golf equipment. The company's culture is rooted in golf principles: integrity of the game, constant improvement in our products, and a commitment to good relationships. With less than $2 billion in annual revenue, we are a company that is neither large nor small. However, we have three golf ball manufacturing plants in Massachusetts, and are, by far, the largest employer in our area. We also have a manufacturing and assembly plant in Carlsbad, CA. In total, we employ about 2300 associates in the United States. Over the last 20 years, Acushnet has received more patents than any other sporting goods company, totaling approximately 2700 golf equipment patents in the United States over that time. We clearly understand the value in possessing good patents and appreciate the patent system. During that same period, however, we also have been subjected to claims based on what, in my view, are very bad patents and have had to navigate around bad patents. The company and I have seen both ends of the patent spectrum.

Acushnet Company has manufactured golf balls in the United States since 1935. Titleist golf balls have been the most played ball at the U.S. Open since 1949. We are extremely proud to manufacture in the United States and doing so allows us to control our manufacturing processes for continuous improvements. However, as discussed below, manufacturing in the United States also subjects us to litigation over bad patents.

The purpose of my testimony is to review two over-arching principles: (1) that bad, overly broad patents, are harmful to U.S. manufacturing companies like Acushnet, and (2) that high quality patents achieve their intended purpose of fostering and protecting innovation. Simply stated, bad patents have a substantially greater effect on manufacturers than the technology industry or pharmaceutical industry. Poor quality patents disincentivize U.S. manufacturing and strain good paying manufacturing jobs.

In that context, I will discuss some potential procedural changes that likely would improve the quality of issued patents to help achieve the essential goals of patent protection without creating unintended economic inefficiencies.

The patent laws allow companies large and small to invest in research and development by protecting the novel ideas that result from that investment, which can improve every aspect of our lives. The patent laws provide the incentive for pharmaceutical and medical device companies to spend significant amounts of their resources towards making better medical drugs and devices to help people

live longer and more fruitful lives. It similarly allows manufacturing companies, like Acushnet, to invest in making everyday products better, so that consumers can enjoy them more.

More particularly, patents foster innovation through the quid pro quo system. In exchange for a full disclosure of new technology, a patentee is granted the right to exclude others from utilizing the technology for a period of time. The logic is that patents disclose and teach new innovations. They provide a roadmap from which others can learn, which in turn results in new and better improvements and innovations. While the patentee can exclude others from using a claimed invention, the patent itself also provides an opportunity for others to innovate, thus sparking competition and continuous improvement.

However, because patents provide the right to exclude and a vast majority of patents are never actually used by the patentee, substantial roadblocks to innovation also can result. In those instances, a patent may stop the widespread use of an idea that benefits the population. That phenomenon is most problematic where bad, overly broad patents that claim beyond what was invented, have been allowed. These patents do not claim a new technology or claim a result without teaching how to achieve the result, and thus, they do not teach anything to people in the field. Worse, these patents are often used by non-practicing entities to extort payments from manufacturing companies, which can either stifle manufacturing improvements or add significantly to the cost of doing business.

In 2013, then Chief Judge Randall Rader of the U.S. Court of Appeals for the Federal Circuit, gave a speech in Plano Texas about Patent Law and Litigation Abuse.[1] He noted that our nation was experiencing a "CRISIS OF CONFIDENCE" in our patent system.[2] In explaining the situation, Chief Judge Rader stressed that litigation abuse is to blame for our problems, not the patent system itself. He recognized that there were litigants who assert overly broad patents against many companies that often do not even practice the intended technology. In many instances, the patents were being asserted against smaller companies with limited means, and the patent owners demanded a "license fee" that was far less than the expense of litigation defense. The defendants were faced with a Hobson's choice – litigate and be vindicated after spending significant resources or pay the extortion fee to avoid the costs of litigation.

Acushnet has seen its fair share of "non-related" patent cases involving bad patents. In June of 2013, Acushnet was sued by the non-practicing entity Eclipse IP LLC in the Eastern District of Texas for allegedly infringing U.S. Patent Nos. 7,876,239 and 7,119,716. Eclipse alleged that Acushnet infringed the '239 patent by "enabling customers to provide and/or select, authentication information regarding online orders, storing the authentication information, and providing the authentication in notification communications."[3] The complaint also alleged that Acushnet infringed the '716 patent by "storing customers' contact data in memory and providing notification communications to the customers which enabled them to change the contact data."[4] In reality, Eclipse ordered a golf club from one of Acushnet's websites and alleged that the website stored their shipping address and provided access for them to change their shipping address. Through this interaction with Acushnet, Eclipse claimed that its patents were infringed.

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[1] Chief Judge Rader, PATENT LAW AND LITIGATION ABUSE, Nov. 1, 2013 (https://mcsmith.blogs.com/files/rader-2013-ed-tex-bb-speech.pdf).
[2] *Id.* at 2.
[3] Eclipse LLC v. Acushnet Company, Complaint, E.D. Tex. (2013).
[4] *Id.*

Innovatio IP Ventures LLC was another entity that reached out to many companies and alleged infringement through the use of Wi-Fi. Innovatio alleged that Acushnet had three manufacturing plants in Massachusetts and that those manufacturing plants must have Wi-Fi. Therefore, it alleged, Acushnet infringed its approximately 20 patents.

Similarly, Helferich stated that Acushnet infringed its patents by sending tweets to Titleist followers. Acushnet was offered a license of $15/1000 tweets. Thus, a tweet to 1,000,000 followers would cost about $15,000. Helferich's demand letter materials included a list of approximately 150 licensees.

Obviously, these types of patent cases have nothing to do with Acushnet's core business of making the best golf equipment that we can. More importantly though, these cases are a distraction and require significant resources to resolve. Thus, these types of patent assertions take resources that could otherwise be better allocated towards research and development, improving manufacturing facilities, or employee bases.

This issue is not just an Acushnet problem. Last year, 1563 patent litigations were filed against U.S. manufacturing companies.[5] In the first quarter of 2021, 507 patent litigations were filed against U.S. manufacturing companies, which represents about 52% of all patent litigations.[6] Litigation against manufacturing companies is not trivial. For example, Landmark Technology was recently sued by the state of Washington, which alleged that Landmark had improperly sent over 1,800 letters to various companies demanding $65,000 for a license.[7] Although the Landmark patent is directed toward loan processing, the demand letters target log-in pages on company websites.[8]

Acushnet has also faced litigation involving poor quality patents that are golf related. Acushnet litigated accusations of infringement from Nassau Precision in the Eastern District of New York.[9] During oral argument on appeal, Judge Michel, referring to the asserted patent, asked, "So it's a product claim written in method language that doesn't even require the performance of a method. What kind of claim is that?" The Plaintiff's counsel noted that he did not draft the patent claims. Even though this dispute was resolved on summary judgment, the case took two years to litigate and cost Acushnet approximately $2,000,000. That is a significant proportion of our research and development budget.

Another example of a poor-quality patent litigation was finally resolved in February of this year. Nike received a Federal Circuit decision upholding the district court's summary judgement decision that a golf club patent was invalid.[10] The case was filed in 2008. Thus, the case took almost 13 years to be resolved. To add salt to the injury, Nike stopped making and selling golf clubs in 2016.

Litigation abuse, as Chief Judge Rader called it, certainly hurts U.S. manufacturers. Companies that manufacture and sell products are clearly the targets for many entities that want to sue and settle for less than the cost of litigation. These entities take resources that cannot be invested in innovation and

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[5] RPX Insight (https://insight.rpxcorp.com).
[6] *Id.*
[7] https://www.mondaq.com/unitedstates/patent/1079176/washington-state-sues-the-new-landmark-technology-over-predatory-patent-troll39-practices-targeting-small-businesses?type=related
[8] *Id.*
[9] Nassau Precision Casting Co. v. Acushnet Company, Inc., No. 10-4226 (E.D.N.Y.).
[10] Saso Golf, Inc. v. Nike, Inc., No. 20-1456 (Fed. Cir. Feb. 10, 2021).

job creation. Smaller companies are often forced to capitulate or cease to exist. While this practice is particularly detrimental to U.S. manufacturers, the issue only addresses half of the problems of overly broad patents.

What Chief Judge Rader missed is that bad patents often stifle innovation without ever being asserted because they create barriers for companies to create products. Companies like Acushnet often avoid implementing technology in the presence of a weak patent because we know that juries can be completely unpredictable when faced with a claim of invalidity. For example, the most expensive and protracted litigation Acushnet faced involved the very successful Pro V1 golf balls. Acushnet was sued for infringement of four patents that were found to be invalid by a jury in the District of Delaware[11] and by the USPTO in Inter Partes Reexaminations.[12] However, during a mock trial, Acushnet observed a mock jury deliberate the point that they wanted to give the plaintiff the damages they were requesting because the jury was unable to give the money to the prior art inventor. The mock jury recognized that the claimed invention had been disclosed by someone else, but they were befuddled about what to do when they could not give the damages to the inventor of the prior art. Companies are well aware of this type of jury confusion, and thus, simply avoid many technologies and innovations even though it is highly likely that the patent claims are invalid. It is often substantially easier and less expensive to avoid a technology altogether than to prove patent claim invalidity to a jury.

On the other hand, Acushnet has experienced the benefits of valid patents. During a freedom-to-operate search, Acushnet found a patent assigned to an individual, Larry Miller, that covered the technology of interest. Acushnet reached out to the inventor and was able to license Patent No. 5,676,603. Similarly, Acushnet purchased U.S. Patent No. 5,730,662 from another individual, Peter Rens.

Recently, Acushnet was involved in a litigation with Costco when they sourced a golf ball from Asia. Acushnet asserted 11 patents and Costco stopped selling the golf ball in question. Costco's replacement ball utilized older technology and was not as well received by the golfing community. These are examples of how the patent system should and does work when valid patents are involved.

Acushnet believes strongly in the patent system. We believe that valid patents are important to economic growth in our country, but that invalid, overly broad patents, are extremely detrimental and dangerous for U.S. manufacturing companies. The patent office issued almost 770,000 patents in the 1980s, compared to almost 3,140,000 in the 2010s, *i.e.*, over four times as many patents. It is inevitable that there will be bad patents with such significant growth, and no system can eliminate all bad patents. However, there are several recommendations that I would like to propose for improving the patent system and reducing the number of overly broad patents.

As a starting point, I would recommend that resources be set aside for additional examiner review. An additional examiner within the art unit that has extensive experience with the art can review each case with the assigned examiner prior to an initial search for prior art and continue to review the case during prosecution. Approximately 10 years ago, the Patent Office was faced with a significant backlog of applications. In response, the Patent Office expanded and hired significantly more examiners. However, that came with increased pressure on the examiners to increase the number of cases being

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[11] Callaway Golf Company v. Acushnet Company, No. 06-91, verdict (D. Del. March 29, 2010).
[12] Inter Partes Reexam Control Nos. 95/000,120; 95/000,121; 95/000,122 and 95/000,123.

examined, and training of new examiners decreased from six months to six weeks. As a result, that increase in staff resulted in an increase in quantity but did not result in an improvement in quality.

It is my opinion that the examining process also could be significantly improved by spending more time at the outset of the case determining what the invention is directed to, and thereafter, setting better search parameters for prior art. That would, in my view, result in more pertinent prior art being located. Too often, patents issue with significantly better, more pertinent prior art not being located by the examiner. I am aware that there are many instances when the best prior art is only available through industry publications and is not available to the Patent Office, but when the Patent Office has the best available prior art, it is disappointing when the examiner misses it.

More importantly, I believe that improvements to 35 U.S.C. §112 are imperative. §112 states that the patent shall have claims "particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention."[13] The law should require the patent office to make applicants use specific language in their specifications to better define and describe the claimed invention. For example, the Eclipse patents claimed communications involving a "mobile thing."[14] While the patents were intended to cover communications relating to the arrival of a bus or taxi, Eclipse alleged that a golf club in our warehouse was a "mobile thing." Thus, the language in the claim could refer to anything that is moveable.

Similarly, §112 should prevent applicants from claiming basic properties that result from their experimentation. For example, Acushnet was involved in a litigation involving U.S. Patent No. 6,348,015, where the claim was directed to the frequency of a club face being in the range of 2800-4500 Hz.[15] In this case, the inventor had invented a new golf club that had the claimed frequency property, but the claims were not directed to the club construction itself. Every golf club has a natural frequency, and during litigation, it was discovered that the inventor identified the desired frequency range by testing prior art clubs in the claimed range. The inventor was trying to identify a different way to simulate the performance of the prior art clubs. However, the asserted claim was void of any actual construction and material limitations and the claim could have been rejected in the Patent Office for failing to distinctly claim the invented subject matter under §112.

Yet another problem that leads to claims that are not directed to the inventor's invention is the abuse of the continuation practice. This practice allows patent applicants to leave open a case with the patent office, even after claims have been allowed, so that more related claims can be filed later. The *Hyatt v. Hirshfeld*[16] case is an extreme example of the abuse of this practice. That applicant has 1,592 claims still pending in four applications dating back to 1970s and 1980s.[17] However, continuation abuse happens all the time, and much less dramatically. Horstemeyer, the inventor and patent attorney for the Eclipse patents, received multiple patents in 2015 that dated back to 2003, even after some of the earlier patents were invalidated in the Central District of California in 2014.

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[13] 35 U.S.C. §112 (b)
[14] Patent No. 7,119,716.
[15] A golf club head comprising: a body; a striking plate connected to the body, the striking plate composed of a first material, and having a natural frequency of less than 4500 Hz and greater than 2800 Hz.
[16] Hyatt v. Hirshfeld, No. 18-2390 (Fed. Cir. June 1, 2021).
[17] *Id.*, at 5.

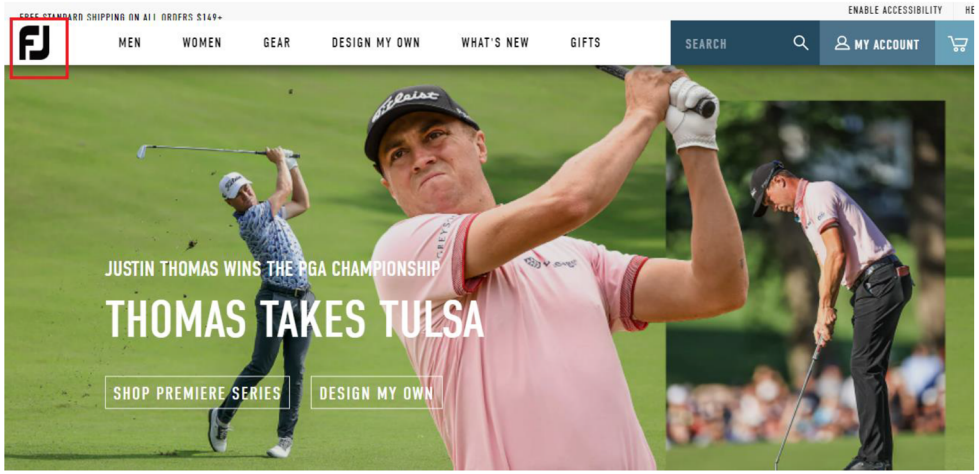
In other examples, U.S. Patent Application 14/498,603, GOLF CLUB HEADS AND METHODS TO MANUFACTURE GOLF CLUB HEADS, has 99 priority claims and U.S. Patent Application No. 14/615,505, GOLF CLUB HEADS AND METHODS TO MANUFACTURE GOLF CLUB HEADS, has 128 priority claims.

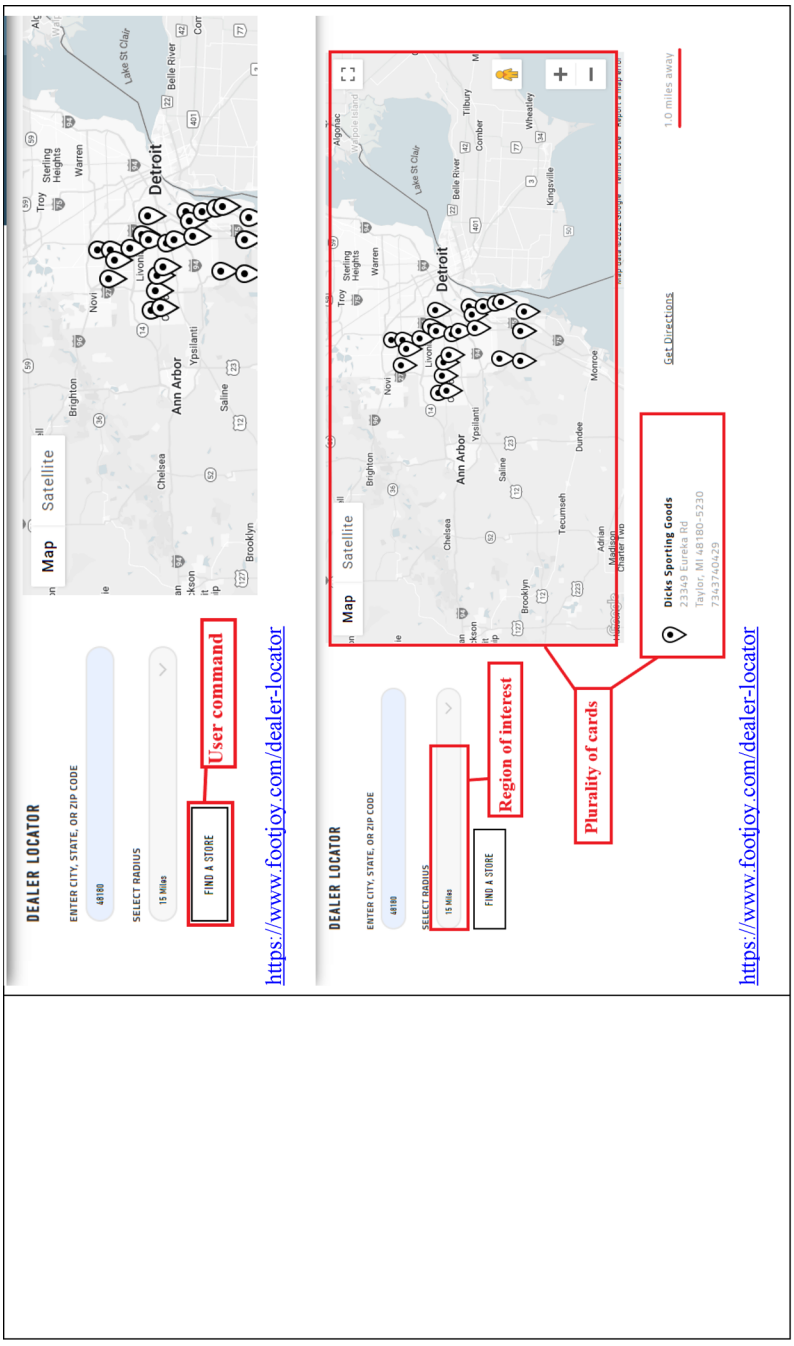
The fundamental problem with continuations is that, after an original application is filed, the inventor is often not involved with the continuing prosecution. Thus, the claims can be manipulated into any invention the patent attorney can conjure up from the application. For example, Hyatt argued that his applications were not being unduly delayed because he delayed only seven to 11 years to file the four applications at issue and between 10 and 19 years before presenting the pending claims.[18] Thus, after about 20 years, Hyatt proposed entirely new claims to keep the applications alive. This practice creates significant roadblocks because manufacturing companies cannot design around claims that they have not seen. The practice of relying on a patent's prosecution for claim scope and definition becomes meaningless when the applicant has claims pending for 10 years and longer.

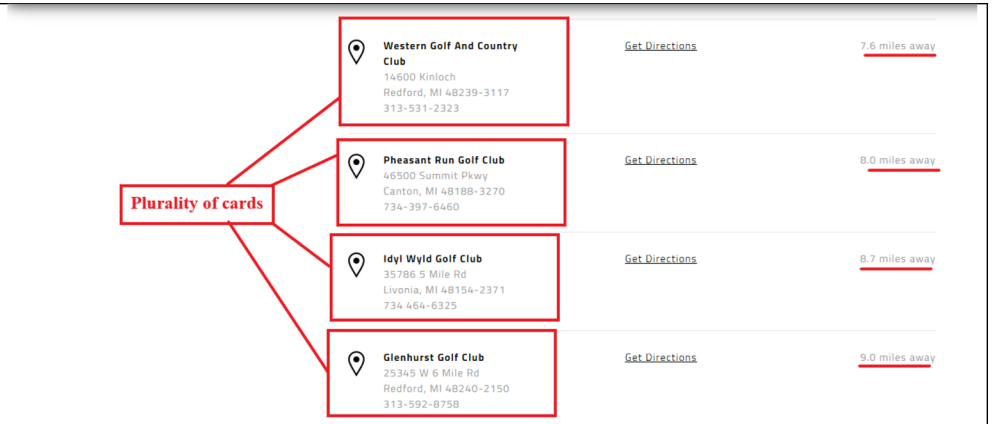
In closing, strong patents encourage and protect innovation, and are critical to our overall economy. Overly broad patents, in contrast, are detrimental to U.S. manufacturing companies, often stifling innovation. Litigation abuse is clearly the most visible way that bad patents harm U.S. manufacturers, but bad patents also create roadblocks that prevent prudent companies from innovating and making products that would be appealing to and appreciated by consumers. While the overly broad patent problem will never be completely solved, there are solutions to reduce the problem. Supporting strong patents and reducing bad patents is critical to our economy and in incentivizing innovation, and we need to get it right.

[18] *Id.*, at 33.

Charted Claims:
Method Claims: 1

US10514832B2	Footjoy ("The accused instrumentality")
1. A method comprising: determining, in response to a user command, regions of interest within each of a plurality of cards by searching information indicating previous user preferences; and	The accused instrumentality practices a method which comprises determining, in response to a user command (a user command to find a dealer in any desired location), regions of interest (within 15 miles radius, within 30 miles radius, etc.) within each of a plurality of cards (e.g., cards showing Footjoy dealer) by searching information indicating previous user preferences (e.g., City, Zip, etc.)  https://www.footjoy.com/


DEALER LOCATOR
ENTER CITY, STATE, OR ZIP CODE
48180
SELECT RADIUS
15 Miles
FIND A STORE
User command
https://www.footjoy.com/dealer-locator
Map
Satellite
Detroit
Ann Arbor
Brighton
Novi
Troy
Sterling Heights
Warren
Belle River
Lake St Clair
Chelsea
Ypsilanti
Saline
Brooklyn
Tecumseh
Dundee
Monroe
Kingsville
Wheatley
Tilbury
Comber
Algonac
Region of interest
Plurality of cards
Dicks Sporting Goods
23349 Eureka Rd
Taylor, MI 48180-5230
7343740439
Get Directions
1.0 miles away
https://www.footjoy.com/dealer-locator



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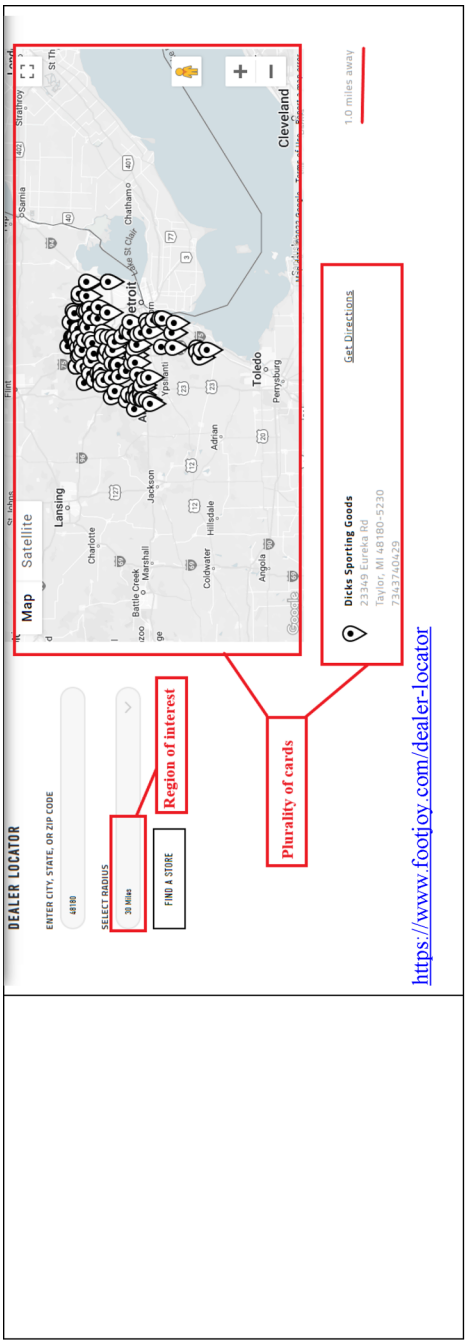

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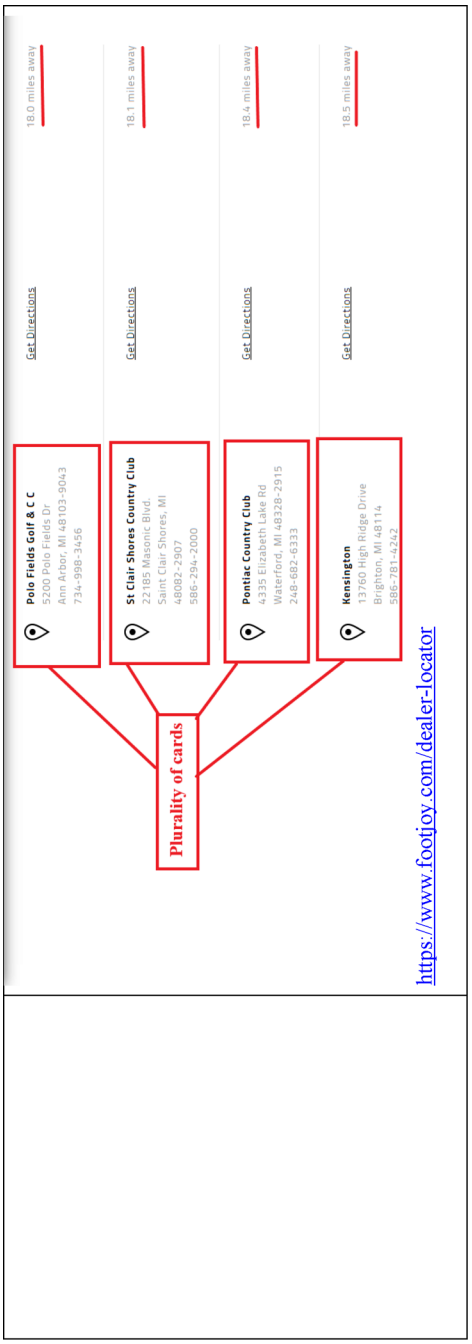
Polo Fields Golf & C C
5200 Polo Fields Dr
Ann Arbor, MI 48103-9043
734-998-3456
Get Directions
18.0 miles away
St Clair Shores Country Club
22185 Masonic Blvd.
Saint Clair Shores, MI
48082-2907
586-294-2000
Get Directions
18.1 miles away
Pontiac Country Club
4335 Elizabeth Lake Rd
Waterford, MI 48328-2915
248-682-6333
Get Directions
18.4 miles away
Kensington
13760 High Ridge Drive
Brighton, MI 48114
586-781-4242
Get Directions
18.5 miles away
Plurality of cards
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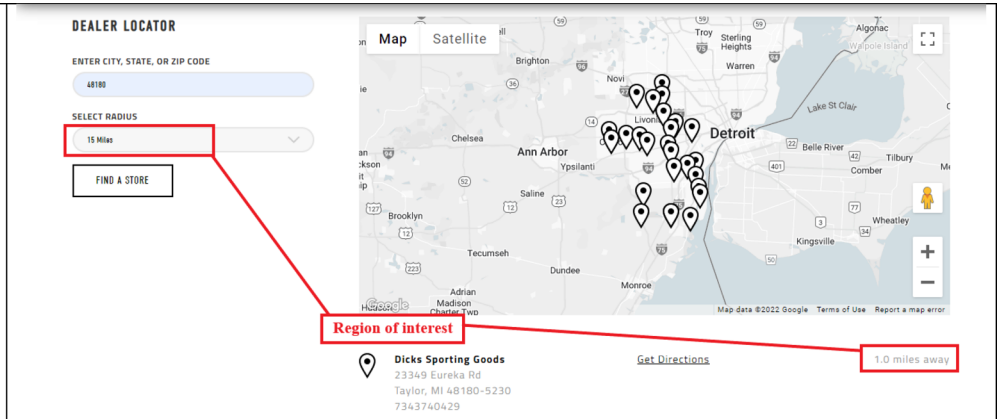

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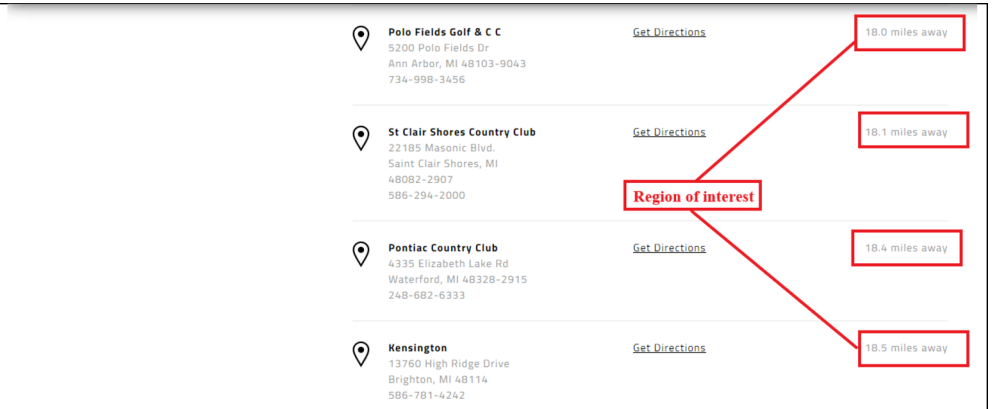

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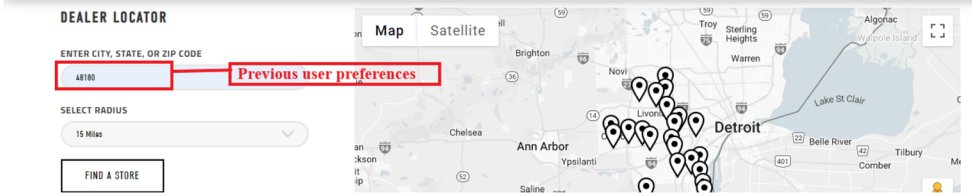

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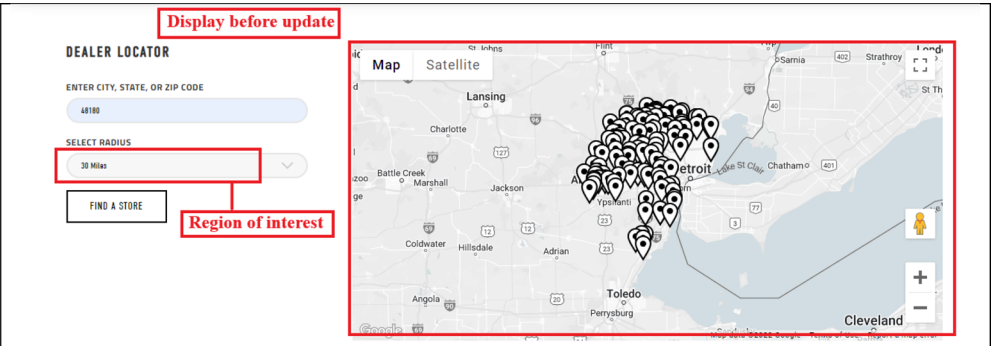
	 https://www.footjoy.com/privacy-policy.html
updating for display the plurality of cards to visibly show in a display area of a display device the at least one region of interest of multiple cards included in a first group of the plurality of cards, wherein said updating includes repositioning the plurality of cards to remove cards not included in the first group from the display area and to visibly display the at least one region of interest within all of the multiple cards included in the first group within the display area of the display device.	The accused instrumentality practices updating for display the plurality of cards (e.g., cards with Footjoy dealer) to visibly show in a display area of a display device (e.g., a user computer device such as laptop, PC, etc.) the at least one region of interest (e.g. radius within 15 miles, radius within 30 miles, etc.) of multiple cards (e.g., all cards included in the search results) included in a first group of the plurality of cards (e.g., a group of dealer cards) wherein said updating includes repositioning the plurality of cards to remove cards not included in the first group (e.g., cards with radius 30 miles are removed) from the display area and to visibly display the at least one region of interest (e.g. cards with radius 15 miles are displayed) within all of the multiple cards included in the first group (e.g., cards with selected miles within the displayed map) within the display area of the display device. As shown below, on determining region of interest and based on user command, the cards showing dealers with selected miles are displayed.



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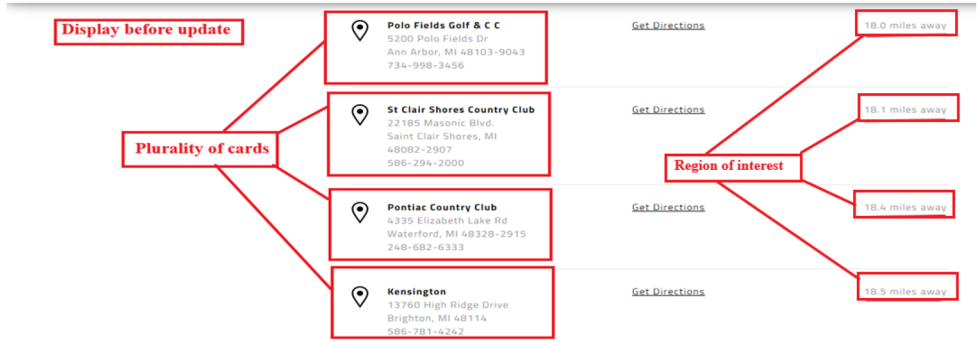

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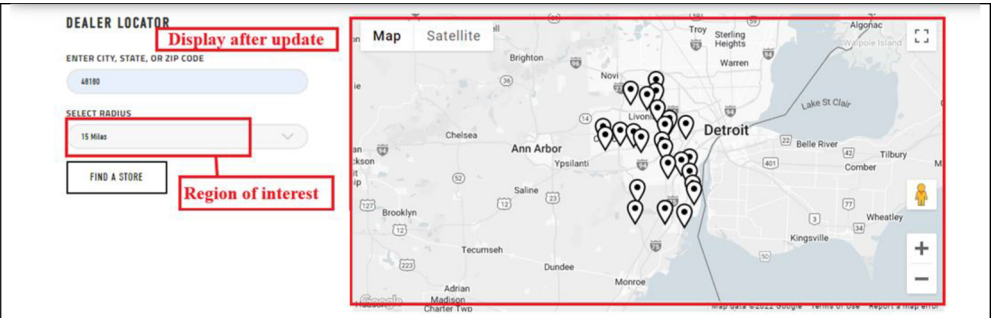

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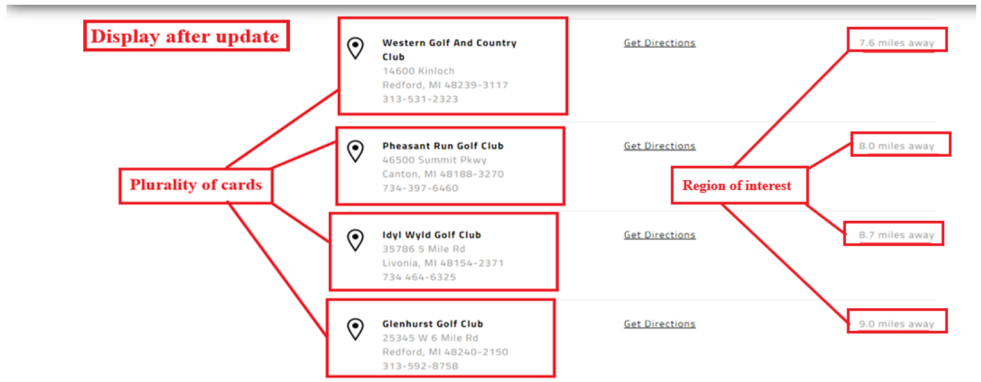

https://www.footjoy.com/dealer-locator

IPEDGE

INTELLECTUAL PROPERTY EDGE

May 30, 2022

Via email

Roland Giroux
Executive Vice President, Chief Legal Officer and Corporate Secretary
Acushnet Holdings Corporation
333 Bridge Street, Fairhaven, MA 02719, US
roland_giroux@acushnetgolf.com

Re: Notice of Infringement to Acushnet Holdings Corporation re Locket IP LLC

Dear Mr. Giroux:

This letter is to provide notice on behalf of Locket IP LLC ("Locket") to Acushnet Holdings Corporation and its affiliates (collectively "Footjoy") of Footjoy 's infringement of Locket's U.S. Patent No. 10,514,832 ("Locket Patent"). Enclosed with this letter is a copy of the Locket Patent.

After an investigation and comparison of the Locket Patent and the following product and service, including, without limitation, the Footjoy Website ("Footjoy Product"), Locket believes that Footjoy is infringing the Locket Patent by making, using, selling and/or offering for sale, as well as instructing Footjoy customers to use Footjoy Product. Enclosed with this letter is a claim chart comparing representative claims of Locket's Patent No. 10,514,832 to the Footjoy Product.

IP EDGE LLC ("IP EDGE") is the licensing advisor for Locket and is authorized to discuss licensing of the patent described herein. Through its licensing advisor, Locket would like to discuss with Footjoy a mutually beneficial agreement that will provide Locket with value for Footjoy 's use of its intellectual property.

We respectfully request an initial response of this letter within two weeks from the date of this letter.

To discuss further, please email annetteg@ip-edge.com, and please cc gbodepudi@ip-edge.com and admin@ip-edge.com.

Please let me know if you have any questions.

Best,

Gautham Bodepudi
IP EDGE LLC
Managing Partner
email: gbodepudi@ip-edge.com
copy: annetteg@ip-edge.com
copy: admin@ip-edge.com

Questions for the Record of Senator Patrick Leahy
Chair, Intellectual Property Subcommittee
Hearing on: "Protecting Real Innovations by Improving Patent Quality"
June 22, 2021

Questions for Mr. Troy Lester

1. The tradeoff for getting the monopoly powers of a patent is that you have to disclose everything about your invention. Given that it is the public against whom these monopoly powers are exercised, any member of the public should be able to look up any patent and see who the current owner is. But that's not the case today.

    a. **Would it help the public if patent owners were required to record the ownership status of their patents at the PTO so that the public knows who exactly is being granted the monopoly powers of a patent and who stands to benefit from any real or threatened litigation?**

Response:

Requiring patent owners to register their ownership interest should not be a controversial issue. Almost all patent owners will register their ownership, as an inventor or an assignee, so that the notice provision from contract law will apply to any future transfer of the patent. The only situations where an owner does not register their assignment, other than because of an oversight, is when the owner is purposely trying to avoid being known. These owners are generally Non-Practicing Entities (NPEs) that are planning an assertion campaign and foreign entities disguised as a resident LLC.

The patent system is founded on the principles of disclosing an inventive idea to the public in exchange for limited exclusive rights. The disclosure of the invention requires transparency in how to make and use the invention. This same principle of transparency should also extend to the owners of patents that are trying to assert those exclusive rights.

There are different types of NPEs. Legitimate NPEs, such as universities, conduct research to better technologies and often obtain patents on their work. They look to license these technologies in order to improve a product or process. These NPEs already identify their ownership interest of their patents by registering their assignments with the USPTO. It is only the more aggressive NPEs trying to assert meritless cases that hide their ownership status so that they cannot incur any repercussions from their sordid patent assertions.

> Sophisticated trolls sue using shell companies created for the specific purpose of shielding their investors from liability and scrutiny. Structured correctly, the entity need not be connected to the corporation's sponsors or its assets. Faced with a sanction or attorney's fee award against it, the LLC could go bankrupt rather than pay the penalty.

Colleen V. Chen, Reforming Software Patents, 50 Hous. L. Rev. 325, 383-383 (2012) (footnote omitted). Courts have found it difficult to hold such NPEs accountable for abusing patent litigation assertions and actions. These NPEs are often formed for the sole purpose of asserting a patent or a family of patents and have no assets other than the patent, no working capital, and no employees. The principals of these NPEs are undisclosed which can frustrate any award sanctioned by the court. This practice has led to many states incorporating laws that

allow patent defendants to file actions against meritless patent assertions and potentially require the patent holder to post escrow. See North Carolina Abusive Patent Assertion (Act), N.C. Gen. Stat. § 75-140.

Moreover, requiring patent ownership disclosure would also have the benefit of promoting business transactions. Parties wanting to use a patented technology would be able to contact the appropriate, real owner to negotiate a licensing arrangement or even an assignment of ownership. This could promote the use of technologies that would otherwise be avoided.

Thus, it is my opinion that all owners, not just the shell company, should be required to register their interest in a patent before that patent is asserted and forfeit any and all damages prior to such registration.

2. Another breakdown in transparency is what sometimes happens when an applicant requests an examiner interview: there will be a terse summary of the interview discussion, but it will result in allowance of the application. After the patent issues, the public, who may be looking to see what convinced the examiner, will see little or no detail from the interview.

    a. **Would it help the public if there was more information about any substantive discussion between the applicant and examiner and entered into the file history of the application?**

Response:

Almost every examiner interview is approximately ½ to 1 hour long and allows the Examiner and applicant to fully evaluate the technology and prior art rejections. In my experience, these interviews result in a single paragraph summary of what was discussed. One result is that in litigation a term or element can be given a completely different definition than what was discussed during the interview and led to the claim's issuance. However, the more prevalent and less discussed result is that the public will be unable to evaluate the scope of a patent claim, and therefore, will be unable to work on a competitive design-around product. This prevents healthy competition and frustrates our economy.

Transparency on interview summaries can be contrary to the patent attorney's goal of obtaining the broadest claims possible for their client. Thus, the attorney will generally be as vague as possible while submitting the required interview summary. However, it is the Examiner's responsibility to ensure that the patent claims are well defined and distinguished over the prior art. Thus, Examiners should be required to complete interview summaries that are detailed enough to convey all of the elements that were discussed and how those elements overcame the rejections. The public should be able to rely on the Examiner's summary to complete a patent evaluation.

Possible solutions could include a program implemented by the USPTO subjecting Examiner interview summaries to quality review and/or requiring interview agendas from practitioners requesting interviews. The agendas would allow the Examiner to be better prepared for the interview and could significantly improve the efficiency of the interviews.

Senator Tillis Questions for the Record – – Protecting Real Innovations by Improving Patent Quality

Mr. Troy Lester

1. How would you define or describe a low quality patent?

Response: Low quality patents or "bad" patents are simply overly broad, invalid patents. The patent system is built on the quid-pro-quo that an inventor disclose and claim a new, non-obvious technology in exchange for limited exclusive rights. When a patent fails to claim anything new or the claims are poorly defined, it is not teaching the public and does not deserve the exclusive rights granted.

It is my opinion that these patents fit into two categories: patents that are clearly taught by the prior art and patents that are very poorly defined.

Patents that are taught by the prior art often issue because the best prior art is not available to the patent Examiner, or the best prior art is missed. Some of these patents can be invalidated through IPRs, but others cannot because the prior art is an existing product or unpublished work and cannot be used in an IPR.

However, the greatest problem in my opinion are poorly defined patents. The patent system is built on the inventor "particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention." 35 U.S.C. § 112. The poorly defined "bad" patents are exemplified by U.S. Patent No. 10,514,832 (the '832 patent), which is the most recent patent asserted by a Non-Practicing Entity (NPE) against Acushnet Company. Copies of the assertion letter, claims chart and patent are attached for convenience. The first claim of the '832 patent was alleged to be infringe by FootJoy's store locator function on its website. The patent claims:

> A method comprising:
> determining, in response to a user command, regions of interest within each of a plurality of cards by searching information indicating previous user preferences; and updating for display the plurality of cards to visibly show in a display area of a display device the at least one region of interest of multiple cards included in a first group of the plurality of cards, wherein said updating includes repositioning the plurality of cards to remove cards not included in the first group from the display area and to visibly display the at least one region of interest within all of the multiple cards included in the first group within the display area of the display device. (Emphasis added).

The allegation of infringement was that by putting in a location with a certain radius into Acushnet's store locator, a first set of stores (cards) were displayed. Then, when a second, smaller radius was used, some stores (cards) were displayed and some of the first stores were not.

The '832 patent is an example of a low-quality patent because the terms used in the claims are so broad, unclear, and devoid of meaning that the claim is completely disconnected from the invention actually described in the patent:

> The present invention provides several different embodiments of a user interface that is used for receiving, recording, playing back, purchasing, and the like media such as videos, television shows, movies, audio, music, video games, and the like. Such a user interface can be implemented on devices such as a computer, set top box, media server, tablet, mobile phone, personal media, device, portable video game system, video game system, and so forth.

As shown, the claim copied above is void of any affiliation to videos, television shows, etc., as described in the specification of the '832 patent. Thus, the NPE, IP EDGE, felt free to send out infringement allegations for store locators on websites. The travesty of this assertion campaign is that Acushnet Company, like many other companies, started using their store locators in the mid-2000s, some five years before the 2010 priority date of the '832 patent. Thus, if the '832 patent reads on store locators because its claims are so poorly defined, it is anticipated by all of the store locators used in the mid-2000s and by U.S. Patent No. 5,930,474, which issued in July 1999 and actually taught store locator technology.

2. What are the biggest problems that you see posed by low quality patents?

Response: Low quality patents or "bad" patents are often asserted against many companies in an attempt to extract many nuisance fee settlements. The NPEs like IP EDGE are well aware that patent litigations often cost more than $5,000,000, and thus, companies can be extorted for up to $50,000 to avoid litigation.

Companies like Acushnet Company are more aware of prior art and are able to prepare material responses to NPEs such as IP EDGE. In Acushnet Company's response to IP EDGE, Acushnet informed IP EDGE that because they were faced with uncontroversial anticipatory prior art, the patent was clearly invalid, and therefore, IP EDGE lost the ability to assert the '832 patent against all other parties' store locators. However, I have to assume that IP EDGE continued to send accusatory letters to many companies that were not aware of the store locator prior art. Thus, IP EDGE was most likely able to extract vast sums of money from vulnerable companies.

I find this type of patent abuse deplorable because I believe in the patent system. I firmly believe that patents foster innovation, which is the engine of our economy. Thus, we have a responsibility to make sure the system is used for its intended purpose, not to extort money from unsuspecting companies. For example, Landmark Technologies sent over 1800 letters seeking $65,000 for "settlement." Assertions of bad patents are antithetical to the intended use of patents and this type of business model can be limited by ensuring that patent claims are well-defined before the patent is issued.

Bad patents also stifle innovation without ever being asserted. They can pose barriers to the creation of products when companies avoid implementation of technologies in the presence of a bad patent because the companies do not want to risk the potential, expensive litigation and being forced to present the patent validity issue to a jury. Juries are well equipped to handle many issues within our judicial system, but patent law is not one of them. Most patents require extensive knowledge of the specialized technology to be properly interpreted and evaluated and juries do not have that capability. Thus, many companies chose to

completely avoid deployment of technologies even when they are aware of a patent's invalidity.

3. What initiatives in this area have been particularly successful, in your perspective?

Response: Low quality patents like the '832 patent can be easily avoided by making the applicant distinctly claim their invention. The Examiner's diligent review and application of the existing enablement requirements of 35 U.S.C. § 112 can include making the applicant use language in the claim that limits the claim to the technology actually being taught in the patent. For example, the claims of the '832 patent should have been limited to the video streaming technology disclosed in the patent and prevented from being asserted against store locators.

For patents that are taught by published prior art, IPRs are by far the best tool to remove them from being asserted. However, IPRs are still extremely expensive and therefore are rarely used. Thus, many invalid patents remain that prohibit companies from pursuing technologies that are clearly in the prior art and should be readily available. Making IPRs more affordable to both petitioners and patent owners and devoting more resources to accommodate the increased demand could significantly improve the patent system.

4. What is the USPTO doing right with respect to patent examination and patent quality, and in what areas would you recommend improvement?

Response: Examiners that have been in a particular art unit for over 5 years seem to possess an excellent grasp of the prior art and some are very adept at building obviousness rejections using 4 to 5 references. By creating well thought out, thorough office actions, they force the applicant to define the invention and distinguish the prior art, and thus create a much more valuable patent. In my experience, the Examiners are well aware of the prior art in patents and are able to use the teaching in prior art patents to form solid rejections. The primary problem the Examiners have with prior art rejections is not having the best prior art available to them and applicants inventing new ways to claim existing technologies.

On the other hand, I believe that Examiners could improve their use of § 112 to make applicant better define their inventions. In *American Axle*, for example, the court affirmed the district court's invalidation of an independent claim in American Axle's patent on a method of manufacturing automotive drive shafts under § 101. *American Axle & Manufacturing, Inc. v. Neapco Holdings LLC*, 939 F.3d 1355, amended, 967 F.3d 1285 (2019), petition for rehearing en banc denied, 966 F.3d 1347 (Fed. Cir. 2020) Notwithstanding the subject matter of the claim, manufacturing a drive shaft with an internal liner, which is patent-eligible subject matter (viz., processes), the courts held it to be patent-ineligible under §101 because it preempts a law of nature.

In my opinion, the courts correctly identified an issue with the patented claim but applied the wrong statute by citing §101 instead of §112. The patent in *American Axle* does not provide an enabling description of the claimed process and the claim in question does not particularly point out and distinctly indicate the details of the shaft and liner required to tune the shaft. In our opinion, the claim in *American Axle* could have been found to be unpatentable for reasons that are found in § 112. The § 112 issue could have been raised at the initial examination stage and required the applicant to insert some physical

properties, such as materials and/or thicknesses of the shaft and liner components.

Also, if *American Axle* were decided on a § 112 basis, additional guidance could be provided to Examiner's on this topic.

Acushnet has dealt directly with the ramifications of unclear guidance on § 112 for Examiners on competitor claims with similar features to those at issue in *American Axle*. For example, U.S. Patent No. 6,348,015 (the '015 patent") claims a golf club head having a "striking plate composed of a first material and having a natural frequency of less than 4500 Hz and greater than 2800 Hz." While this claim is directed to a golf club, which in general is clearly within a category of patentable subject matter under §101, the only alleged novel element of the claim is a natural frequency which every article possesses. This patent claim, in our opinion, is clearly not definite as it does not distinctly claim the golf club in any manner whatsoever. It claims a natural property, frequency, that all golf clubs possess. Under current patent eligibility jurisprudence, the best course of action to invalidate this claim may be to argue it is not patent eligible under § 101 based on the decision in *American Axle*. However, the claim should have been rejected at the examining stage under § 112.

5. How can the USPTO improve collaboration on prior art searching—both domestically (e.g. between USPTO and the FDA) and internationally (e.g. among the IP5)?

   Response: In my opinion, the USPTO could try to collaborate with domestic industry regulatory bodies. For example, for golf, the USPTO could try to collaborate with the United States Golf Association (USGA) on searches and technology issues. The USGA requires golf clubs to be submitted to determine whether they conform to the rules of golf. Thus, the USGA is well aware of golf club technology being used. Unfortunately, submissions to the USGA are confidential so these types of collaborations could be extremely difficult.

   I believe that collaboration of Examiner joint training among the IP5 would be extremely helpful. Different Examiners have different search techniques that could be shared and discussed to significantly improve searching and examination processes. However, improved translations may prove to be an even greater asset. Currently, Japanese Examiners are able to assert Japanese and U.S. references because the Examiners know both languages and are able to search patents and references from both countries. However, U.S. Examiners have to rely on very poor-quality, machine translations of Japanese art. Thus, the Japanese objections tends to cite more thorough prior art.

6. Are you aware of some of the USPTO's recent efforts to address patent quality? What initiatives in this area have been particularly successful, in your perspective? What have not?

   Response: One recent effort to improve patent quality that I'm aware of is the automated assignment of applications designed to make sure that the proper Examiner is reviewing the application. This effort also allows Examiners to "challenge" the initial classification of an application to improve the search and ensure an appropriate Examiner handles the case. This initiative has not had any effect on the cases that we prosecute because our applications are all examined by a core group of Examiners.

The USPTO has also increased the number of production hours for cases, providing more hours to Examiners to review the applications. This effort makes sense since the amount of prior art is continuously growing. Hopefully, this will enable Examiners to spend more time searching and better evaluating applications.

In the 21st century, the USPTO saw a significant expansion of the Examining crops to help reduce the application backlog, which resulted in a high number of "Junior" Examiners. This effort focused on quantity, not quality. The system relies heavily on Primary Examiners training and supervising Junior Examiners and examining their own cases. This can lead to low-quality patents seeping through the cracks.

Over the last couple of years, the USPTO has implemented random checks of office actions and ratings for the Examiners. These evaluations provide feedback and incentivizes the Examiners to be more thorough. However, I think it would be very prudent for the Junior and Primary Examiners to have a second pair of eyes on a case before preparing an office action. Collaboration would allow the Examiners to more thoroughly vet what the invention is and whether the claims define the invention. Thus, this proposition requires the USPTO to increase its resources for quality purposes rather than quantity purposes.

There has been a concerted effort for more collaboration with EPO under the CPC over last 10 years. This has been a slow transition, but it seems to be improving lately. Examiners from the EPO and USPTO are getting better at providing a more global, unified approach. Moreover, if an examination search is in the proper technology area it provides a better-quality search. The problem is with cases like the '832 patent discussed above, the Examiner was searching in the video art, but the patent claims were extremely vague and should never have been allowed.

Another initiative directed to improving quality is the After Final Consideration Pilot 2.0. This program enables applicants to propose amendments after prosecution has closed on the merits. This helps applicants obtain patents when only §112 clarity or definiteness issues stand in the way. In order to improve the clarity of patents, it might be useful to provide the Examiners with an addition §112 review and allow them to work with the applicant to create higher-quality patents.

7. What are your thoughts about creating a "gold plated" patent, where applicants would have the option of paying for a more thorough examination of their inventions that would merit a presumption of validity (a "gold plated"), or allowing less economically significant patents to receive a separate patent?

Response: I believe that we already have "gold plated" patents. Patents that have survived an IPR petition are "gold plated." The AIA prevents an IPR petitioner from asserting invalidity in trial on a ground that was raised or could reasonably have been raised in the IPR. Thus, any patent surviving an IPR has substantially more value.

Allowing applicants to pay more for a more thorough examination could reduce the number cases where the best prior art is missed, but it does not assist in cases where the best prior art was not available to the Examiner. Moreover, patents already receive a very strong presumption of validity in court, even when new prior art is presented.

8. Are there any particular data points or metrics that could help prioritize discussions about improving patent quality? What agencies or other organizations could contribute to collecting such data?

   Response: I believe that the only true metrics is the number of patents that are found to be invalid by the PTAB or courts. By comparing the number of patents asserted to the number of cases where the patent is found invalid, the patent office can determine the percentage of bad patents being granted. For example, it is my understanding that approximately 30 % to 40 % of all IPR petitions result in at least one claim being invalidated. Thus, those patents have claims that should not have been allowed.

9. Do you have any experience with responding to assertions based on fraudulent patents to share?

   Response: Acushnet Company has responded to too many assertions of low-quality patents. In addition to the assertion from IP EDGE that is attached, Acushnet Company has seen its fair share of "bad" patent cases.

   In June of 2013, Acushnet was sued by Eclipse IP LLC in the Eastern District of Texas for allegedly infringing U.S. Patent Nos. 7,876,239 and 7,119,716. Eclipse alleged that Acushnet infringed the '239 patent by "enabling customers to provide and/or select, authentication information regarding online orders, storing the authentication information, and providing the authentication in notification communications."[1] The complaint also alleged that Acushnet infringed the '716 patent by "storing customers' contact data in memory and providing notification communications to the customers which enabled them to change the contact data."[2] In reality, Eclipse ordered a golf club from one of Acushnet's websites and alleged that the website stored their shipping address and provided access for them to change their shipping address. Through this interaction with Acushnet, Eclipse claimed that its patents directed to tracking buses and taxis were infringed.

   Innovatio IP Ventures LLC was another entity that reached out to many companies and alleged infringement through their use of Wi-Fi. Innovatio alleged that Acushnet had three manufacturing plants in Massachusetts and that those manufacturing plants must have Wi-Fi. Therefore, they alleged, Acushnet infringed its approximately 20 patents. Similarly, Helferich stated that Acushnet infringed its patents by sending tweets to followers. Acushnet was offered a license for $15/1000 tweets. Thus, a tweet to 1,000,000 followers would cost about $15,000. Helferich's intimidation material included a list of approximately 150 licensees.

   Obviously, these types of patent matters have nothing to do with Acushnet's core business of making the best golf equipment that we can. More importantly though, these cases can be serious distractions and require significant resources to resolve. Thus, these types of patent assertions take resources that could and should otherwise be better allocated towards research and development or employees.

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[1] Eclipse LLC v. Acushnet Company, Complaint, E.D. Tex. (2013).
[2] *Id.*

(12) **United States Patent**
Rudman et al.

(10) **Patent No.: US 10,514,832 B2**
(45) **Date of Patent: *Dec. 24, 2019**

(54) **METHOD FOR LOCATING REGIONS OF INTEREST IN A USER INTERFACE**

(71) Applicant: **THOMSON Licensing**, Issy-les-Moulineaux (FR)

(72) Inventors: **Kenneth Rudman**, South Pasadena, CA (US); **Vasil Nadzakov**, Beverly Hills, CA (US); **Andrew Yoon**, Los Angeles, CA (US); **Roger Yeh**, San Marino, CA (US); **Basil Badawiyeh**, Santa Clarita, CA (US); **Genevieve Marie Pinvidic**, Burbank, CA (US); **Dana Forte**, Castaic, CA (US); **Dan Han Diep**, San Gabriel, CA (US); **Samir Ahmed**, Culver City, CA (US); **Lee Shartzer**, Valencia, CA (US); **John Frederick Bishop**, Santa Monica, CA (US); **James Booth**, Burbank, CA (US); **Hao Chi Tran**, El Monte, CA (US); **Peter Lee**, Calabasas Park, CA (US); **Gregory Gudorf**, San Diego, CA (US); **Douglas Jason Pickersgill**, Los Angeles, CA (US); **Mark Walker**, Castaic, CA (US); **David Pettigrew**, San Francisco, CA (US)

(73) Assignee: **Thomson Licensing**, Cesson-Sevigne (FR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 48 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/971,020**

(22) Filed: **May 4, 2018**

(65) **Prior Publication Data**

US 2018/0253203 A1 Sep. 6, 2018

Related U.S. Application Data

(63) Continuation of application No. 13/993,939, filed as application No. PCT/US2011/066004 on Dec. 20, 2011, now Pat. No. 9,990,112.
(Continued)

(51) **Int. Cl.**
G06F 3/048 (2013.01)
G06F 3/0484 (2013.01)
(Continued)

(52) **U.S. Cl.**
CPC ***G06F 3/0484*** (2013.01); ***G06F 3/0482*** (2013.01); ***G06F 3/0485*** (2013.01);
(Continued)

(58) **Field of Classification Search**
None
See application file for complete search history.

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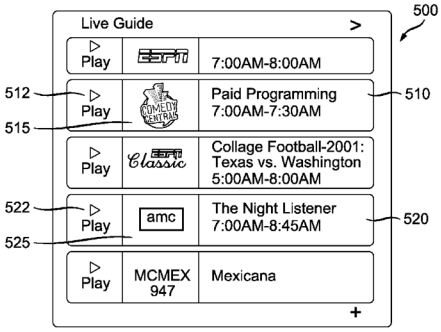
Primary Examiner — Hua Lu
(74) *Attorney, Agent, or Firm* — Vincent Edward Duffy

(57) **ABSTRACT**

The present disclosure is directed towards having a user interface that displays a number of cards or windows. A user can implement a command where the user interface will automatically change the position of the displayed cards to
(Continued)



show regions of interest which are the parts of the cards that a user may have interested in. The user interest can be determined in accordance with user preference information. Optionally, cards which do not have regions of interest are removed from a display area and such cards are replaced with new cards that do have regions of interest.

18 Claims, 12 Drawing Sheets

Related U.S. Application Data

(60) Provisional application No. 61/429,741, filed on Jan. 4, 2011, provisional application No. 61/426,509, filed on Dec. 22, 2010.

(51) **Int. Cl.**

G06F 16/44	(2019.01)
G06F 16/438	(2019.01)
G06F 3/0482	(2013.01)
G11B 27/034	(2006.01)
G11B 27/10	(2006.01)
G06F 3/0488	(2013.01)
G06F 3/0485	(2013.01)

(52) **U.S. Cl.**
CPC ***G06F 3/04842*** (2013.01); ***G06F 3/04883*** (2013.01); ***G06F 16/4387*** (2019.01); ***G06F 16/444*** (2019.01); ***G11B 27/034*** (2013.01); ***G11B 27/105*** (2013.01); *G06F 2203/04806* (2013.01)

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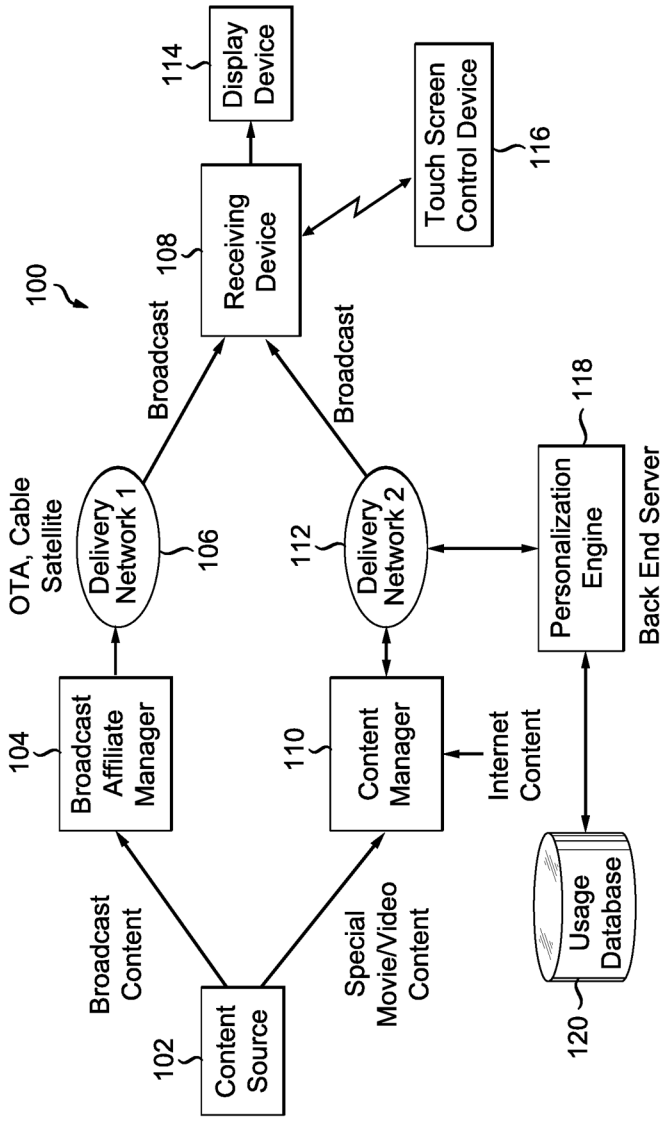
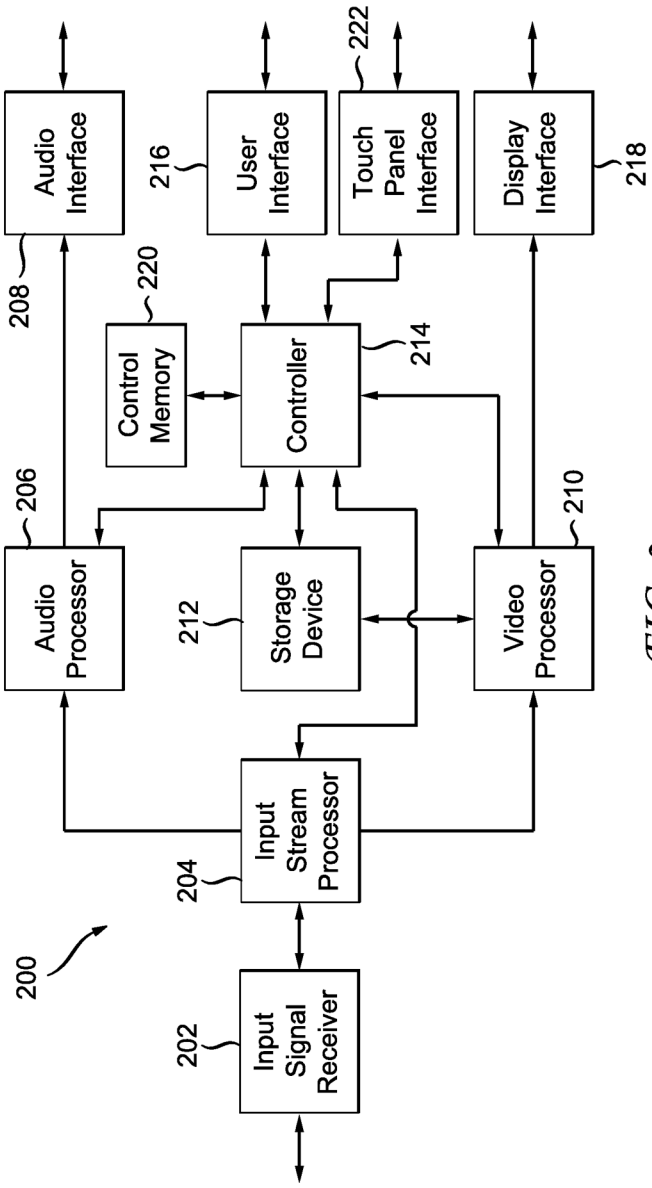

100
Content Source
102
Broadcast Content
Special Movie/Video Content
Broadcast Affiliate Manager
104
Content Manager
110
Internet Content
OTA, Cable Satellite
Delivery Network 1
106
Delivery Network 2
112
Broadcast
Broadcast
Receiving Device
108
Display Device
114
Touch Screen Control Device
116
Personalization Engine
118
Back End Server
Usage Database
120

FIG. 1


Audio Interface
User Interface
Touch Panel Interface
Display Interface
Control Memory
Controller
Audio Processor
Storage Device
Video Processor
Input Stream Processor
Input Signal Receiver
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202
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208
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212
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216
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220
222

FIG. 2

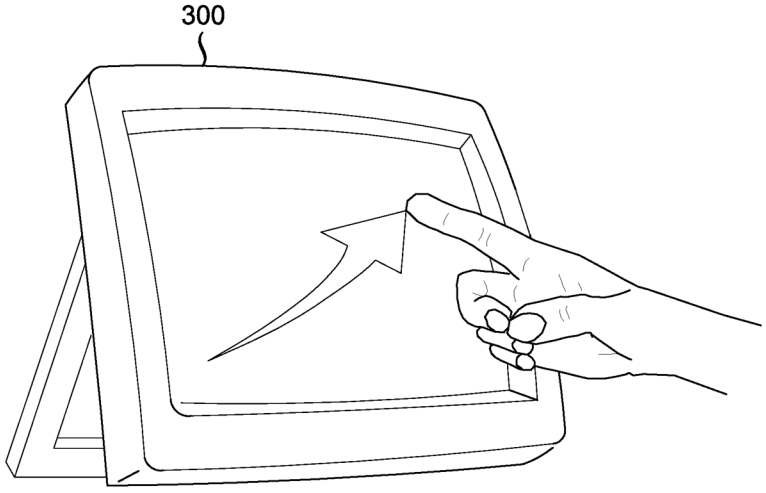
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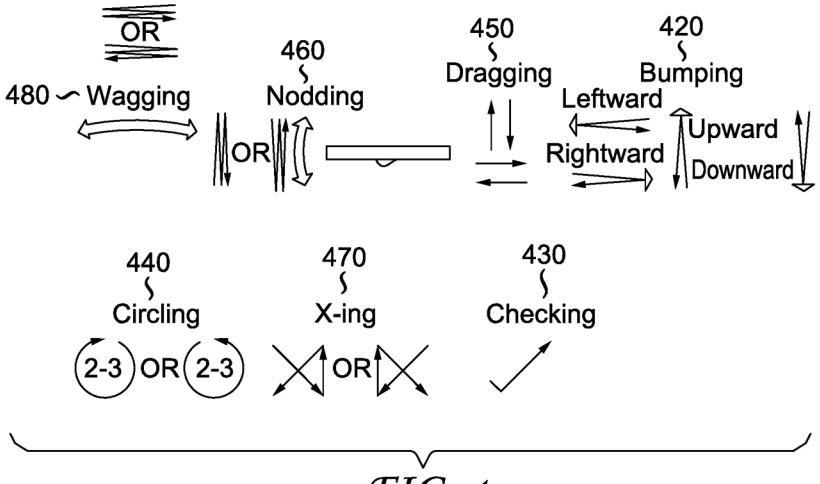
FIG. 3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Nodding
OR
450
Dragging
420
Bumping
Leftward
Rightward
Upward
Downward
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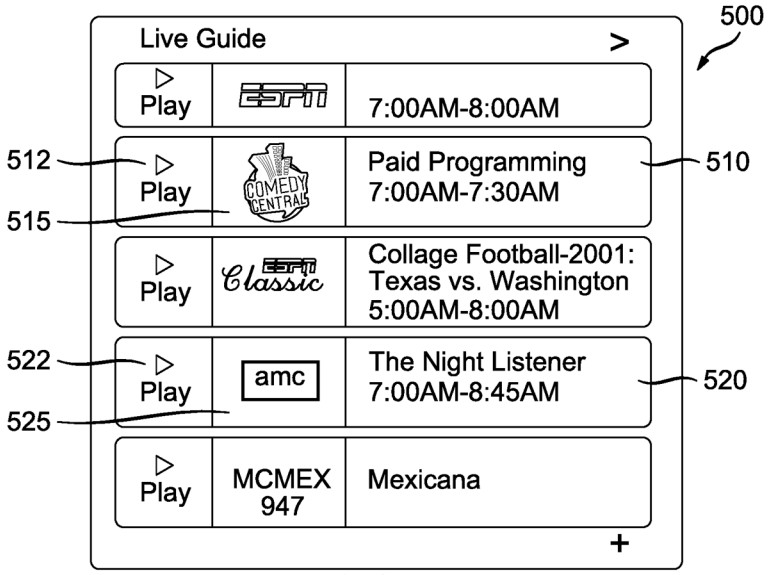
Circling
2-3
OR
2-3
470
X-ing
OR
430
Checking

FIG. 4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Paid Programming
7:00AM-7:30AM
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Texas vs. Washington
5:00AM-8:00AM
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The Night Listener
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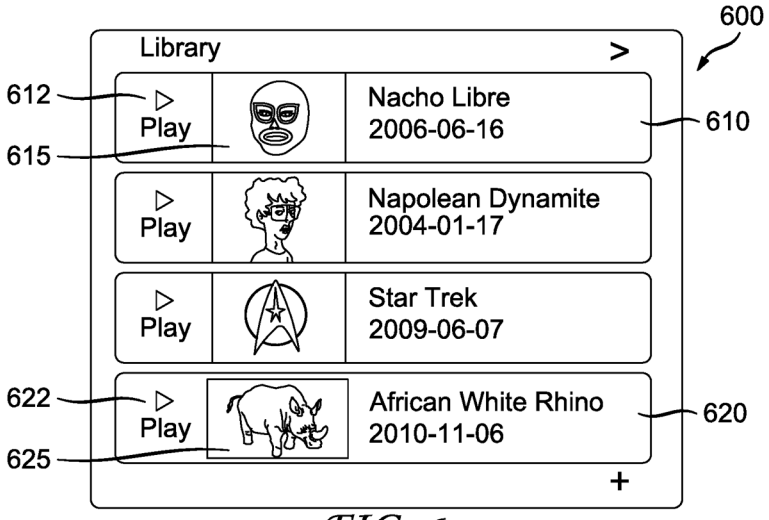
Mexicana
+

FIG. 5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Play
African White Rhino
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620
625
+

FIG. 6

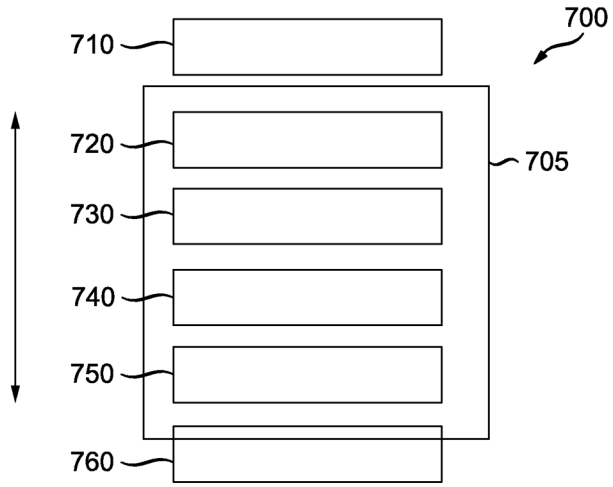


FIG. 7

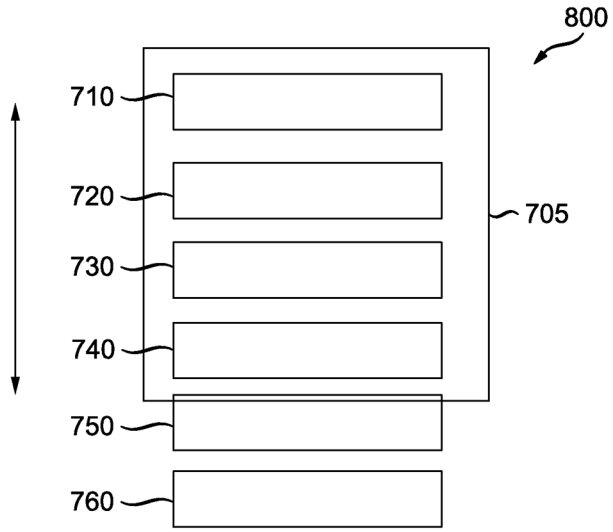


FIG. 8

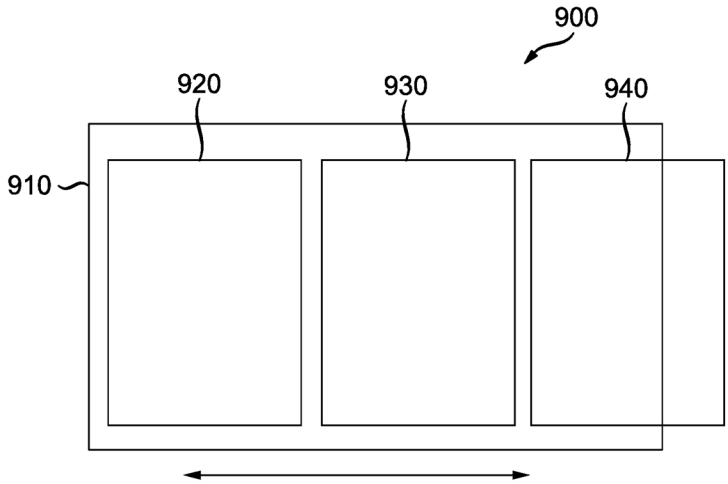


FIG. 9

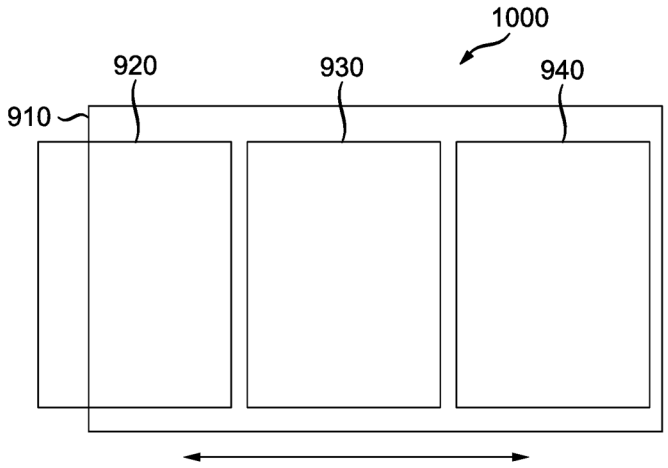
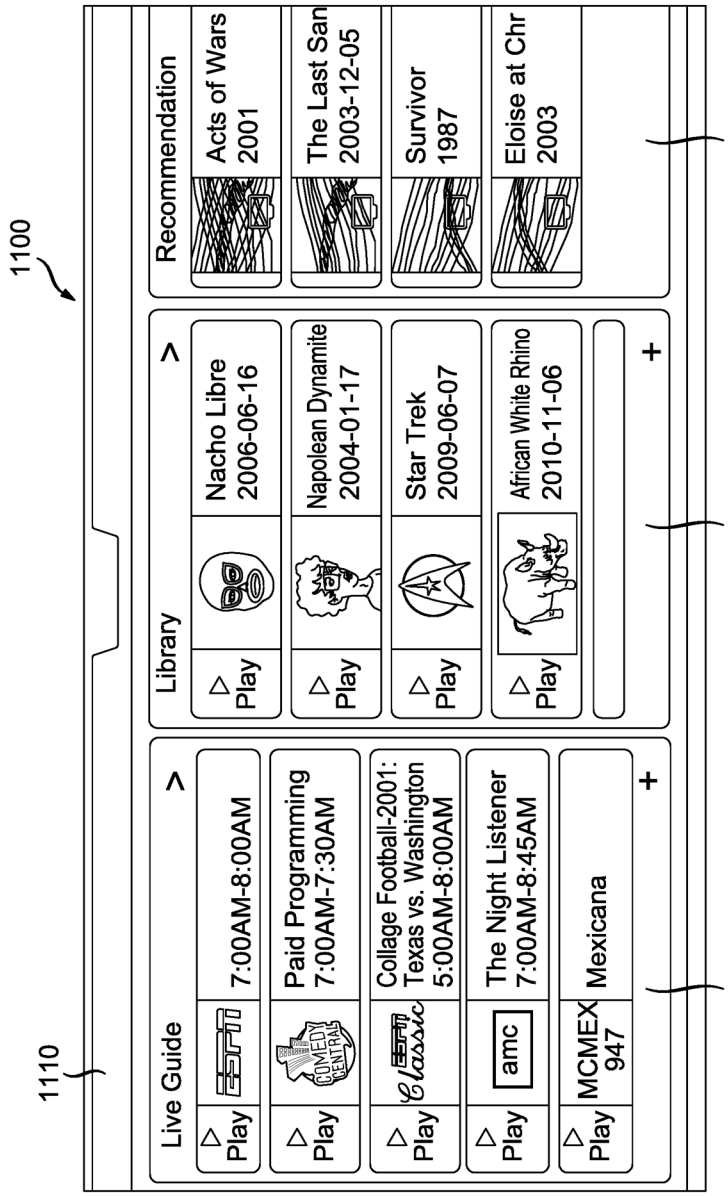


FIG. 10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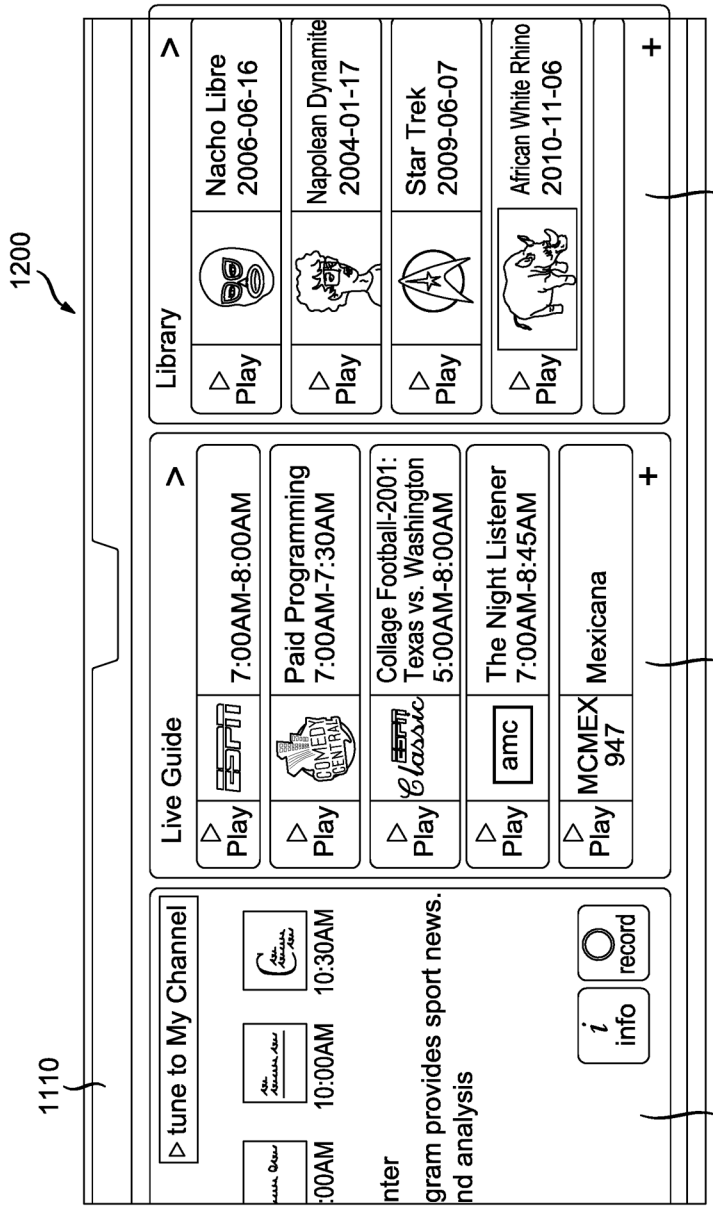
Paid Programming
7:00AM-7:30AM
Collage Football-2001:
Texas vs. Washington
5:00AM-8:00AM
The Night Listener
7:00AM-8:45AM
Mexicana
Library
Nacho Libre
2006-06-16
Napolean Dynamite
2004-01-17
Star Trek
2009-06-07
African White Rhino
2010-11-06
Recommendation
Acts of Wars
2001
The Last San
2003-12-05
Survivor
1987
Eloise at Chr
2003

FIG. 11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1130
1150
tune to My Channel
10:00AM 10:30AM
nter
gram provides sport news.
nd analysis
info
record
Live Guide
Play
7:00AM-8:00AM
Paid Programming
7:00AM-7:30AM
Collage Football-2001:
Texas vs. Washington
5:00AM-8:00AM
The Night Listener
7:00AM-8:45AM
MCMEX
947
Mexicana
Library
Nacho Libre
2006-06-16
Napolean Dynamite
2004-01-17
Star Trek
2009-06-07
African White Rhino
2010-11-06

FIG. 12

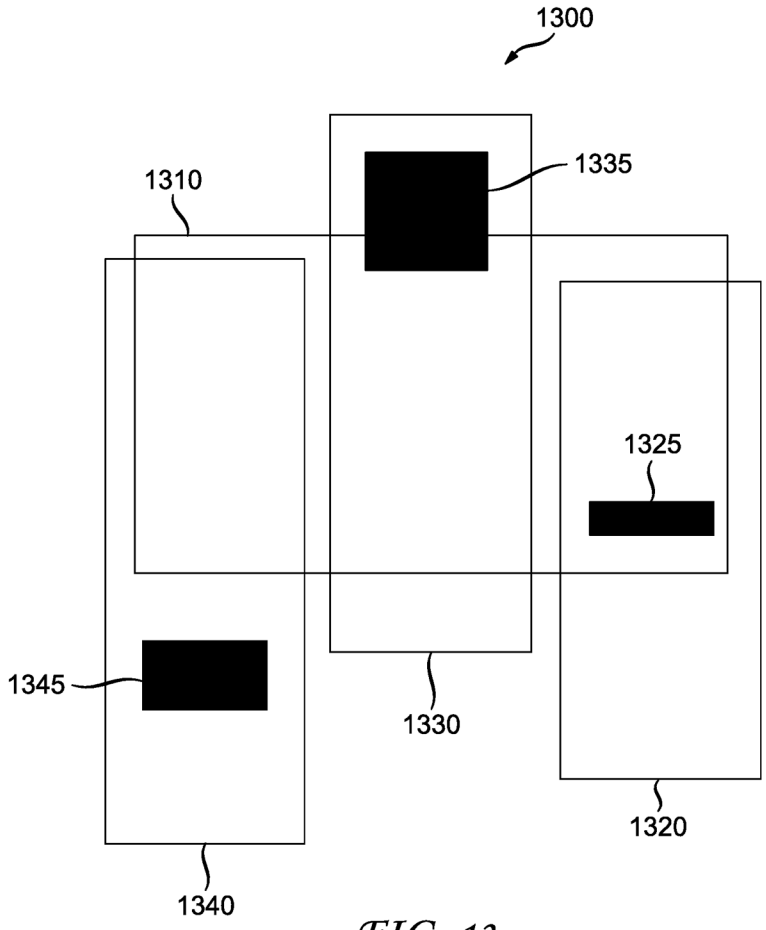

FIG. 13

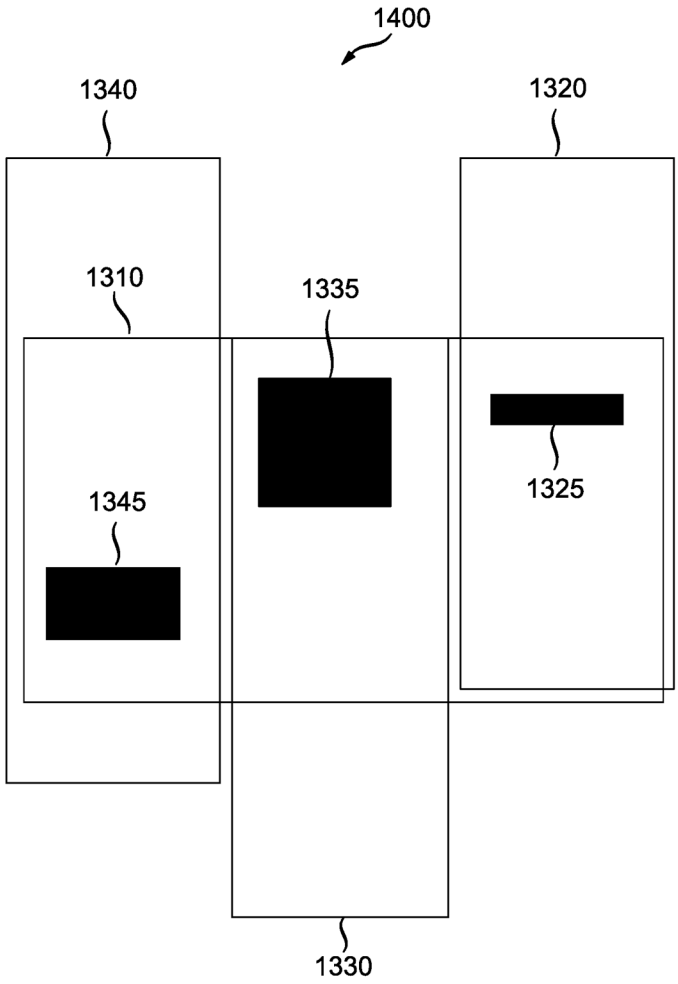

FIG. 14

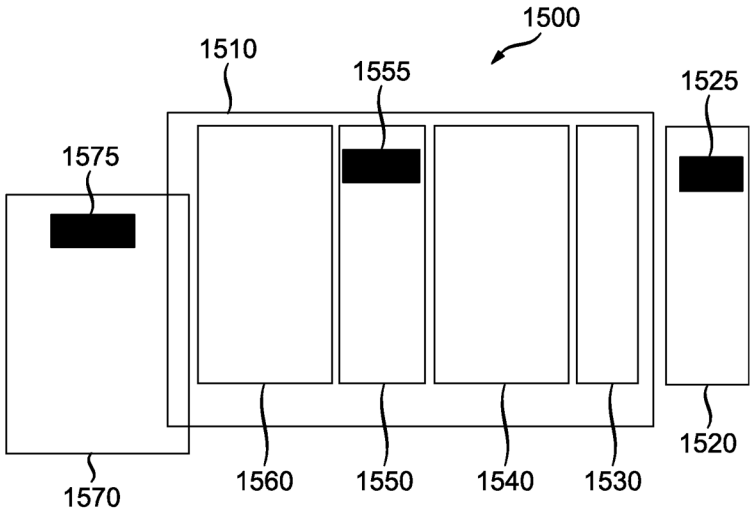
1500
1510
1555
1525
1575
1520
1570
1560
1550
1540
1530

FIG. 15

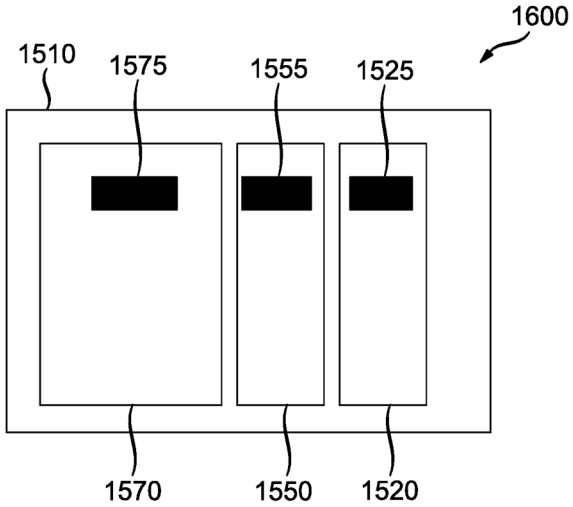
1600
1510
1575
1555
1525
1570
1550
1520

FIG. 16

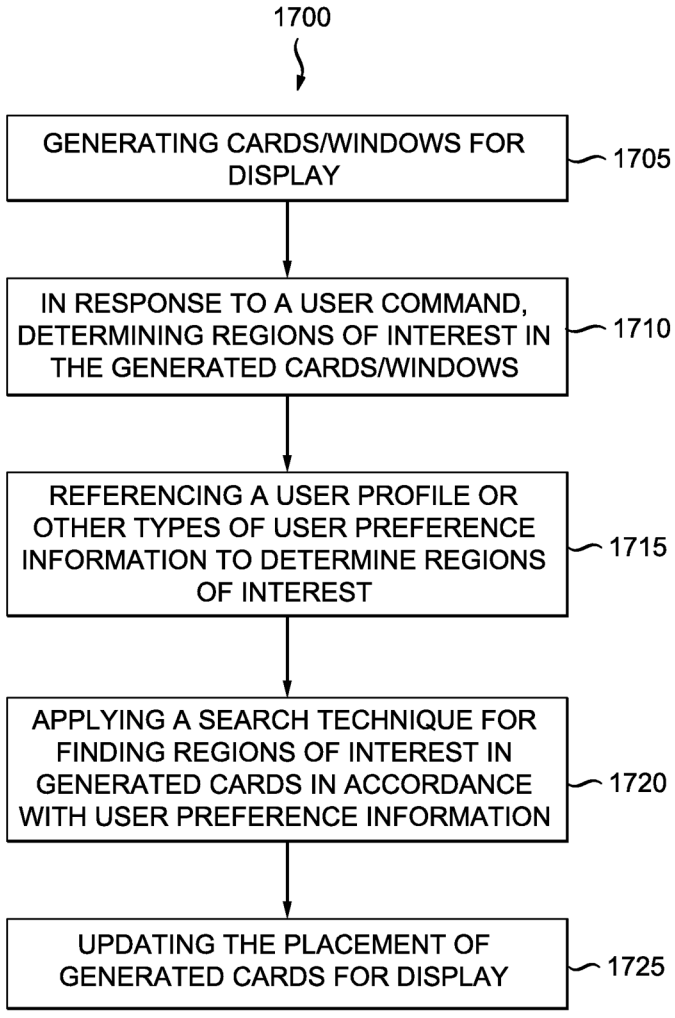
1700
GENERATING CARDS/WINDOWS FOR DISPLAY
1705
IN RESPONSE TO A USER COMMAND, DETERMINING REGIONS OF INTEREST IN THE GENERATED CARDS/WINDOWS
1710
REFERENCING A USER PROFILE OR OTHER TYPES OF USER PREFERENCE INFORMATION TO DETERMINE REGIONS OF INTEREST
1715
APPLYING A SEARCH TECHNIQUE FOR FINDING REGIONS OF INTEREST IN GENERATED CARDS IN ACCORDANCE WITH USER PREFERENCE INFORMATION
1720
UPDATING THE PLACEMENT OF GENERATED CARDS FOR DISPLAY
1725

FIG. 17

METHOD FOR LOCATING REGIONS OF INTEREST IN A USER INTERFACE

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit, under 35 U.S.C. § 120, of U.S. patent application Ser. No. 13/993,939 filed Jan. 29, 2014, which claims the benefit, under 35 U.S.C. § 365 of International Application PCT/US2011/066004 filed Dec. 20, 2011 which was published in accordance with PCT Article 21(2) on Jun. 28, 2012 in English and which claims the benefit of U.S. provisional patent applications No. 61/426,509 filed Dec. 22, 2010 and 61/429,741 filed Jan. 4, 2011.

TECHNICAL FIELD

A user interface is used for displaying multiple windows/cards. More particularly, the present disclosure is for a method for generating a user interface to locate various regions of interest across multiple cards with little user input.

BACKGROUND OF THE INVENTION

When using a media device such as a computer or a tablet, it is very likely that a user will have multiple windows of content open at one time. These windows are typically manipulated in a way where a user has to scroll through each window or card individually to find specific areas or topics of interest. Such a task becomes cumbersome when a user wants to find their items of interest quickly when going through cards/windows but the display interface only accommodates several cards and/or such cards have areas that exceed the displayable area of the media device.

SUMMARY OF THE INVENTION

A method is presented whereby various regions of interest are automatically shown to a user in response to the activation of an interest feature. Multiple windows or cards are rearranged in a displayable area so that region of interest for each card or window is shown without requiring a user to manipulate such cards/windows individually.

BRIEF DESCRIPTION OF THE DRAWINGS

These, and other aspects, features and advantages of the present disclosure will be described or become apparent from the following detailed description of the preferred embodiments, which is to be read in connection with the accompanying drawings.

In the drawings, wherein like reference numerals denote similar elements throughout the views:

FIG. **1** is a block diagram of an exemplary system for delivering video content in accordance with the present disclosure;

FIG. **2** is a block diagram of an exemplary set-top box/digital video recorder (DVR) as a media device in accordance with the present disclosure;

FIG. **3** is a perspective view of an exemplary media device in accordance with an embodiment of the present disclosure;

FIG. **4** illustrates an exemplary embodiment of the use of a gestures for a sensing controller or touch screen in accordance with the present disclosure;

FIG. **5** illustrates an exemplary embodiment of a first card user interface of the present disclosure;

FIG. **6** illustrates an exemplary embodiment of an second card user interface of the present disclosure;

FIG. **7** illustrates an exemplary embodiment of a first manipulation of a card user interface of the present disclosure;

FIG. **8** illustrates an exemplary embodiment of an second manipulation of a card interface of the present disclosure;

FIG. **9** illustrates an exemplary embodiment of a first manipulation of multiple card interfaces when present on a display device in accordance with the present disclosure;

FIG. **10** illustrates an exemplary embodiment of a second manipulation of multiple card interfaces when present on a display device in accordance with the present disclosure;

FIG. **11** illustrates an exemplary embodiment of a first manipulation of multiple card interfaces when present on a display device in accordance with the present disclosure;

FIG. **12** illustrates an exemplary embodiment of second manipulation of multiple card interfaces when present on a display device in accordance with the present disclosure;

FIG. **13** illustrates an exemplary embodiments of applying a region of interest feature to multiple cards interfaces when present on a display device in accordance with the present disclosure;

FIG. **14** illustrates an exemplary embodiments of applying a region of interest feature to multiple cards interfaces when present on a display device in accordance with the present disclosure;

FIG. **15** illustrates an exemplary alternative embodiment of applying a region of interest feature to multiple cards shown on a display device in accordance with the present disclosure;

FIG. **16** illustrates an exemplary alternative embodiment of applying a region of interest feature to multiple cards shown on a display device in accordance with the present disclosure; and

FIG. **17** presents a flow chart for determining regions of interest as to update the presentation of displayed cards in accordance with the present disclosure.

DETAILED DESCRIPTION

The present invention provides several different embodiments of a user interface that is used for receiving, recording, playing back, purchasing, and the like media such as videos, television shows, movies, audio, music, video games, and the like. Such a user interface can be implemented on devices such as a computer, set top box, media server, tablet, mobile phone, personal media, device, portable video game system, video game system, and so forth.

Turning now to FIG. **1**, a block diagram of an embodiment of a system **100** for delivering content to a home or end user is shown. The content originates from a content source **102**, such as a movie studio or production house. The content may be supplied in at least one of two forms. One form may be a broadcast form of content. The broadcast content is provided to the broadcast affiliate manager **104**, which is typically a national broadcast service, such as the American Broadcasting Company (ABC), National Broadcasting Company (NBC), Columbia Broadcasting System (CBS), etc. The broadcast affiliate manager may collect and store the content, and may schedule delivery of the content over a deliver network, shown as delivery network **1** (**106**). Delivery network **1** (**106**) may include satellite link transmission from a national center to one or more regional or local centers. Delivery network **1** (**106**) may also include

local content delivery using local delivery systems such as over the air broadcast, satellite broadcast, or cable broadcast. The locally delivered content is provided to a media device **108** in a user's home, where the content will subsequently be searched by the user. It is to be appreciated that the media device **108** can take many forms and may be embodied as a set top box/digital video recorder (DVR), a gateway, a modem, etc. Further, the media device **108** may act as entry point, or gateway, for a home network system that includes additional devices configured as either client or peer devices in the home network.

A second form of content is referred to as special content. Special content may include content delivered as premium viewing, pay-per-view, or other content otherwise not provided to the broadcast affiliate manager, e.g., movies, video games or other video elements. In many cases, the special content may be content requested by the user. The special content may be delivered to a content manager **110**. The content manager **110** may be a service provider, such as an Internet website, affiliated, for instance, with a content provider, broadcast service, or delivery network service. The content manager **110** may also incorporate Internet content into the delivery system. The content manager **110** may deliver the content to the user's media device **108** over a separate delivery network, delivery network **2** (**112**). Delivery network **2** (**112**) may include high-speed broadband Internet type communications systems. It is important to note that the content from the broadcast affiliate manager **104** may also be delivered using all or parts of delivery network **2** (**112**) and content from the content manager **110** may be delivered using all or parts of delivery network **1** (**106**). In addition, the user may also obtain content directly from the Internet via delivery network **2** (**112**) without necessarily having the content managed by the content manager **110**.

Several adaptations for utilizing the separately delivered content may be possible. In one possible approach, the special content is provided as an augmentation to the broadcast content, providing alternative displays, purchase and merchandising options, enhancement material, etc. In another embodiment, the special content may completely replace some programming content provided as broadcast content. Finally, the special content may be completely separate from the broadcast content, and may simply be a media alternative that the user may choose to utilize. For instance, the special content may be a library of movies that are not yet available as broadcast content.

The media device **108** may receive different types of content from one or both of delivery network **1** and delivery network **2**. The media device **108** processes the content, and provides a separation of the content based on user preferences and commands. The media device **108** may also include a storage device, such as a hard drive or optical disk drive, for recording and playing back audio and video content. Further details of the operation of the media device **108** and features associated with playing back stored content will be described below in relation to FIG. **2**. The processed content is provided to a display device **114**. The display device **114** may be a conventional 2-D type display or may alternatively be an advanced 3-D display.

The media device **108** may also be interfaced to a second screen such as a touch screen control device **116**. The touch screen control device **116** may be adapted to provide user control for the media device **108** and/or the display device **114**. The touch screen device **116** may also be capable of displaying video content. The video content may be graphics entries, such as user interface entries, or may be a portion of the video content that is delivered to the display device **114** The touch screen control device **116** may interface to media device **108** using any well known signal transmission system, such as infra-red (IR) or radio frequency (RF) communications and may include standard protocols such as infra-red data association (IRDA) standard, Wi-Fi, Bluetooth and the like, or any other proprietary protocols. Operations of touch screen control device **116** will be described in further detail below.

Optionally, media device **108** and touch screen control device **116** can be integrated into the same device. Examples of these media devices with a touch screen include computers, laptops, cell phones, personal media player, MP3 players, personal desk assistants, tablet devices, digital video recorders, and the like. For purposes of the this specification, the term media device **108** can encompass all of these type of devices with set top boxes, digital video recorders, gateway devices, and the like.

In the example of FIG. **1**, the system **100** also includes a back end server **118** and a usage database **120**. The back end server **118** includes a personalization engine that analyzes the usage habits of a user and makes recommendations based on those usage habits. The usage database **120** is where the usage habits for a user are monitored and information about such usage habits is stored. It is possible to use such user habit information to develop a profile for a user which is then used for recommending advertisements and programming. In some cases, the usage database **120** may be part of the back end server **118**. In the present example, the back end server **118** (as well as the usage database **120**) is connected to the system the system **100** and accessed through the delivery network **2** (**112**).

Turning now to FIG. **2**, a block diagram of an embodiment of a media device **200** is shown. Receiving device **200** may operate similar to the media device described in FIG. **1** and may be included as part of a gateway device, modem, set-top box, or other similar communications device. The device **200** shown may also be incorporated into other systems including an audio device or a display device. In either case, several components necessary for complete operation of the system are not shown in the interest of conciseness, as they are well known to those skilled in the art.

In the device **200** shown in FIG. **2**, the content is received by an input signal receiver **202**. The input signal receiver **202** may be one of several known receiver circuits used for receiving, demodulation, and decoding signals provided over one of the several possible networks including over the air, cable, satellite, Ethernet, fiber and phone line networks. The desired input signal may be selected and retrieved by the input signal receiver **202** based on user input provided through a control interface or touch panel interface **222**. Touch panel interface **222** may include an interface for a touch screen device. Touch panel interface **222** may also be adapted to interface to a cellular phone, a tablet, a mouse, a high end remote or the like.

The decoded output signal is provided to an input stream processor **204**. The input stream processor **204** performs the final signal selection and processing, and includes separation of video content from audio content for the content stream. The audio content is provided to an audio processor **206** for conversion from the received format, such as compressed digital signal, to an analog waveform signal. The analog waveform signal is provided to an audio interface **208** and further to the display device or audio amplifier. Alternatively, the audio interface **208** may provide a digital signal to an audio output device or display device using a High-

Definition Multimedia Interface (HDMI) cable or alternate audio interface such as via a Sony/Philips Digital Interconnect Format (SPDIF). The audio interface may also include amplifiers for driving one more sets of speakers. The audio processor **206** also performs any necessary conversion for the storage of the audio signals.

The video output from the input stream processor **204** is provided to a video processor **210**. The video signal may be one of several formats. The video processor **210** provides, as necessary a conversion of the video content, based on the input signal format. The video processor **210** also performs any necessary conversion for the storage of the video signals.

A storage device **212** stores audio and video content received at the input. The storage device **212** allows later retrieval and playback of the content under the control of a controller **214** and also based on commands, e.g., navigation instructions such as fast-forward (FF) and rewind (Rew), received from a user interface **216** and/or touch panel interface **222**. The storage device **212** may be a hard disk drive, one or more large capacity integrated electronic memories, such as static RAM (SRAM), or dynamic RAM (DRAM), or may be an interchangeable optical disk storage system such as a compact disk (CD) drive or digital video disk (DVD) drive.

The converted video signal, from the video processor **210**, either originating from the input or from the storage device **212**, is provided to the display interface **218**. The display interface **218** further provides the display signal to a display device of the type described above. The display interface **218** may be an analog signal interface such as red-green-blue (RGB) or may be a digital interface such as HDMI. It is to be appreciated that the display interface **218** will generate the various screens for presenting the search results in a three dimensional gird as will be described in more detail below.

The controller **214** is interconnected via a bus to several of the components of the device **200**, including the input stream processor **202**, audio processor **206**, video processor **210**, storage device **212**, and a user interface **216**. The controller **214** manages the conversion process for converting the input stream signal into a signal for storage on the storage device or for display. The controller **214** also manages the retrieval and playback of stored content. Furthermore, as will be described below, the controller **214** performs searching of content and the creation and adjusting of the gird display representing the content, either stored or to be delivered via the delivery networks, described above.

The controller **214** is further coupled to control memory **220** (e.g., volatile or non-volatile memory, including RAM, SRAM, DRAM, ROM, programmable ROM (PROM), flash memory, electronically programmable ROM (EPROM), electronically erasable programmable ROM (EEPROM), etc.) for storing information and instruction code for controller **214**. Control memory **220** may store instructions for controller **214**. Control memory may also store a database of elements, such as graphic elements containing content, various graphic elements used for generating a displayed user interface for display interface **218**, and the like. Alternatively, the memory may store the graphic elements in identified or grouped memory locations and use an access or location table to identify the memory locations for the various portions of information related to the graphic elements. In addition, various graphic elements can be generated in response to computer instructions interpreted by controller **214** for output to display interface **218**. Additional details related to the storage of the graphic elements will be described below. Further, the implementation of the control memory **220** may include several possible embodiments, such as a single memory device or, alternatively, more than one memory circuit communicatively connected or coupled together to form a shared or common memory. Still further, the memory may be included with other circuitry, such as portions of bus communications circuitry, in a larger circuit.

Optionally, controller **214** can be adapted to extract metadata from audio and video media by using audio processor **206** and video processor **210**, respectively. That is, metadata that is contained in video signal in the vertical blanking interval, auxiliary data fields associated with video, or in other areas in the video signal can be harvested by using the video processor **210** with controller **214** as to generate metadata that can be used for functions such as generating an electronic program guide, have descriptive information about received video, supporting an auxiliary information service, and the like. Similarly, the audio processor **206** working with controller **214** can be adapted to recognize audio watermarks that may be in an audio signal. Such audio watermarks can then be used to perform some action such as the recognition of the audio signal, security which identifies the source of an audio signal, or perform some other service. Furthermore, metadata to support the actions listed above can come from a network source which are processed by controller **214**.

Turning now to FIG. **3**, the user interface process of the present disclosure employs an input device that can be used to express functions, such as fast forward, rewind, etc. To allow for this, a tablet or touch panel device **300** (which is the same as the touch screen device **116** shown in FIG. **1** and/or is an integrated example of media device **108** and touch screen device **116**) may be interfaced via the user interface **216** and/or touch panel interface **222** of the receiving device **200**. The touch panel device **300** allows operation of the receiving device or set top box based on hand movements, or gestures, and actions translated through the panel into commands for the set top box or other control device. In one embodiment, the touch panel **300** may simply serve as a navigational tool to navigate the grid display. In other embodiments, the touch panel **300** will additionally serve as the display device allowing the user to more directly interact with the navigation through the grid display of content. The touch panel device may be included as part of a remote control device containing more conventional control functions such as activator buttons. The touch panel **300** can also includes at least one camera element. As described in further detail below, content displayed on the touch panel device **300** may be zapped or thrown to the main screen (e.g., display device **114** shown in FIG. **1**).

Turning now to FIG. **4**, the use of a gesture sensing controller or touch screen, such as shown, provides for a number of types of user interaction. The inputs from the controller are used to define gestures and the gestures, in turn, define specific contextual commands. The configuration of the sensors may permit defining movement of a user's fingers on a touch screen or may even permit defining the movement of the controller itself in either one dimension or two dimensions. two-dimensional motion, such as a diagonal, and a combination of yaw, pitch and roll can be used to define any three-dimensional motion, such as a swing. A number of gestures are illustrated in FIG. **4**. Gestures are interpreted in context and are identified by defined movements made by the user.

Bumping **420** is defined by a two-stroke drawing indicating pointing in one direction, either up, down, left or right. The bumping gesture is associated with specific commands

in context. For example, in a TimeShifting mode, a left-bump gesture **420** indicates rewinding, and a right-bump gesture indicates fast-forwarding. In other contexts, a bump gesture **420** is interpreted to increment a particular value in the direction designated by the bump. Checking **440** is defined as in drawing a checkmark. It is similar to a downward bump gesture **420**. Checking is identified in context to designate a reminder, user tag or to select an item or element. Circling **440** is defined as drawing a circle in either direction. It is possible that both directions could be distinguished. However, to avoid confusion, a circle is identified as a single command regardless of direction. Dragging **450** is defined as an angular movement of the controller (a change in pitch and/or yaw) while pressing a button (virtual or physical) on the tablet **300** (i.e., a "trigger drag"). The dragging gesture **450** may be used for navigation, speed, distance, time-shifting, rewinding, and forwarding. Dragging **450** can be used to move a cursor, a virtual cursor, or a change of state, such as highlighting outlining or selecting on the display. Dragging **450** can be in any direction and is generally used to navigate in two dimensions. However, in certain interfaces, it is preferred to modify the response to the dragging command. For example, in some interfaces, operation in one dimension or direction is favored with respect to other dimensions or directions depending upon the position of the virtual cursor or the direction of movement. Nodding **460** is defined by two fast trigger-drag up-and-down vertical movements. Nodding **460** is used to indicate "Yes" or "Accept." X-ing **470** is defined as in drawing the letter "X." X-ing **470** is used for "Delete" or "Block" commands. Wagging **480** is defined by two trigger-drag fast back-and-forth horizontal movements. The wagging gesture **480** is used to indicate "No" or "Cancel."

Depending on the complexity of the sensor system, only simple one dimensional motion or gestures may be allowed. For instance, a simple right or left movement on the sensor as shown here may produce a fast forward or rewind function. In addition, multiple sensors could be included and placed at different locations on the touch screen. For instance, a horizontal sensor for left and right movement may be placed in one spot and used for volume up/down, while a vertical sensor for up down movement may be place in a different spot and used for channel up and down. In this way specific gesture mappings may be used. As discussed in further detail below, a two finger swipe gesture may be utilized to initiate the throwing or moving of content from the tablet **300** to the main screen or display device **114**.

FIG. **5** illustrates an exemplary embodiment of an interface known as a card, where various applications are presented within such a card interface. For example, live television guide application that represents different television listings are presented within card interface **500**. That is, the card functions as a window that displays a representation of the application being run. Such cards can be presented on a device including a tablet, a media player, a phone, a monitor, a computer, and any other device that has a display. Cards can represent different applications such as electronic program guides, playlists, social media interfaces, games, video, audio, web pages, browsers, rendered media services, and the like.

Returning to card interface **500**, cell **510** displays information about a television show, in this example an infomercial, being broadcasted on a broadcast channel called Comedy Central. Play control **512** when activated using a gesture will cause a tuner in a device such as a set top box, tablet, television, and the like, to tune to a requested channel. Graphic **515** such as a logo comports to the broadcast channel that can be tuned to by activating play control **512**. Cell **520** displays information for a television show called The Night Listener which is being broadcasted on American Movie Classics (AMC) which is indicated by graphic **525**. If a user wants to tune to AMC, play control **522** can be activated with a gesture. The result of the activation of play controls **512**, **522** leads to the outputting of a tuned channel to a display or recording device.

FIG. **6** is an exemplary embodiment of a card interface **600** for another application that represents different media assets (video, audio, pictures, and the like) that are available for playback. Specifically, such media assets can be stored in a content source such as local storage medium, a remote storage medium, an on-demand media service such as video on demand, over the top media service, and the like, where a media asset is delivered to a media device when requested. For example, in response to the activation of play control **612**, the media asset Nacho Libre as indicated by cell **610** can be played back using the exemplary architecture as described for FIG. **1**. Similarly, a media asset identified as African White Rhino in cell **620** can be played when play control **622** is activated with a gesture.

Graphics **612** and **625** represent thumbnails, poster art, logo, icon, and the like that are used to identify a media asset whereby graphic **612** represents Nacho Libre while graphic element **625** represents African White Rhino. Such graphics can be linked to a media asset by an association made by a user, program guide information that specifies a particular graphic, a screenshot from a media file, and the like.

FIG. **7** is an exemplary embodiment of a card interface **700** that is manipulated by a gesture or an action by an input device. Card interface **700** has a display area **705** which is the part of the card or window that can be viewed. Sometimes there may be more elements where a card may have more elements than can be displayed in display area **705** at one time. For example, cell **710** is not displayed for card interface **700** while cells **720**, **730**, **740**, **750**, and part of cell **760** are viewable in display area **705**.

Cards can be manipulated in a vertical direction using a gesture or control input, where cells that are displayed are capable of being shown in response to such a gesture of control in an up or down motion. When card interface **800** from FIG. **8** is subjected to a downward gesture and/or control input, as an manipulation, display area **705** will show cell **710**, while cell **760** is moved down so far as not to be viewable. Likewise part of cell **750** is not displayed in response to the downward gesture/control input. Cells **750** and **760** can be viewed again in display area **705** if one operates card interface **800** in an upward gesture, as a manipulation, to yield the arrangement of cells shown in card interface **700**.

FIG. **9** is an exemplary embodiment of user interface **900** of a device that presents multiple card interfaces. In this illustrative embodiment, display area **910** displays multiple cards **920**, **930**, and **940** which can be manipulated in a horizontal direction in response to a gesture and/or control input, where part of card **940** is not displayed in display area **910**. If one manipulates display area **910** towards the left with a gesture/control input, the result is shown in FIG. **10** for user interface **1000** where card **940** is completely shown in display area **910** while part of card **920** is not displayed. If one were to move display area **910** to the right with a gesture/control input, the result is shown in FIG. **9**, where card **920** is completely shown in display area **910** while part of card **940** is not displayed.

FIG. **11** displays an alternative embodiment of a multiple card interfaces shown in user interface **1100** that is subjected

to a manipulation. Specifically, cards **1120**, **1130**, and **1140**, are shown in display area **1110**. These cards in response to a gesture/control input in the right direction will result in user interface **1200** shown in FIG. **12**. That is, user interface **1200** shows that cards **1120** and **1130** are moved to the right, as to show a new card **1150** in display area **1110**. If display area **1110** in FIG. **12** is moved to the left in response to a gesture/control interface, card **1150** will not be displayed while card **1120** becomes visible in display area **1110** as shown in FIG. **11**.

FIG. **13** displays an illustrative embodiment of implementing an interest feature across multiple card interfaces that a user can use for locating various items of interest. That is, user interface **1300** displays three cards **1320**, **1330**, and **1340** which have various regions of interest that a user has interest in. The interest feature can be activated by enabling a command, gesture, control interface, and the like. That is, the interest feature can be activated in response to a user action to cause an automatic result where such items or regions of interest are located without having to have a user search through all of the displayed cards.

Regions of interest **1325**, **1335**, and **1345** be developed in accordance with a user profile where a user can indicate that they have particular interests in actors, television shows, directors, sports teams, music, and the like where such attributes can be stored in a database. An architecture as shown in FIG. **1** can use these user attributes and apply a search algorithm to find text, pictures, and the like which can be present on different cards. A display device will then attempt to show such areas of interest by rearranging such cards in response to the activation of the interest feature.

Referring to FIG. **13**, display area **1310** has a card **1320** with an interest region **1325** that is towards the bottom of the card **1320**. Card interface **1330** shows that a region of interest **1335** is towards the top of the card where most of region of interest **1335** is not visible in display area **1310**. Card interface **1340** presents a case where the region of interest **1345** is below the display area **1310**. This means that region of interest **1345** is not seen because it is not within display area **1310**.

FIG. **14** presents an embodiment **1400** of the application of the interest feature where multiple cards are automatically moved to show regions of interest in a display area **1310**. That is, card **1320** is moved towards the top as to have region of interest **1325** moved towards the upper part of display area **1310**. In contrast, in order to show region of interest **1335**, card **1330** is moved down so that region of **1335** is now visible. Card **1340** is automatically moved in an up direction as to have region of interest **1345** displayed in display area **1310**.

FIGS. **15** and **16** show an alternative embodiment for the application of the interest feature. In FIG. **15**, a user interface **1500** with multiple cards with various sizes is shown. In the example, cards **1520**, **1550**, and **1570** have regions of interest **1525**, **1555**, and **1575**, respectively. The problem with the presentation of display area **1510** is that cards **1520** and **1570** are not visible, while card **1550** can be seen. That is, display area **1510** has cards **1530**, **1540**, and **1560** which do not any areas of interest. When the interest feature as previously described is activated, the results are shown in FIG. **16** where cards **1520** and **1570** are moved to display area **1570** by having the intervening cards **1530**, **1540**, and **1560** deleted/removed from display area **1570**.

FIG. **17** presents a flow chart **1700** for determining regions of interest as to update the presentation of displayed cards in accordance with the present disclosure. A controller **214** within media device **200** can be used to implement this process using computer code, although such a method can also be implemented using other types of devices, client server relationship, and the like.

In step **1705**, a media device **200** configures and generates cards or windows for display as shown in FIGS. **5-12**, for example. In response to a user command, step **1710** activates a function of determining regions of interest in the generated cards/windows in a media device **200**. Specifically, in response to a gesture/control input command, media device **200** will initiate an action of determining what constitutes a region of interest.

Step **1715** has a media device **200** determining topics, metadata, graphics, and the like as a region of interest in accordance with user preference information. Such information can be determining by using a user profile where a user explicitly lists keywords or indicates various subjects that the user has interest (i.e., I like baseball, I hate hockey). Other approaches can determine user preference information in accordance with how a user interfaces with media device **200** or other devices, where video and audio media that are accessed more are assumed to be more relevant to a user than video and audio media that are accessed infrequently by a user. Other preference techniques can be used for determining a user's preferences can be applied in accordance with the described principles. In the present example, metadata or keywords can be generated as part of the user preference information, although other types of data can be used as well.

Step **1720** then uses the results of such determined user preference information and applies a search function to find such information if present on the displayed cards/windows. For example, if keywords are developed from step **1715**, a search function looking for such keywords in the text present on cards can be used to determine a region of interest. Similarly, if there is metadata that is associated with a graphic present on a card, a keyword that matches such metadata would indicate that such a graphic would be potentially a region of interest. Other search techniques can be applied for matching up regions of interest can be applied in accordance with the described principles.

Step **1725** modifies the windows/cards for display. Once the regions of interest are determined in step **1720**, step **1725** uses this information to determine what cards have regions of interest. The cards that have regions of interest are moved up or down by media device **200** as to show such regions of interest in a manner as illustrated in FIGS. **13-16**. In addition, if there are cards that do not possess any regions of interest, such cards can be optionally closed and removed from a display area. The display area can then be updated with new cards that have regions of interest, as determined in previous steps **1710-1720**.

It should be understood that the elements shown in the FIGS. may be implemented in various forms of hardware, software or combinations thereof. Preferably, these elements are implemented in a combination of hardware and software on one or more appropriately programmed general-purpose devices, which may include a processor, memory and input/output interfaces.

The present description illustrates the principles of the present disclosure. It will thus be appreciated that those skilled in the art will be able to devise various arrangements that, although not explicitly described or shown herein, embody the principles of the disclosure and are included within its scope.

All examples and conditional language recited herein are intended for informational purposes to aid the reader in understanding the principles of the disclosure and the con-

cepts contributed by the inventor to furthering the art, and are to be construed as being without limitation to such specifically recited examples and conditions.

Moreover, all statements herein reciting principles, aspects, and embodiments of the disclosure, as well as specific examples thereof, are intended to encompass both structural and functional equivalents thereof. Additionally, it is intended that such equivalents include both currently known equivalents as well as equivalents developed in the future, i.e., any elements developed that perform the same function, regardless of structure.

Thus, for example, it will be appreciated by those skilled in the art that the block diagrams presented herein represent conceptual views of illustrative circuitry embodying the principles of the disclosure. Similarly, it will be appreciated that any flow charts, flow diagrams, state transition diagrams, pseudocode, and the like represent various processes that can be substantially represented in computer readable media and so executed by a computer or processor, whether or not such computer or processor is explicitly shown. The computer readable media and code written on can be implemented in a transitory state (signal) and a non-transitory state (e.g., on a tangible medium such as CD-ROM, DVD, Blu-Ray, Hard Drive, flash card, or other type of tangible storage medium).

The functions of the various elements shown in the figures may be provided through the use of dedicated hardware as well as hardware capable of executing software in association with appropriate software. When provided by a processor, the functions may be provided by a single dedicated processor, by a single shared processor, or by a plurality of individual processors, some of which may be shared. Moreover, explicit use of the term "processor" or "controller" should not be construed to refer exclusively to hardware capable of executing software, and may implicitly include, without limitation, digital signal processor ("DSP") hardware, read only memory ("ROM") for storing software, random access memory ("RAM"), and nonvolatile storage.

Other hardware, conventional and/or custom, may also be included. Similarly, any switches shown in the figures are conceptual only. Their function may be carried out through the operation of program logic, through dedicated logic, through the interaction of program control and dedicated logic, or even manually, the particular technique being selectable by the implementer as more specifically understood from the context.

Although embodiments which incorporate the teachings of the present disclosure have been shown and described in detail herein, those skilled in the art can readily devise many other varied embodiments that still incorporate these teachings. It is noted that modifications and variations can be made by persons skilled in the art in light of the above teachings.

The invention claimed is:

1. A method comprising:

determining, in response to a user command, regions of interest within each of a plurality of cards by searching information indicating previous user preferences; and

updating for display the plurality of cards to visibly show in a display area of a display device the at least one region of interest of multiple cards included in a first group of the plurality of cards, wherein said updating includes repositioning the plurality of cards to remove cards not included in the first group from the display area and to visibly display the at least one region of interest within all of the multiple cards included in the first group within the display area of the display device.

2. The method of claim **1**, wherein the at least one region of interest is determined from user preference information.

3. The method of claim **2**, wherein the user preference information comes from at least one or a user profile, prior user activity with media, and explicit user inputs.

4. The method of claim **1**, wherein the repositioning further comprises moving the multiple cards in an up or down direction to visibly show the at least one region of interest in all of the multiple cards.

5. The method of claim **4**, wherein the updating for display has a first card and a second card included in the multiple cards being moved in opposite directions when visibly showing first and second regions of interest included in the first and second cards, respectively.

6. The method of claim **4**, wherein the updating for display has a first card and a second card included in the multiple cards being moved in the same direction when visibly showing first and second regions of interest included in the first and second cards, respectively.

7. Apparatus comprising one or more processors configured to:

determine, in response to a user command, regions of interest within each of a plurality of cards by searching information indicating previous user preferences; and

update for display the plurality of cards to visibly show in a display area of a display device the at least one region of interest of multiple cards included a first group of the plurality of cards, wherein said updating including repositioning the plurality of cards to remove cards not included in the first group from the display area and to visibly display the at least one region of interest within all of the multiple cards included in the first group within the display area of the display device.

8. The apparatus of claim **7**, wherein the at least one region of interest is determined from user preference information.

9. The apparatus of claim **8**, wherein the user preference information comes from at least one or a user profile, prior user activity with media, and explicit user inputs.

10. The apparatus of claim **7**, wherein the repositioning further comprises moving the multiple cards in an up or down direction to visibly show the at least one region of interest in all of the multiple cards.

11. The apparatus of claim **10**, wherein the updating for display has a first card and a second card included in the multiple cards being moved in opposite directions when visibly showing first and second regions of interest included in the first and second cards, respectively.

12. The apparatus of claim **10**, wherein the updating for display has a first card and a second card included in the multiple cards being moved in the same direction when visibly showing first and second regions of interest included in the first and second cards, respectively.

13. A non-transitory computer-readable medium storing executable program instructions to cause a computer executing the instructions to perform a method comprising:

determining, in response to a user command, regions of interest within each of a plurality of cards by searching information indicating previous user preferences; and

updating for display the plurality of cards to visibly show in a display area of a display device the at least one region of interest of multiple cards included in a first group of the plurality of cards, wherein said updating includes repositioning the plurality of cards to remove

cards not included in the first group from the display area and to visibly display the at least one region of interest within all of the multiple cards included in the first group within the display area of the display device.

14. The non-transitory computer-readable medium of claim **13**, wherein the at least one region of interest is determined from user preference information.

15. The non-transitory computer-readable medium of claim **14**, wherein the user preference information comes from at least one or a user profile, prior user activity with media, and explicit user inputs.

16. The non-transitory computer-readable medium of claim **13**, wherein the repositioning further comprises moving the multiple cards in an up or down direction to visibly show the at least one region of interest in all of the multiple cards.

17. The non-transitory computer-readable medium of claim **16**, wherein the updating for display has a first card and a second card included in the multiple cards being moved in opposite directions when visibly showing first and second regions of interest included in the first and second cards, respectively.

18. The non-transitory computer-readable medium of claim **16**, wherein the updating for display has a first card and a second card included in the multiple cards being moved in the same direction when visibly showing first and second regions of interest included in the first and second cards, respectively.

* * * * *

Senator Tillis Questions for the Record – Protecting Real Innovations by Improving Patent Quality

Ms. Bridget Asay:

1. How would you define or describe a low quality patent?

A low-quality patent is a patent that in whole or in part does not meet the legal standards for patentability and is likely to be invalidated if challenged in litigation or administrative proceedings. *See, e.g.,* Statement of Andrei Iancu, Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, before the Committee on the Judiciary, United States Senate, *Oversight of the U.S. Patent and Trademark Office* (April 18, 2018) ("In general, quality patents are those that are issued in compliance with all the requirements of Title 35 of the United States Code as well as relevant case law at the time of issuance, and survive challenge down the line."); GAO, Report to the Chairman, Committee on the Judiciary, House of Representatives, *Intellectual Property: Patent Office Should Define Quality, Reassess Incentives, and Improve Clarity* (2016) ("Most stakeholders GAO interviewed said they would define a quality patent as one that would meet the statutory requirements for novelty and clarity, among others, and would be upheld if challenged in a lawsuit or other proceeding.").

2. What are the biggest problems that you see posed by low quality patents?

In my testimony, I focused on the problem of patent trolling: litigation and threats of litigation by holders of low-quality patents, often called patent-assertion entities. *See, e.g.,* Federal Trade Commission, Patent Assertion Entity Activity (October 2016) (FTC Report), at 1 ("Patent assertion entities (PAEs) are businesses that acquire patents from third parties and seek to generate revenue by asserting them against alleged infringers."); *id.* at A-2 ("'Patent assertion entity' or 'PAE' means a firm whose business model primarily focuses on purchasing and asserting patents."); *cf. Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 579 U.S. 93, 109 (2016) ("Trolls, in the patois of the patent community, are entities that hold patents for the primary purpose of enforcing them against alleged infringers, often exacting outsized licensing fees on threat of litigation.").

Patent litigation is expensive and, for a number of reasons, it is difficult to get meritless infringement claims dismissed at an early stage. Patent-assertion entities can collect low-quality patents and exploit the economics of patent litigation to force favorable settlements even though their infringement claims are weak and would almost certainly fail on the merits. The FTC study observed that what it called "Litigation PAEs" typically sued alleged infringers and then settled for amounts less than $300,000—an amount that, according to the American Intellectual Property Law Association, "approximate[d] the lower bound of early-stage litigation costs of defending a patent infringement suit." FTC Report, at 43 & n.165. The FTC observed that "[g]iven the relatively low dollar amounts of the licenses, the behavior of Litigation PAEs is consistent with nuisance litigation." *Id.*

Paying off these claims, and paying for lawyers to handle them, puts a substantial burden on many businesses, including start ups and small businesses. The FTC found that its "study

suggests that Study PAEs asserted their patents not only against manufacturers of the accused products, but also against firms that were end-users of the products" and cites public comments complaining about demand letters targeting small businesses like bakeries and coffee shops. *Id.* at 6 & n.11. A 2013 White House report cited estimates that PAEs had made between 60,000 and 100,000 litigation threats in 2012 alone. Executive Office of the President, *Patent Assertion and Innovation* (June 2013) (White House Report), at 6; *see also id.* at 10 ("the majority of PAE suits target small and inventor-driven companies").

The White House report also explains and summarizes the broader economic impacts of PAE litigation, including decreased innovation and the opportunity costs of "economic 'dead weight loss.'" *Id.* at 12; *see also id.* at 9-10.

3. What initiatives in this area have been particularly successful, in your perspective?

The Leahy-Smith America Invents Act created the inter partes review process. Inter partes review, or IPR, "allows a third party to ask the U.S. Patent and Trademark Office to reexamine the claims in an already-issued patent and to cancel any claim that the agency finds to be unpatentable in light of prior art." *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 265 (2016). IPR has facilitated somewhat quicker and less expensive review and invalidation of low-quality patents. Although the IPR process cannot work properly when the PTAB uses its discretion to deny review of low-quality patents that Congress intended the IPR process to address, Director Vidal's June 21, 2022 Memorandum provides guidance to the agency to address this issue. Specifically, Director Vidal's guidance clarifies that to benefit the patent system and the public good, there are certain circumstances under which the PTAB will not deny institution on the basis of the discretionary *Fintiv* factors, including when a petition presents compelling evidence of unpatentability. *See* Katherine Vidal, *Interim Procedure for Discretionary Denials in AIA Post Grant Proceedings with Parallel District Court Litigation*. (June 21, 2022), https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf. This guidance is important to ensure that the IPR procedure continues to address low-quality patents. Congress may want to consider codifying it.

The consumer-protection oriented efforts led by state attorneys general and the Federal Trade Commission about a decade ago focused particular attention on litigation threats directed at end users and consumers. Those efforts also prompted state statutes aimed at bad-faith assertions of patent infringement. A North Carolina federal court recently upheld North Carolina's Abusive Patent Assertions Act. *NAPCO, Inc. v. Landmark Tech. A, LLC*, 555 F. Supp. 3d 189, 212 (M.D.N.C. 2021). That court noted that "[s]ince 2013, over two dozen states have enacted statutes focused on curbing bad faith assertions of patent infringement by so-called "patent trolls." *Id.* at 206. These statutes provide companies with additional tools to deter baseless patent litigation and recover fees and costs in defending that litigation.

4. How can the USPTO improve collaboration on prior art searching—both domestically (e.g. between USPTO and the FDA) and internationally (e.g. among the IP5)?

This important topic is beyond the scope of my testimony. I note, however, that President Biden's Executive Order 14036 (Promoting Competition in the American Economy) directed the FDA to engage with the USPTO and that the two agencies have begun that collaborative process. *See* USPTO, *What are USPTO-FDA Collaboration Initiatives?*, https://www.uspto.gov/initiatives/fda-collaboration/what-are-uspto-fda-collaboration-initiatives. In July 2022, the Director of the USPTO wrote to the Director of the FDA and provided a detailed list of potential initiatives, including more training for examiners, more examination time, and collaboration aimed at improving prior art searches.

5. Are there any particular data points or metrics that could help prioritize discussions about improving patent quality? What agencies or other organizations could contribute to collecting such data?

A number of stakeholders have noted the lack of transparency in the ownership of patent-assertion entities. *E.g.*, FTC Report, at 11, 52; NAAG Letter, *infra*, at 2; White House Report, at 4. The FTC recommended amending Fed. R. Civ. P. 7.1 to "expand the reportable relationships" and thus "provide defendants and the judiciary with a better understanding of financial relationships relating to firms that may appear in the courtroom." FTC Report, at 11. An expanded and updated version of the FTC's 2016 study would provide critical data about patent assertion entities and patent litigation.

Detailed tracking and analysis of both IPR and litigation outcomes would also provide useful metrics about patent quality. The USPTO provides some data about IPR outcomes. USPTO, Statistics, https://www.uspto.gov/patents/ptab/statistics. A more granular analysis of IPR and litigation outcomes could help identify why low-quality patents issue—for example, failure to consider prior art, mistakes in assessing prior art, mistakes in granting patents covering ineligible subject matter under § 101, failure to require full and clear disclosure and claiming under § 112, etc. It would also be helpful to track PAE involvement in IPRs. USPTO Director Vidal recently announced that the USPTO is "in the early stages of discussing a collaboration with the American Intellectual Property Law Association and the Intellectual Property Owners Association to develop a training initiative for patent examiners." Remarks by USPTO Director Kathi Vidal at PPAC (May 12, 2022), https://www.uspto.gov/about-us/news-updates/remarks-uspto-director-kathi-vidal-ppac-0. According to the Director, this "training will focus on how their examination prosecution record is used after a patent is granted — and on techniques to improve the clarity of that record." Detailed review of the grounds on which issued patents are later canceled could be part of this collaboration.

6. In the hearing, you mentioned the National Association of Attorneys General playing a consumer protection role to combat bad actors asserting low quality patents. Could you please elaborate on that?

State attorneys general bring a consumer-protection focus to the practices of patent assertion entities. They have taken action where these entities have targeted small businesses and

end users in their states. The Washington Attorney General filed suit last year against Landmark Technologies after that entity sent demand letters to small businesses like florists and candy stores and sued five Washington businesses that refused to pay for licenses. *See* Office of the Attorney General, Washington State, *AG Ferguson Files Lawsuit Against "Patent Troll" Targeting Small Businesses,* https://www.atg.wa.gov/news/news-releases/ag-ferguson-files-lawsuit-against-patent-troll-targeting-small-businesses; *State of Washington v. Landmark Tech. A LLC*, No. 21-2-06348-5 SEA (Wash. Super. Ct. filed May 13, 2021). In 2013, Vermont sued MPHJ Technologies after it threatened Vermont small businesses and nonprofits with patent-infringement suits. *E.g., Vermont v. MPHJ Tech. Invs., LLC*, 803 F.3d 635, 638 (Fed. Cir. 2015) (describing state's enforcement action).

In 2014, the Attorneys General of 42 States, through the National Association of Attorneys General (NAAG) sent a letter to this Committee, which began:

> We, the Attorneys General of 42 states, write to express our support of your efforts to enact bipartisan patent reform legislation, and to share our concerns with the currently proposed S. 1720 and the recently passed H.R. 3309. So-called patent trolls stifle innovation and harm our economy by making dubious claims of patent infringement and using the threat of expensive litigation to extort money from small businesses and nonprofits. We have received many complaints from these businesses and nonprofits, our constituents, who are desperate for relief from the misuse of the patent system. While these threats were once focused on tech businesses, they are now levied at all manner of businesses, including banks, hospitals, restaurants and hotels.

Letter from J.B. Van Hollen, NAAG President, et al. to Hon. Patrick Leahy, Chairman, et al. (Feb. 24, 2014) (NAAG Letter). The NAAG Letter asked the Committee to consider legislation that would clarify and confirm state enforcement authority in this area.

7. What technological improvements should the USPTO focus on to improve prior art searching?

This important topic is beyond the scope of my testimony. I note, however, that President Biden's Executive Order 14036 (Promoting Competition in the American Economy) directed the FDA to engage with the USPTO and that the two agencies have begun that collaborative process. *See* USPTO, *What are USPTO-FDA Collaboration Initiatives?,* https://www.uspto.gov/initiatives/fda-collaboration/what-are-uspto-fda-collaboration-initiatives. In July 2022, the Director of the USPTO wrote to the Director of the FDA and provided a detailed list of potential initiatives, including more training for examiners, more examination time, and collaboration aimed at improving prior art searches.

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September 13, 2022

Senator Richard J. Durbin
Chair, Committee on the Judiciary
United States Senate
Washington, DC 20510-6275

Re: Response to Questions for the Record -- Intellectual Property Subcommittee Hearing, "Protecting Real Innovations by Improving Patent Quality", June 22, 2021

Dear Senator Durbin,

I thank you for the opportunity to provide written responses regarding my testimony at the Intellectual Property Subcommittee Hearing, "Protecting Real Innovations by Improving Patent Quality" on June 22, 2021. My responses to the questions posed by Chair Leahy and Senator Tillis are set forth below. I would be happy to answer any additional questions that you or any members of the Subcommittee may have.

Questions from Senator Patrick Leahy

1. The tradeoff for getting the monopoly powers of a patent is that you have to disclose everything about your invention. Given that it is the public against whom these monopoly powers are exercised, any member of the public should be able to look up any patent and see who the current owner is. But that's not the case today.

    a. Would it help the public if patent owners were required to record the ownership status of their patents at the PTO so that the public knows who exactly is being granted the monopoly powers of a patent and who stands to benefit from any real or threatened litigation?

    Response: Yes, the dearth of publicly available patent ownership information is well known, and numerous commentators have observed that this lack of transparency can facilitate various abuses.[1] *I fully support the proposals made by prior commentators that beneficial ownership of patents, both initially and upon transfer, be recorded at the PTO, and that failure to record this information on a timely basis be grounds for revocation of a patent. In addition, I have proposed a more substantial "annotation" system for patents*

[1] Jonathan Stroud & Levi Lall, *Paper of Record: Modernizing Ownership Disclosures for U.S. Patents*, 124 W. VA. L. REV. 449 (2022), Lisa Larrimore Ouellette & Heidi Williams, *Reforming the Patent System*, HAMILTON PROJECT (2020), Nathan P. Anderson, *Striking a Balance The Pursuit of Transparent Patent Ownership*, 30 BERKELEY TECH. L.J. 395 (2015).

based on the well-known practice of "Shepardizing" judicial decisions in order further to increase transparency regarding patent assets in the market.[2]

2. During the hearing, there was discussion of some of the quality metrics found in the USPTO's Fiscal Year 2020 Performance and Accountability Report (https://www.uspto.gov/sites/default/files/documents/USPTOFY20PAR.pdf). In particular, there was a statement that the report concluded that examiners apply the statutory patentability requirements correctly about 93% of the time. This appears to be a reference to the Patent Correctness Indicators that are found on page 67 of the report, which do indicate that examiners on average apply each of four separate statutory requirements correctly about 93% of the time. More specifically, it concludes that examiners apply section 101 correctly 97.7% of the time; section 102 correctly 94.3% of the time; section 103 correctly 88.9% of the time; and section 112 correctly 90.6% of the time.

   I want to make sure that the Subcommittee correctly understands the implications of these statistics. My understanding is that because an examiner would have to apply every one of the four statutory requirements correctly in order to correctly examine an application, these statistics indicate a per application accuracy rate that is significantly lower.

   a. Is that the correct understanding of the Patent Correctness Indicators?

      Response: Yes, I believe this interpretation is correct. In order for an application as a whole to be "correctly" examined, examination must be "correct" under each of Sections 101, 102, 103 and 112.

   b. What is an accurate assessment, using the Patent Correctness Indicator numbers, of the accuracy rate per application, applying all four statutory criteria?

      Response: The information presented in the Performance and Accountability Report is insufficient to make an independent determination of per-application accuracy, as the distribution of "incorrect" examinations among applications is not disclosed. As presented, the 93% accuracy figure, which seems to be a simple unweighted average of the four per-section accuracy percentages, would only be meaningful if the same number of applications had each of the four error types, which seems unlikely.

   c. Is there some other metric by which you would prefer to measure the accuracy rate—for example by looking at all patent claims whose validity is assessed by a court over a certain window of time and comparing the rate of final adjudications, by claim, confirming validity to the total number of final

[2] Jorge L. Contreras, *Shepardizing Patents*, Patently-O, (Jun. 16, 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3868513.

adjudications, by claim—and what is the accuracy rate under your preferred metric?

Response: *There are numerous potential measures of examiner accuracy. The accuracy measures presented in the Performance and Accountability Report are useful inasmuch as they give an overall picture of the degree to which examiners comply with PTO examination procedures. A low degree of compliance indicates areas in which PTO training of examiners should be enhanced or rules should be clarified. Moreover, individual performance against these criteria (even though not presented in the Performance and Accountability Report) could be used to identify examiners in need of enhanced training or otherwise for performance incentive purposes.*

However, while low "accuracy" results clearly indicate a need for improvement in the examination process, high accuracy results do not necessarily indicate that examinations are of "high" quality. This is because, based on my understanding of the measures, the reviewers do not undertake an independent examination of the applications at issue, nor search for nor substantively engage with prior art references. Thus, even if an examiner complies with relevant procedural requirements during examination, there is no assurance that the examiner is performing well (i.e., identifying relevant prior art, applying proper reasoning to the applicant's arguments, framing responses in the most effective manner, etc.)

As such, other measures of examiner effectiveness could be used. As the Senator suggests, judicial determinations of claim validity are probably the best indicators of claim quality. Yet there are comparatively few claims that reach a final judicial determination of validity. A larger sample size could be obtained by looking instead at PTAB evaluations of challenged claims. Yet both judicial and PTAB determinations are skewed toward patents and claims that are commercially valuable and thus motivate private challenge.

Perhaps it is useful to focus primarily on commercially valuable claims, as there are fewer market-wide implications of low-quality patents that are not commercially valuable. However, if there is a desire to evaluate examiner performance generally, the PTO could establish a more rigorous internal evaluation process in which randomly selected applications are examined by an independent examination team, at least to the stage of an initial office action, but possibly through allowance or final rejection (an analogy to this process is the IRS taxpayer audit). Such a second examination could identify areas in which the first examiner's work was lacking and thus form a more complete basis for assessing the accuracy of the examination process.

3. As you know, if the PTO wants to reject a patent application, many, many people will review that proposed rejection. If the applicant disagrees with an examiner's

rejection, she can appeal to the Patent Trial and Appeal Board, where three different administrative patent judges will review.

If those patent judges agree with the examiner's rejection, the applicant can still appeal to the Federal Circuit, where PTO attorneys will review the rejection, as will the court. In stark contrast, if the examiner wants to allow the application, only one person has to have any hand in that decision.

a. How would you strike a balance between making sure there is some review of a decision to issue a patent while making sure the patent system remains efficient?

Response: Though it could be improved in some ways, PTAB review is an effective means for reviewing the validity of issued patents. The PTAB system is efficient because market actors affected by issued patents are the ones most incentivized to bring challenges, and the system will spend little time on patents that have little commercial value.

This being said, as I pointed out in my testimony, the Supreme Court in Lear v. Atkins, 395 U.S. 653 (1969), *recognized the significant harm that can result from the presence of invalid or "bad" patents in the market. As I have previously noted:*[3]

1) A bad patent can act as prior art preventing later inventors from receiving a patent they deserve after actually developing the claimed technology.

2) The holder of a bad patent can enforce the patent against others who are more successful at developing the technology (i.e., a bad patent is not necessarily an unenforceable patent).

3) Even if a bad patent can eventually be invalidated in court, patent litigation is costly, especially for small and medium sized enterprises (SMEs). Some may prefer to settle infringement claims rather than incur the cost of litigation, leaving the bad patent on the books for assertion against others.

4) The existence of bad patents can itself chill new research and innovation, thus reducing market entry, technology development and competition.

As a result, I have proposed[4] *a series of measures at the PTO to help to detect and avoid the issuance of inoperative and other invalid patents: (1) increasing*

[3] Jorge L. Contreras, *Patent Reality Checks: Eliminating Patents on Fake, Impossible and Other Inoperative Inventions*, 102 J. PAT. TRADEMARK OFF. SOC'Y 2, 8 (2021).
[4] Contreras, *Patent Reality Checks, supra* note 3, at 13-16.

PTO efforts to detect potentially inoperable inventions, (2) heightening examination requirements, including a certification of enablement, for certain inventions, (3) enabling greater public input into the examination process, and (4) increasing penalties for fraudulent conduct before the PTO (for additional detail, see response to Senator Tillis's question 9, below).

b. Are there certain types of cases that might particularly warrant a second set of eyes, such as (1) cases involving inventors who have had scientific papers retracted and other red flags, (2) any applications where the examiner proposes to allow the application on the first office action, or (3) any applications that have family members that have been the subject of inter partes review or court proceedings?

Response: Yes. I have previously proposed[5] that the PTO identify applications in which certain "red flags" appear (subpart (1) of Question 3.b), including inventions based on retracted papers, inventors subject to criminal indictments, securities investigations, disciplinary proceedings, scientific misconduct allegations and other forms of behavior that could give rise to questions about the assertions made in an application. Such flagged applications should receive heightened examination.

I support the Senator's suggestion in subpart (2) that applications allowed on the first office action be added to this set of "red flag" applications, not because improper conduct is suspected on the part of the applicant, but because the examiner may not have investigated the prior art or other requirements for patentability as thoroughly as possible.

With respect to subpart (3), I might limit enhanced examination to applications having family members that were invalidated or limited in PTAB or judicial proceedings. Family members that emerged from such proceedings unscathed are arguably stronger than average patents, and perhaps even "gold plated" as discussed in my response to Senator Tillis's Question 13, below.

4. As you so clearly outlined with the Theranos story, there is a serious lack of real-world review of patent applications for things like indictments for lying about having invented the claimed invention. One avenue of real-world review that came up during the hearing was making sure that no inconsistent information is submitted to different government agencies, such as the PTO and the Food and Drug Administration, for different purposes.

a. Would you support a requirement that an applicant must disclose to the PTO anything that applicant has said to any other agency about any prior art reference at issue in the application?

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[5] Contreras, *Patent Reality Checks, supra* note 3, at 13-15.

Response: Yes. The sometimes significant mismatch between information disclosed to the PTO and the FDA is well-known and has led to a range of proposals for increased interaction between these agencies, including the Interagency Patent Coordination and Improvement Act (S. 4430) introduced this term.[6] These proposals, if adopted, would significantly improve information transparency between these two key innovation agencies.

However, as suggested by the Senator, there is room for additional improvement, including by imposing affirmative disclosure obligations on patent applicants. An obligation on patent applicants to disclose any statements regarding prior art made to the FDA or other agencies could improve the examination process by alerting the examiner to particular areas warranting special attention.

b. Should that requirement be legislative, a PTO rule, or something else?

Response: Applicants are already required under 37 CFR § 1.56 to disclose to the PTO all information that they possess which is relevant to patentability. Specifically § 1.56(b)(2) requires the applicant to disclose any information that "refutes, or is inconsistent with, a position the applicant takes in … an argument of patentability." Arguably, this requirement applies to statements that the applicant makes to the FDA regarding prior art. However, in order to avoid ambiguity, 37 CFR § 1.56 could be amended to clarify that such statements made to other agencies, particularly the FDA, are subject to this disclosure requirement.

5. You mentioned in your written testimony that it is a known problem that fraudulently procured patents cannot be canceled by the PTO, even after the fraud is discovered.

a. Should there be an avenue for the PTO to invalidate an issued patent if the agency later finds out it was procured through fraud?

Response: I thank the Senator for this question. While the PTO has the ability to reject an application if it deems the applicant to have committed fraud on the office, such findings are rare. Rather, evidence pointing to fraud on the patent office usually arises after a patent has issued.[7] As such, the typical proceeding involving these allegations is an infringement suit in which inequitable conduct is raised as an affirmative defense by the accused infringer. As a result, it is likely that a potentially large number of fraudulently procured patents remain unchallenged.

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[6] *See also* S. Sean Tu, *FDA Reexamination: Increased Communication Between the FDA and USPTO to Improve Patent Quality*, 60 HOUSTON L. REV. (2022).
[7] Contreras, *Patent Reality Checks, supra* note 3, at 9-10.

This being said, the PTO does have an existing avenue to invalidate issued patents upon post-issuance findings of fraud: a reexamination ordered at the Director's initiative under 37 CFR § 1.520. Under this provision, the Director may initiate a reexamination of any issued patent if a "substantial new question of patentability is raised by patents or printed publications which have been discovered by the Director or which have been brought to the Director's attention." Despite this authority, the PTO explains that "[a] decision to order reexamination at the Director's initiative is … rare. Only in compelling circumstances, after a review of all the facts concerning the patent, would such a decision be made."[8] To my knowledge, on the rare occasions when this Director-ordered reexamination has been ordered, it has involved patents that have caused public embarrassment to the PTO (e.g., the infamous method of swinging on a swing).[9] I am unaware whether this provision has been invoked to address a situation involving fraud on the patent office. In order to clarify that Director-ordered reexamination can and should be used for this purpose, 37 CFR § 1.520 and the relevant MPEP section could be updated to make this clear.

Questions from Senator Thom Tillis

1. How would you define or describe a low quality patent?

Response: I would define a "low quality" patent as a patent, the claims of which can be interpreted to cover more than the patentee actually invented or reduced to practice. The hallmark of many low quality patents is a set of claims that are drafted in a manner that is overly vague or general, thus reaching products and services that the patentee cannot reasonably be said to have invented. Low quality is not merely a synonym for invalidity, as it does not encompass patents found invalid under Sections 101 for claiming ineligible subject matter, or under Sections 102 or 103 for seeking to cover some element of the prior art unknown to the patentee. Rather, low quality stems largely from the attempt to claim future innovations that the patentee cannot fairly claim to have invented, and is often associated with similar concepts of over-claiming, overly broad claims, lack of enablement,, gun jumping and the like.

2. What are the main obstacles towards improving patent quality?

Response: Low patent quality arises due to the inherent nature of patent claims and the natural pressures of the patent prosecution system. The exclusive rights associated with patents derive entirely from the linguistic claims eventually allowed by the

[8] U.S. Pat. & Trademark Off., Manual of Patent Examining Procedure, 2239 Reexamination Ordered at the Director's Initiative [R-10.2019].
[9] See Amy L. Magas, *When Politics Interfere with Patent Reexamination*, 4 JOHN MARSHALL REV. INTELL. PROP. L. 160, 168 n. 63 (2004) (collecting cases).

USPTO. Skilled patent practitioners justifiably seek to claim inventions using language that is as broad as possible. Breadth in claim language is necessary, particularly given the demise of the "doctrine of equivalents" in recent years, to prevent competitors from avoiding patent claims through the introduction of insignificant distinctions between what is claimed and an otherwise infringing product. For example, if a claim for a house coating recites "a coat of blue paint" and the same result could be achieved using purple paint, a competitor may avoid infringement by using purple instead of blue paint, yet otherwise reproducing the patented invention in all material respects. Yet if the claim instead recited "a coat of dark-colored paint", the competitor would be unable to avoid the claim with a simple color change. The patent prosecutor's challenge is thus to claim as broadly as possible while still tying the claim language to the disclosures of the specification – what was invented and enabled. In the above example, a skilled practitioner might thus seek to claim "a coat of paint" (thus encompassing any color) or even "a coating" (encompassing paint as well as other coatings). It is the final expansion of this claim language that runs the risk of being overly broad. If, for example, a competitor develops a nanoparticle coating that makes the house invisible to radar, it would still be covered by the claim to "coatings" even though the original patentee may never have had an inkling about radar-eluding surfaces. Thus, while the prosecutor may be congratulated upon the issuance of such a broad claim, the resulting patent would be of low quality, given its potential to sweep in a range of inventions that were never contemplated or reduced to practice by the inventor. In this way, we end up with patents originally drafted for mail-order cassette tape services that are interpreted to cover the podcasting industry,[10] and an old telephone network patent that is heralded as claiming the hyperlink.[11]

3. What recommendations do you have to increase patent quality? How would you recommend prioritizing improvements?

Response: Please see response to Question 9, below.

4. What are the biggest problems that you see posed by low quality patents?

Response: More than half a century ago, the Supreme Court recognized in Lear v. Atkins, *395 U.S. 653 (1969), the threat that low quality (and otherwise invalid) patents pose to the market and innovation. The existence in the marketplace of these patents, it observed, impairs "the important public interest in permitting full and free competition in the use of ideas which are in reality a part of the public domain." In short, low quality patents allow private parties to put fences around not-yet-invented technologies that should still be part of the public domain.*

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[10] Elec. Frontier Fndn., EFF Wins Final Victory Over Podcasting Patent, May 14, 2018, https://www.eff.org/deeplinks/2018/05/eff-wins-final-victory-over-podcasting-patent.
[11] See John Naughton, BT clowns in tangle over web patents, Feb. 17, 2002, https://www.theguardian.com/technology/2002/feb/17/business.columnists

As noted in my response to Senator Leahy's Question 3.a, the following are some specific examples of the harms that can flow from the existence of low quality patents in the market:

a) A low quality patent can act as prior art preventing later inventors from receiving a patent they deserve after actually developing the claimed technology.

b) The holder of a low quality patent can enforce the patent against others who are more successful at developing the technology, either through litigation or the threat of litigation that underlies licensing demands.

c) Even if a low quality patent can eventually be invalidated in court, patent litigation is costly, especially for small and medium sized enterprises (SMEs). Some may prefer to settle infringement claims rather than incur the cost of litigation, leaving the low quality patent on the books for assertion against others.

d) The existence of low quality patents can itself chill new research and innovation, thus reducing market entry, technology development and competition.

5. What initiatives to address patent quality have been particularly successful, in your perspective?

Response: I believe that the USPTO examiner corps is good at implementing guidance from the PTAB and courts into its examination policies and procedures. An increasing source of such guidance is the PTAB, which has been increasingly active over the last decade, particularly in the context of party-initiated IPR proceedings. Unfortunately, there are few avenues at the PTAB to review enablement issues (see below).

6. Are there any particular data points or metrics that could help prioritize discussions about improving patent quality? What agencies or other organizations could contribute to collecting such data?

Response: As noted in my response to Senator Leahy's question 2.c, above, there are several possible approaches to measuring patent quality, including by reference to judicial and PTAB validity determinations, as well as internal USPTO sampling and review of examined applications, particularly in areas most susceptible to low quality patents. See also my response to Question 11, below.

7. How can the USPTO improve collaboration on prior art searching—both domestically (e.g. between USPTO and the FDA) and internationally (e.g. among the IP5)?

Response: The Senator raises an important issue. While I agree that such collaboration would be beneficial, I do not currently have specific recommendations for the improvement of inter-agency collaboration in this area.

8. What technological improvements should the USPTO focus on to improve prior art searching?

Response: While I appreciate the importance of the Senator's question, I do not have the relevant technical expertise to suggest particular technological improvements for the USPTO.

9. You have expressed concern about patents covering imaginary, fraudulent, or otherwise non-existent inventions, and have proposed solutions. Could you please elaborate on your proposed solutions, including the concept of adopting more stringent enablement standards for examiners?

Response: As I have previously written,[12] the problem of inoperative patents can be addressed by a greater focus at the patent examination stage on whether or not claimed inventions have been reduced to practice by their inventors. To that end, I offer a few modest "reality checks" to help examiners more closely align patent allowances to technical realities, and to deter fraudulent behavior at the USPTO.

a. Increase Vigilance for Inoperable Inventions

At the examination stage, the USPTO should check inventor names against lists of retracted papers, criminal indictments, securities investigations, disciplinary proceedings, scientific misconduct allegations and other forms of behavior that could give rise to questions about the assertions made in an application. The USPTO could also flag other questionable applications such as miracle cures, cold fusion and interstellar spacecraft. Finally, as Professor Janet Freilich has suggested,[13] when examiners conduct an initial search concerning an application, they should seek information published both before and after the priority date of the application. Post-priority information may not be relevant for prior art purposes, but it could identify retracted papers as well as public allegations and controversy surrounding a particular invention. An application flagged for any of these reasons could be subject to heightened enablement examination (see subpart (b) below).

b. Enhanced Enablement Examination

If an application is flagged as potentially claiming an inoperative invention, an examiner should be able to request verification that the invention has actually been reduced to practice and adequately enabled. This verification could come

[12] Contreras, *Patent Reality Checks, supra* note 3, at 13-16.
[13] Janet Freilich, *Ignoring Information Quality*, 89 FORDHAM L. REV. 2113, 2146-47 (2021).

in several forms. First, as several scholars have previously suggested, applicants could be required during prosecution to provide more information about the enablement of their inventions.[14] *Yet this approach may be of limited value when inventors are less than forthright, as might occur with respect to fraudulent inventions. Thus, a more effective approach may be to require an applicant to demonstrate the practice of its invention to a third party auditor or peer reviewer, or to convince the reviewer that reduction to practice is both feasible and likely.*

c. Engage the Public

Over the years, commentators have observed that members of the public (academics, industrial researchers, software developers, etc.) are more likely to appreciate the technical challenges faced by a given invention than examiners.[15] *As such, numerous proposals have been made to enable members of the public to offer input to the USPTO with respect to particular patent applications. For example, between 2007 and 2011, the USPTO and New York Law School operated a pilot program called "Peer to Patent", which allowed "citizen-experts" to review selected patent applications (mostly relating to computing, software and business methods), to identify and rate prior art, and to offer other input to the examination process.*[16]

It is not clear why the Peer to Patent program was discontinued after 2011, but it is possible that the USPTO believed that new mechanisms for challenging patents under the America Invents Act (AIA) might serve a similar function. For example, as amended by the AIA, Section 122(e) of the Patent Act permits members of the public to submit to the USPTO prior art pertaining to any patent application for six months after its publication, and Section 311 permits members of the public to bring an inter partes review (IPR) proceeding to challenge the novelty or nonobviousness of an issued patent within nine months of its issuance. Neither of these procedures, however, allows challenges to the enablement *of a patented invention. Yet in order to address the issue of inoperative inventions, greater public input into enablement is required. Accordingly, the pre-issuance submission procedure under Section 122(e) should be expanded to permit members of the public to raise enablement concerns with the USPTO throughout the prosecution of a patent application, without requiring the expense or formality of a full IPR proceeding. In addition to such an amendment, the USPTO may wish to consider*

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[14] *See* Freilich, *Information Quality, supra* note 13, at 2145, Mark A. Lemley, *Ready for Patenting*, 96 B.U. L. REV. 1171, 1191 (2016), Sean Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621, 642 n.103 (2010).

[15] *See, e.g.*, Lisa L. Ouellette, *Pierson, Peer Review, and Patent Law*, 69 VANDERBILT L. REV. 1825, 1842 (2016), Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 614–15 (1999).

[16] *See* Naomi Allen et al., Peer to Patent: First Pilot Final Results (2012). *See also* Ouellette, Peer Review, *supra* note 15, at 1839-40 (describing program).

reinvigorating and expanding the scope of the Peer to Patent program to seek information and views regarding enablement, as well as prior art, from the public.

d. Enhance Penalties for Fraud

As noted earlier, the principal penalties for inequitable conduct and fraud before the USPTO are rejection of a patent application and unenforceability of an issued patent. Claims under antitrust law and state fraud statutes may also be available. However, there is no explicit fraud remedy, either private or administrative, under the Patent Act. In fact, the America Invents Act of 2011 eliminated virtually all references to an applicant's deceptive intentions that were previously included in the Patent Act.

In many cases, the remedy of patent unenforceability may be sufficient to deter an applicant from intentionally omitting relevant prior art references – the type of conduct most frequently challenged under the inequitable conduct doctrine. However, merely rendering a patent unenforceable when it was procured through fraudulent means seems unduly lenient, particularly when compared to penalties for fraud in other legal contexts.

Accordingly, the penalties for fraud on the USPTO should be expanded in the case of inoperative inventions (i.e., these procured through deception beyond the simple omission of prior art references) to include both criminal penalties and substantial fines. Similar penalties, as well as civil punitive damages, should also be available against entities responsible for the post-issuance enforcement of such patents. Such enhanced penalties are likely to reduce the chance that applicants will seek patents on inoperative inventions and that they and their assignees will seek to enforce them.

10. Over the past several years, some stakeholders have consistently expressed concerns about the number of patents being issued that don't appear to satisfy the enablement and written description requirements found in Section 112. These stakeholders claim that Section 112 has not been correctly interpreted or appropriately applied by the USPTO or the courts and that this has resulted in the issuance of many vague and overly-broad patents of questionable validity. What is your view regarding whether the USPTO adequately enforces Section 112 to ensure that issued patents comply with the enablement and written description requirements?

Response: As suggested in my prior responses, I share the concern that the USPTO may allow patent claims that capture more than the inventor has actually invented or reduced to practice.

11. Do you think current examination practice is effective in deterring so-called "functional claiming," which is the inappropriate practice of describing only the desired result in a patent without disclosing the particular means of producing that result as is required by Section 112?

Response: While I do not have specific evidence of the quantity of "functional claiming" that is allowed in issued patents, my understanding is that it continues to appear. As a result, I would suggest that a study (either by the PTO or by independent academics) be undertaken to gather evidence regarding the prevalence of functional claiming in issued U.S. patents.

12. Are any changes to Section 112 that should be made by Congress to clarify its meaning or to ensure it is given its intended effect?

Response. Yes. As noted in my response to Question 9, I would suggest that Section 122(e) of the Patent Act be expanded to permit members of the public to raise enablement concerns with the USPTO throughout the prosecution of a patent application, without requiring the expense or formality of a full IPR proceeding. This expansion could be accomplished through an amendment to Section 112 or Section 122(e).

13. What are your thoughts about creating a "gold plated" patent, where applicants would have the option of paying for a more thorough examination of their inventions that would merit a presumption of validity (a "gold plated"), or allowing less economically significant patents to receive a separate patent?

Response: I have previously proposed that patents undergoing the enhanced enablement review discussed in my response to Question 9 receive a strong presumption of enablement under Section 112. Such a presumption would be similar to the "gold-plating" suggested by others, including Senator Tillis.[17] Such a system would make patents that have undergone stringent enablement confirmation less vulnerable to enablement-based validity challenges. The designation of such patents could be recorded and displayed by the USPTO directly on patent records, making this information easily accessible to the market.[18]

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[17] Doug Lichtman & Mark A. Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 Stan. L. Rev. 45, 50, 61-63 (2007), Politico, *Tech of the Town - Lawmakers Examine Ways to Improve Patent Quality*, Jun. 22, 2021 ("Ranking member Thom Tillis (R-N.C.) will . . .… advocate for creating a `"gold-plated`" patent that would involve a more rigorous review process.)

[18] For a discussion of a proposed annotation system, see Jorge L. Contreras, *Shepardizing Patents*, Patently-O, (Jun. 16, 2021), https://patentlyo.com/patent/2021/06/contreras-shepardizing-patents.html.

I thank you again for the opportunity to respond to these questions. Please let me know if I can provide any additional information to assist the subcommittee with its important work in this area.

Very truly yours,

Jorge L. Contreras

Questions for the Record of Senator Patrick Leahy
Chair, Intellectual Property Subcommittee
Hearing on: "Protecting Real Innovations by Improving Patent Quality"
June 22, 2021

Questions for Mr. Julio Garceran

1. You mentioned that you would like to see more examination done to ensure, before a patent issues, that it complies with the requirements of 35 U.S.C. § 112 such as enablement and written description.

   a. **Would it help for the PTO to have an automated program that flags any terms—words or phrases—that appear in an applicant's claims and do not appear in the applicant's specification?**

      Such a program could be helpful to flag potential section 112 issues for the examiner. The examiner could then require claims terms that were actually used in the specification, or if the term is not in the specification but is subject matter supported by the specification, then the examiner should require an express definition for the claim term.

   b. **Would it improve examination if an automated program were to flag for examiners the rejections that have been issued against similar claims by other countries' patent offices?**

      That could be helpful by highlighting rejections somewhat analogous to section 112. I think that such a tool would be more helpful with regard to assisting in prior art searching.

2. In the hearing, we heard that perhaps bad-faith patent assertions are on the decline, as there have not been very many suits under state laws that authorize suits against those who assert their patents in bad faith.

   a. **Do you have any experiences with North Carolina's state law in which there was no litigation but the law was nevertheless beneficially used?**

      Yes, I have experience with using the North Carolina Abusive Patent Assertions Act beneficially without litigation. In those experiences, I provided specific reasons why the patents at issue were invalid and/or not infringed and threatened to bring suit against them under the Act if they were to actually file a patent litigation suit against my company. I also threatened the patent owners with seeking an award of costs and fees under 35 U.S.C section 285 and sanctions under FRCP 11 should they proceed with the patent litigation. The entities did not pursue patent litigation. In at least one instance, patent litigation was filed and subsequently dropped by the patent owner after I provided them with similar warnings.

Senator Tillis Questions for the Record – Protecting Real Innovations by Improving Patent Quality

Mr. Julio Garceran

1. How would you define or describe a low quality patent?

   To me, a low quality patent can suffer from a multitude of defects. I will summarize three types of low-quality patents that I have encountered: 1) a patent in which the scope of the claim language is not supported by the patent specification, thereby providing a monopoly to the patentee of an undeserved claim scope because the claim scope encompasses technical subject matter disconnected from the specification; 2) a patent in which the claim scope has not been clearly defined relative to the prior art (In my experience, depending on the characteristics of the target product, the patentee for low quality patents will mold the definition of the claim terms to fit the product instead of having a clear meaning on the front end; and/or 3) a patent where the examiner has not performed an adequate prior art search.

2. What are the biggest problems that you see posed by low quality patents? When in the hands of non-practicing entities, such as patent assertion entities and universities (which typically have already been compensated for their research), that do not have to deal with the realities of selling products and competing in the marketplace, low quality patents tend to hamper innovation and competition. Patent litigation costs millions of dollars, and those costs typically disproportionately fall on the operating companies defending the patent lawsuits rather than the non-practicing entities in the litigation. The high costs of invalidating or obtaining a finding of non-infringement costs the same whether it is a low quality patent or a high quality patent. Operating companies are encumbered with those high costs of litigation that are better allocated to producing innovative products. The high cost of patent litigation can even force the operating company to license the low quality patents, not out of real need but just to avoid the cost of litigation. The license adds no value to the operating company except to avoid the cost of patent litigation but still burdens the operating company with extra costs.

   An operating company producing products in the marketplace is less likely to put their own products at risk and spend millions of dollars in patent litigation fees by asserting low quality patents against operating company competitors. But, non-practicing entities with much less downside may be willing to take the risk, hire a law firm on contingency to lower their downside even further, and take a shot at patent litigation. The operating company may decide it is not worth the cost or uncertainty of patent litigation and license the low quality patent.

3. What initiatives in this area have been particularly successful, in your perspective?

   In general, the USPTO's focus on trying to improve patent quality is encouraging, but I am not aware of any particular initiative that has been highly successful in solving the problem. The IPR process has done a good job of invalidating low quality patents, but the IPR process should not undermine the rights of the owners of legitimate patents.

   Significantly, I must stress my concerns that efforts to improve patent quality could go too far to weaken the patent system because those efforts are being pushed by influential companies that do not rely on patents to protect their innovations. Many innovative operating companies rely on patents to protect the innovations incorporated in their products, where the innovations can be readily discovered by reverse engineering the product and copied by competitors. We need to maintain a strong patent system to protect the innovations of such operating companies.

Certain changes to patent law may help and have helped to some degree in disincentivizing owners of low quality patents from bringing very expensive patent litigation.

First, damages reform regarding the smallest saleable unit and apportionment have done a better job of attributing the damages awarded in patent litigation to the actual scope of the patent. It may be worth considering adjusting patent damages law to take into account whether and to what extent the patent owner actually produces relevant products in the marketplace.

Second, courts have been more willing recently to award costs and fees for defending against a low quality patent that is invalidated or found to not be infringed. Such cases generally need to be found "exceptional." Courts need to be more willing to grant such awards or partial awards. The consistent award of such fees may deter the filing of patent litigation based on low quality patents. Such awards should be strongly considered where the accused infringer has shown specific grounds to the patentee for why the patent is invalid or not infringed, yet the patent owner proceeds with the patent litigation only to ultimately lose on those grounds.

Third, and possibly most significant, the courts should consistently entertain early summary judgement motions based on focused grounds of invalidity or non-infringement to help weed out low quality patents before huge sums of money are spent on patent litigation.

4. What is the USPTO doing right with respect to patent examination and patent quality, and in what areas would you recommend improvement?

   The USPTO has recognized the issue of low quality patents, and I believe that is half the battle. As with most things, resource allocation and training goes a long way.

   With regard to areas of improvement, in my experience, patent quality is somewhat examiner-dependent, and there should be a system to track examiner performance over time by keeping track of the statistics on which examiners are producing subsequently invalidated patents versus valid patents and the reasons why such patents were invalidated or found not to be infringed/not infringed. Those could be used as tools for training the broader examiner pool as well as particular examiners.

   Additionally, I feel that examiners should focus more on using section 112 grounds of indefiniteness, written description and enablement to produce higher quality patents on the front end. With regard to indefiniteness, requiring patent applicants to define terms, especially those terms that are being used to distinguish the prior art. Often, patent applicants do not explain why a claim term distinguishes over the prior art and simply regurgitate the claim language. This could be an opportunity to require a more definite definition of a claim term. Additionally, in terms of written description, the claim scope should be more clearly linked to the invention possessed by the inventor. The patent claims should absolutely not be limited to the embodiments described in the specification, but there needs to be express support for the broadly claimed invention and where those boundaries lie.

5. How can the USPTO improve collaboration on prior art searching—both domestically (e.g. between USPTO and the FDA) and internationally (e.g. among the IP5)?

   I do not have experience with the FDA, so I will not weigh in there. With regard to collaboration with different patent offices, it may be relatively easy to establish a database

where examiners are informed of foreign counterparts to patent applications that they are examining and the search results for each of the foreign counterparts. The patent examiners could use that database as a starting point or supplement for their own prior art searching. Such capability may already be available, but the use of such a database system should not be hard to implement and could actually make the searching task more efficient and more qualitative. The database could also include links to the responsible examiners in case communications between the examiners is desired.

6. Are there any particular data points or metrics that could help prioritize discussions about improving patent quality? What agencies or other organizations could contribute to collecting such data?

   In my response to question 3, I mention gathering statistics on patent invalidity/validity and non-infringement/infringement findings for patents in litigation/PTAB that include the particular examiners and grounds for the findings of the patents that they examined. Accordingly, there should be increased communication between the USPTO and the federal judiciary exchanging such information relative to the outcomes of patent litigation such that the USPTO can gather such statistics. From those statistics, the USPTO can provide the feedback to the examiner population in general and individually to influence examiner behaviors. The Judiciary and USPTO can also exchange feedback on how to improve patent quality and how the problems associated with low quality patents that invariably will still end up in litigation can be alleviated by the USPTO on the front end and by the Judiciary on the back end.

7. In the hearing, you mentioned that 112 rejections are considered non-substantive and suggested they should be given greater priority during prosecution. Could you please elaborate?

   In my experience, section 112 rejections that come up during prosecution are usually indefiniteness rejections that are easily cured by simply pointing to some support in the specification or some minor word changes made to the claims. I rarely see any section 112 written description or enablement rejections. Examiners should use section 112 rejections in conjunction with their prior art rejections to make sure patent applicants are specifying the meaning of claim terms by either citing a definition in the specification or providing one, especially when the claim term is important in distinguishing the prior art. That way, the boundaries of the claim are clear. With regard to written description or enablement, the examiner should look for disconnects between the scope of the claims and the teachings of the specification and make the patent applicant correct the disconnect. This can be done by requiring the patent applicant to define the proper breadth of the invention in general terms and in terms of what the specification reasonably enables as far as claim scope.

8. Over the past several years, some stakeholders have consistently expressed concerns about the number of patents being issued that don't appear to satisfy the enablement and written description requirements found in Section 112. These stakeholders claim that Section 112 has not been correctly interpreted or appropriately applied by the USPTO or the courts and that this has resulted in the issuance of many vague and overly-broad patents of questionable validity. What is your view regarding whether the USPTO adequately enforces Section 112 to ensure that issued patents comply with the enablement and written description

requirements?

I believe that the USPTO should make 112 rejections more of a priority, including indefiniteness, written description and enablement rejections. Please see my responses to question 1, 4 and 7.

9. Do you think current examination practice is effective in deterring so-called "functional claiming," which is the inappropriate practice of describing only the desired result in a patent without disclosing the particular means of producing that result as required by Section 112?

   I believe any issue with "functional claiming" gets alleviated, so long as the claim is novel and non-obvious, if proper deference is given to section 112 as discussed above.

10. Are there any changes to Section 112 that should be made by Congress to clarify its meaning or to ensure it is given its intended effect?

    I think the current state of section 112 jurisprudence could be codified with maybe some clarification, but to me, the issue is the actual enforcement of section 112 in the USPTO as it currently stands. If you think that legislative codification of section 112 will lead to more of a focus on enforcing section 112 at the USPTO, then I agree.

11. What are your thoughts about creating a "gold plated" patent, where applicants would have the option of paying for a more thorough examination of their inventions that would merit a presumption of validity (a "gold plated"), or allowing less economically significant patents to receive a separate patent?

    Personally, I do not agree with a "gold plated" patent. I think we should improve the process for all patents. If we don't fix the quality issue with all patents, then the problem with low quality patents remains. If we create a new category of "gold plated" patent, is the result that regular patents become lower quality?

June 22, 2021

Dear Members of the Subcommittee on Intellectual Property of the Senate Committee on the Judiciary,

We applaud you for convening today's hearing, and urge the Subcommittee to continue to prioritize patent quality—seeking to ensure only valid patents issue and protecting against the assertion of low-quality patents. Patent quality is essential to the nation's innovative startups, both because high-quality patents are valuable assets for many nascent tech companies and because low-quality patents are a barrier to innovation and too easily weaponized against small businesses. Today's conversation, on Protecting Real Innovations by Improving Patent Quality, promises to make a valuable contribution toward better, more quality-focused patent policy.

Engine is a non-profit technology policy, research, and advocacy organization that bridges the gap between policymakers and startups. Engine works with government and a community of thousands of high-technology, growth-oriented startups across the nation to support the development of technology entrepreneurship through economic research, policy analysis, and advocacy on local and national issues. We appreciate the opportunity to submit this letter to the record of today's hearing.

High-quality patents can be a valuable asset for many high-growth, high-tech startups. These companies understand the role patents can play in protecting inventions.[1] For many early stage companies, they seek high-quality patents to attract investors, obtain some competitive advantage, prevent direct copying, and enhance their reputation.[2] Likewise, increasing patent quality will increase confidence in the entire U.S. patent system.

By contrast, low-quality patents—those that claim things that were already known or that are written in vague, overbroad terms that are difficult to understand—lack value and routinely stand in the way of innovation. And they operate in ways that are particularly detrimental to startups. The mere existence of a low-quality patent can distort commercial and innovation markets, operating—as the Supreme Court has noted—like "scarecrows."[3] Even if they are never asserted, "invalid patents can create unacceptable litigation risks for potential entrants, raise entry costs, delay entry, deter

[1] *See, e.g.*, *Patent Quality is Essential to the State of Innovation*, YouTube, (Nov. 9, 2018), https://www.youtube.com/watch?time_continue=1&v=63NYSYcV5kc.
[2] *See, e.g.*, Stuart J.J. Graham et al., *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 Berkeley Tech. L.J. 1255, 1256 (2009) (reporting on survey of entrepreneurs); *#StartupsEverywhere profile: Alex Kuklinski, Founder, fyiio*, Engine (Apr. 24, 2020), https://www.engine.is/news/startupseverywhere-lincoln-neb ("While I had some hesitations up front about patent trolls and other concerns, I think when it comes to protecting what you're doing, I think it is nice to say we have some legal protections with the patents.").
[3] *Cardinal Chem. Co. v. Morton Int'l, Inc.*, 508 U.S. 83, 96 (1993) (quoting *Bresnick v. U.S. Vitamin Corp.*, 139 F.2d 239, 242 (2d Cir. 1943) (Hand, J.)).

customers and business partners from contracting with new entrants, and impose inefficiencies while distorting innovation."[4]

Yet, low-quality patents are a reality facing the nation's innovators. And in recent years the country's global rankings in quality have dropped.[5] Indeed, one study revealed that 43 percent of patents that are subject to a final court judgment on validity were found invalid.[6] Another study estimated approximately 28 percent of patents would be found anticipated or obvious (i.e., invalid under 35 U.S.C. §§ 102 or 103) if adjudicated. For patents covering software or business methods, those estimated invalidity rates increase to 39 percent and 56 percent respectively.[7] And this is likely an underestimate, as the study only looked at prior-art-related invalidity and did not consider how many patents are likely invalid under, e.g., 35 U.S.C. § 112.

Regrettably, low-quality patents can be (and are) weaponized against startups and small businesses in ways that slow them down and have forced many to close up shop altogether.[8] Startups are more vulnerable than established firms to the costs and risks of abusive patent litigation, making them an attractive and unfortunately common target.[9] Indeed, many startups will only interact with the patent system in the context of abusive litigation. For example, patent assertion entities (PAEs) use low-quality patents to try to coerce startups to take quick settlements and established competitors can use even meritless patent litigation to distract, slow, or stall new market entrants.[10] And low-quality patents are the type that can be easily asserted against, or used to threaten, a broad range of innovative companies and/or end-users of technology.[11]

Low-quality patents also pose problems for patent owners. As noted, many startups opt to incur the expense of applying for and obtaining patents. It is frustrating for a company to learn that, after spending that time and money, its patent is easily invalidated; if the applicant knew about prior art or disclosure problems sooner, it could have amended its patent during examination, resulting in a higher-quality patent that truly passes statutory muster at the end. The answer to the quality problem cannot be to make low-quality patents (which, again, do not satisfy the statutory requirements,

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[4] Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 Minn. L. Rev. 101, 114 (2006).
[5] *E.g.*, Adam Houldsworth & Bridget Diakun, *Benchmarking 2020 – Europe Holds its Lead but Honeymoon Might be Over for USPTO Head*, IAM (June 8, 2020), https://www.iam-media.com/law-policy/benchmarking-2020-europe-holds-its-lead-honeymoon-might-be-over-uspto-head (U.S. ranks 4th out of 5 patent offices for quality).
[6] John R. Allison et al., *Our Divided Patent System*, 82 U. Chi. L. Rev. 1073, 1099 (2015).
[7] Shawn P. Miller, *Where's the Innovation: An Analysis of the Quantity and Qualities of Anticipated and Obvious Patents*, 18 Va. J. L. & Tech. 1, 6-7 (2013).
[8] *See, e.g.*, Joe Mullin, *New Study Suggests Patent Trolls Really Are Killing Startups*, Ars Technica (June 11, 2014), https://arstechnica.com/tech-policy/2014/06/new-study-suggests-patent-trolls-really-are-killing-startups/ (startup's valuation dropped by $4 million during a patent suit that was ultimately dismissed); Amy L. Landers, *The Antipatent: A Proposal for Startup Immunity*, 93 Neb. L. Rev. 950, 979-80 (2015) (recounting examples of two former startups who won patent cases but lost market opportunities); Engine, *Startups Need Comprehensive Patent Reform Now* 7-14, https://perma.cc/8E7R-S46Q (recounting additional stories of startups harmed by assertion of wrongly-issued patents).
[9] *E.g.*, Collen Chien, *Startups and Patent Trolls*, 17 Stan. Tech. L. Rev. 461, 461-62 (2014) ("most unique defendants to troll suits are small"); Ted Sichelman, *The Vonage Trilogy: A Case Study in "Patent Bullying,"* 90 Notre Dame L. Rev. 543 (2014) (describing how "incumbents [are] able to exploit defects in the patent system in order to prevent disruptive technologies from competing with their outmoded products and services").
[10] *E.g.*, *id.*
[11] *Cf.* Chien, *supra* note 9, at 478 (noting patent assertion entities assert in a way that creates more options for "widespread campaigns targeting small companies that have little to do with the underlying technology")

should not have issued in the first place, and hurt innovation) more enforceable or harder to challenge. Instead, Congress is correct to turn its focus to improving the quality of issued patents.

The Subcommittee will likely hear promising suggestions today, and we hope you will also evaluate these options as you consider how to improve patent quality. First, build on the success of the America Invents Act in creating regional patent offices, to do an even better job of meeting innovators where they are at and ensuring they have ready access to the resources, tools, and advice they need to prepare and file high-quality applications. Second, consider pilots to provide more information about applications and related prior art early in examination.[12] Third, restore quality oriented infrastructure and leadership positions within the U.S. Patent and Trademark Office (PTO).[13] Fourth, ensure the PTO and examiners have the resources and technology needed to fully evaluate patent quality (including relevant prior art and the time to analyze it).[14] Fifth, identify and correct incentives for the issuance of low-quality patents, including evaluating possible improvements to the PTO's cost structure.[15] Sixth, encourage earlier clarity during patent examination, perhaps through claim construction analysis.[16] Finally, promoting quality must also include meaningful opportunities to challenge low-quality patents, because even with improvements to the system some will continue to issue. Increased patent quality on the front end can reduce demand for post-issuance challenges, but affordable and efficient opportunities to challenge invalid patents are still needed.

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Thank you for your consideration. Engine appreciates the Subcommittee's demonstrated interest in improving patent quality, and remains committed to engaging with Members on these and other important issues.

Sincerely,
Engine

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[12] *E.g.*, Colleen V. Chien, *Rigorous Policy Pilots the USPTO Could Try*, 104 Iowa L. Rev. Online 1 (2019), *available at* https://ssrn.com/abstract=3499202 (suggesting a pilot to give applicants all relevant prior art "up front"); *Improving Access and Inclusivity in the Patent System: Unleashing America's Economic Engine, Hearing Before the Subcomm. on Intellectual Property of the S. Comm. on the Judiciary*, 117th Congress at 1:01:38 (2021) (testimony of Professor Lateef Mtima, Professor of Law, Howard University School of Law), *available at* https://www.judiciary.senate.gov/meetings/improving-access-and-inclusivity-in-the-patent-system-unleashing-americas-economic-engine (suggesting pre-prosecution patentability assessment for certain applicants).

[13] *See, e.g.*, Abby Rives, *A Declining Focus on Patent Quality at the USPTO and What it Means for Startups*, Engine (Oct. 21, 2020), https://www.engine.is/news/ip-recap-102120.

[14] *See, e.g.*, Josh Landau, *Granted in 19 Hours*, PatentProgress (Mar. 6, 2018), https://www.patentprogress.org/2018/03/06/granted-19-hours/.

[15] *E.g.*, *Promoting the Useful Arts: How Can Congress Prevent the Issuance of Poor Quality Patents?: Hearing Before the Subcomm. on Intellectual Property of the S. Comm. on the Judiciary*, 116th Congress (2019) (testimony of Melissa F. Wasserman), *available at* https://www.judiciary.senate.gov/imo/media/doc/Wasserman%20Testimony.pdf.

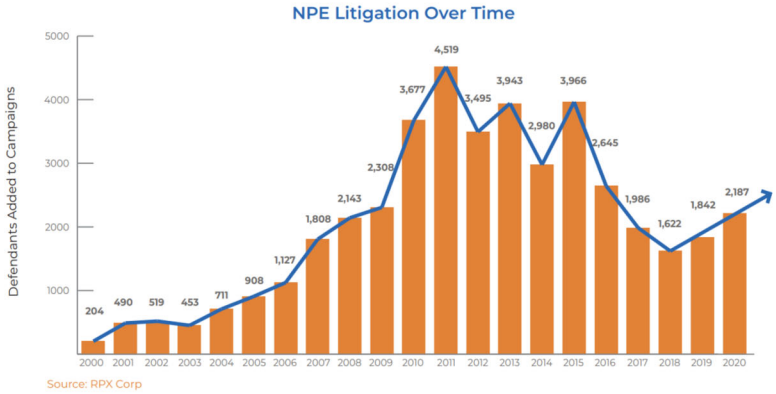
[16] *E.g.*, R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. Penn. L. Rev. 2135, 2165-68 (2009).

UNITED for PATENT REFORM

United for Patent Reform (UFPR) is a broad coalition of diverse American businesses advocating for a patent system that enhances patent quality, advances meaningful innovation, and protects legitimate American businesses from abusive patent litigation. Our members are small and large — they range from Main Street retail shops, REALTORS®, hotels, grocers, convenience stores, and restaurants to national construction companies, automobile manufacturers, and technology businesses. Collectively, our members represent over 80 million U.S. employees, a figure that accounts for nearly two-thirds of private sector jobs in the U.S.

UFPR appreciates the opportunity to provide this testimony on the critical issue of protecting real innovations by improving patent quality. Our members appreciate the important role the U.S. patent system plays in supporting innovation. But we have also experienced the harm that patent litigation abuse facilitated by low-quality patents can cause. These abuses can be a serious drag on innovation and job creation, and can erode public confidence in the patent system.

Much of that abuse is perpetrated by non-practicing entities (NPEs), which exist only to buy up patents and threaten productive businesses with costly litigation. From 2005 to 2015, the number of NPE suits quadrupled, placing a crushing burden on U.S. businesses that create jobs across all sectors of the economy. We experienced a welcome slowdown starting in 2016, although the overall level of NPE litigation remained at record highs compared to earlier years. But as the most recent data shows, abusive patent litigation is once again on the rise as NPEs take advantage of worsening conditions in the U.S. patent system.[1]



[1] *See* "Q4 in Review: 2020 Ends with Litigation Increase Despite Pandemic as Courts Tackle SEP Issues," RPX Blog (Jan.13, 2021) https://www.rpxcorp.com/intelligence/blog/q4-in-review-2020-ends-with-litigation-increase-despite-pandemic-as-courts-tackle-sep-issues/#litigation-update:-district-court-litigation-increased-in-2020-despite-covid-19-and-slight-q4-dip,-driven-by-npe-filings.

The increase in NPE patent litigation continued throughout the COVID-19 pandemic. While businesses like restaurants, grocery stores, retailers, and many other Main Street establishments were reimagining how to do business, relying on technology to make dining and shopping safer, those same businesses were forced to fend off abusive patent lawsuits brought by NPEs. Among those getting sued were companies that sought and received loans under the Paycheck Protection Program, which means money that was intended to help retain jobs and rebuild businesses instead went into the pockets of NPEs.[2]

These lawsuits impact businesses across the country. Some examples are below.[3]

- California: Fast-food chain Jack in the Box was among several other restaurants, plus hotels and retailers, targeted for using an app to maintain a remote connection with a server through a mobile device.
- Georgia: Waffle House, Chick-fil-A, and Zaxby's were sued for using remote devices, QR codes, and GPS tracking.
- North Carolina: Dole Foods, headquartered in Charlotte, was sued for using website navigation and is one of 50 parties to be targeted in the litigation so far.
- Texas: Supermarket H-E-B was sued – by the same NPE that sued its Austin-based subsidiary, food delivery company Favor Delivery – for using a website job search service.

To restore the public's confidence in the patent system, we believe that it is imperative to have a renewed focus on improving patent quality at the U.S. Patent and Trademark Office. And for the next director of the Patent and Trademark Office, it is equally imperative to choose a candidate who recognizes that improvements are needed and will take swift action to address them. As this hearing rightfully acknowledges, the patent system exists to promote and protect real innovation for the benefit of the American public, not to issue undeserving patents that place a drag on innovation and are used to go after productive businesses.

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[2] See "Paycheck Protection Recipients Among NPE Targets," Patent Progress (Aug. 26, 2020) https://www.patentprogress.org/2020/08/26/paycheck-protection-recipients-among-npe-targets/.

[3] *See* "Main Street's Economic Recovery Hampered by Abusive Patent Lawsuits" (providing a more extensive summary of patent litigation against Main Street businesses during the pandemic) https://unitedforpatentreform.com/files/files/Main%20Street%20Case%20Studies.pdf.

Submitted Statement for the Record of the
Coalition Against Patent Abuse

Before the
Subcommittee on Intellectual Property
of the
Committee on the Judiciary
United States Senate

Hearing on
Protecting Real Innovations by Improving Patent Quality

June 22, 2021

STATEMENT OF THE COALITION AGAINST PATENT ABUSE

CHAIRMAN LEAHY, RANKING MEMBER TILLIS, AND MEMBERS OF THE SUBCOMMITTEE:

The Coalition Against Patent Abuse thanks the Subcommittee for holding this hearing on patent quality. CAPA is a coalition of healthcare providers, consumer groups, patient advocacy organizations, free market advocates, employers, and others fighting abuses of the patent system that can extend government-granted monopolies that illegitimately keep drug prices high for years, or even decades. CAPA produces research and analysis on patents and drug costs aimed at educating lawmakers and policy experts on issues vital to American health care.[1]

Low-quality patents are an important driver of pharmaceutical monopolies that render drugs unaffordable or inaccessible to American patients, and improving patent quality will go far toward resolving today's crisis of skyrocketing drug prices. A critical part of patent quality is the inter partes review proceeding for challenging patents of questionable validity. Members of this Subcommittee wisely shepherded the enabling legislation for inter partes review to enactment in 2011. In the eight years that it has been in effect, inter partes review and related patent challenge proceedings have proven effective in overcoming abuse of patents that improperly block competition, raise prices, and stifle future innovation. That critical role is plainly observable in the context of drug patents, where infirmities in patent examination allow pharmaceutical firms to obtain questionable patents that wrongly block generic competition and cost Americans hundreds of millions of dollars every year. Inter partes review has successfully distinguished patents representing genuine innovation from those that serve largely to preserve pharmaceutical monopoly profits without concomitant public benefit.

CAPA's research on inter partes reviews, presented below, reveals the effectiveness and value of those proceedings and the Board that conducts them. The case studies show that patents declared erroneous in those proceedings are manifestly uninventive "secondary" patents designed to extend monopoly prices beyond the congressionally specified patent term. They show that cancellation of those patents can lower drug prices

[1]A list of CAPA members may be found on the website https://www.capanow.org/. Opinions expressed herein reflect the views of the coalition but not necessarily those of the individual members.

by 98%, because they enable multiple competitors, even ones beyond the firms bringing the patent challenges, to compete vigorously on prices. And they show why the Board has proven to be an effective venue for such challenges: because the administrative patent judges on the Board have the qualifications to understand complex technological facts in patent cases and apply patent law to those facts objectively, such that judicial review affirms the Board over 80% of the time.

Nevertheless, in recent years the prior administration has taken a number of detrimental steps to weaken the effectiveness of inter partes review, making it a less viable tool for ensuring patent quality and eliminating undue monopolies on essential drugs. CAPA thus calls on this Subcommittee to consider reforms to inter partes review that would undo these changes and further strengthen the proceedings in service of lower drug prices, increased competition, and greater patient access.

I. THE IMPORTANCE OF INTER PARTES REVIEW AND PATENT QUALITY TO LOWERING DRUG PRICES

When it created the Patent Trial and Appeal Board in 2011 to adjudicate inter partes review proceedings, Congress hoped to overcome serious and systematic flaws in the American patent system that enabled wrongfully issued patents to block competition and injure the American public.[2] In the context of pharmaceutical patents,[3] the Board and inter partes review have been invaluable to approaching the United States drug pricing crisis.

Skyrocketing drug prices today certainly merit the term "crisis." Eight in ten surveyed Americans describe the cost of prescription drugs as "unreasonable,"[4] and the "rising price of prescription drugs was an important factor" to a majority of voters of all parties.[5]

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[2]*See* H.R. REP. NO. 112-98, at 46–48 (2011); Joe Matal, *A Guide to the Legislative History of the America Invents Act: Part II of II*, 21 FED. CIR. B.J. 539, 600–02 (2012).

[3]For simplicity, this brief throughout uses the terms "pharmaceuticals" and "drugs" to refer to the broad class of chemical therapeutic medicines, and "generics" to refer to subsequent competitive products that are roughly market substitutes. In industry parlance, those terms refer only to small-molecule products, while large-molecule therapeutics are analogously designated "biologics" and "biosimilars"; the differences are immaterial to this case.

[4]*See* Ashley Kirzinger et al., *KFF Health Tracking Poll—February 2019: Prescription Drugs*, KAISER FAM. FOUND. (Mar. 1, 2019), https://www.kff.org/health-costs/poll-finding/kff-health-tracking-poll-february-2019-prescription-drugs/.

[5]COAL. AGAINST PATENT ABUSE & MORNING CONSULT, REFORMING THE PATENT SYSTEM 1 (Nov. 2020), https://www.capanow.org/wp-content/uploads/2020/11/CAPA_Memo_MC.pdf.

Unaffordability has harmed Americans, with nearly a third of surveyed adults reported not taking medicines as prescribed because of costs, and 29% of them reportedly became sicker as a result.[6] Indeed, researchers attribute between 112,000 and 125,000 deaths a year to patients who fail to take necessary medications because they cannot afford them.[7]

The most straightforward approach to overcoming this drug pricing problem is competition.[8] Having multiple firms selling a drug can cut prices tremendously—over 95% in some cases, a U.S. Food and Drug Administration study finds.[9] The Government Accountability Office similarly concludes that generics cost on average 75% less than the brand-name equivalent, and substitution of generic drugs between 1999 and 2010 saved Americans more than $1 trillion.[10] Because patents by definition are government-granted privileges to escape competition, multiple surveys find that Americans overwhelmingly blame pharmaceutical patents and the firms that hold them for the unreasonable costs of drugs.[11]

Inter partes reviews conducted by the Board have played a key role in stemming these harms. The case studies that follow were gathered by correlating drug patent inter partes review outcomes where all patent claims were canceled, against Medicaid and other data on drug prices.[12] Several key features of the Board emerge from this study, pointing to

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[6]*See* Kirzinger et al., *supra* note 4.

[7]*See* XCENDA AMERSOURCEBERGEN, MODELING THE POPULATION OUTCOMES OF COST-RELATED NONADHERENCE: MODEL REPORT 13 tbl.6 (2020), https://www.cidsa.org/publications/xcenda-summary; ASS'N FOR ACCESSIBLE MEDS., GENERIC DRUG ACCESS & SAVINGS IN THE U.S. 26 (2017), https://accessiblemeds.org/resources/blog/2017-generic-drug-access-and-savings-us-report.

[8]*See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-18-40, DRUG INDUSTRY: PROFITS, RESEARCH AND DEVELOPMENT SPENDING, AND MERGER AND ACQUISITION DEALS 47–50 (Nov. 2017), https://www.gao.gov/assets/690/688472.pdf (citing studies).

[9]RYAN CONRAD & RANDALL LUTTER, U.S. FOOD & DRUG ADMIN., GENERIC COMPETITION AND DRUG PRICES: NEW EVIDENCE LINKING GREATER GENERIC COMPETITION AND LOWER GENERIC DRUG PRICES 3 (Dec. 2019), https://www.fda.gov/media/133509/download.

[10]*See* Letter from John E. Dicken, U.S. Gov't Accountability Office, to Orrin G. Hatch, U.S. Senate, *GAO-12-371R: Savings from Generic Drug Use* (Jan. 31, 2012), https://www.gao.gov/assets/590/588064.pdf.

[11]*See* COAL. AGAINST PATENT ABUSE & MORNING CONSULT, *supra* note 5, at 1; Kirzinger et al., *supra* note 4.

[12]Specifically, this analysis uses National Average Drug Acquisition Cost (NADAC) weekly reference data, which is based on monthly pharmacy surveys and other data. *See* CTRS. FOR MEDICARE & MEDICAID SERVS., METHODOLOGY FOR CALCUL ATING THE NATIONAL AVERAGE DRUG ACQUISITION COST (NADAC) FOR MEDICAID COVERED OUTPATIENT DRUGS 20 (Nov. 2013), https://www.medicaid.gov/medicaid-chip-program-information/by-topics/prescription-drugs/ful-nadac-

inter partes review being a strong mechanism for overcoming the ongoing problems of skyrocketing drug prices.

Most obviously, the effect of inter partes review on questionable drug patents is to lower prices—often dramatically. Cancellation of erroneous patents on a drug opens the door to generic competition, and that competition brings prices down on average 75%, saving American consumers over $100 billion a year according to the Government Accountability Office.[13] The case studies repeatedly show competition following rapidly after a Board decision in inter partes review, with almost immediate savings of up to 93%.

Monopoly drug prices might be tolerable if the patents backing those prices represented genuine innovation, but the patents that the Board has declared erroneous do not. Instead, the case studies reflect bald manipulation of the patent system to extend monopoly control over drugs that ought to be open to competition.[14] The challenged patents involve mere combinations of well-known drugs, predictable dosage adjustments, and trivial modifications to drug delivery. These "inventions" offered insignificant benefits or even caused harm, in one case being the centerpiece of a drug company's fraudulent scheme that led to a $1.7 billion fine.

These "follow-on" or "secondary" patents, so called because they are directed not to the active ingredient of a drug but to uses or formulations,[15] frequently fail in litigation against generics[16] and are often described as as "weak" or "less solid" even by the very

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downloads/nadacmethodology.pdf.

[13]*See* Dicken, *supra* note 10; U.S. GOV'T ACCOUNTABILITY OFFICE, *supra* note 8, at 47–50.

[14]By contrast, there is no evidence of the Board being overbearing on legitimately issued patents. A study of inter partes reviews between 2012 and 2017 found that only 7 out of 198 challenged drug patents were directed to active ingredients, with only 2 such challenges successful in canceling all disputed patent claims. *See* Jonathan J. Darrow et al., *The Generic Drug Industry Embraces a Faster, Cheaper Pathway for Challenging Patents*, 17 APPLIED HEALTH ECON. & HEALTH POL'Y 47, 51 (2018). Moreover, while there were some initial concerns about abuse of inter partes review to manipulate drug companies' stock prices, those practices were apparently "a complete failure" and now are largely "all but over." Matthew Bultman, *Hedge Fund Drug Patent Challenges in Doubt After Bass' Test*, LAW360 (Mar. 31, 2017), https://www.sternekessler.com/sites/default/files/2018-01/Hedge_Fund_Drug_Patent_Challenges_In_Doubt_After_Bass_Test.pdf.

[15]On secondary patents, see generally KEVIN T. RICHARDS ET AL., CONG. RESEARCH SERV., REPORT NO. R46221, DRUG PRICING AND PHARMACEUTICAL PATENTING PRACTICES 9, 16–19 (Feb. 11, 2020), https://www.everycrsreport.com/reports/R46221.html.

[16]*See, e.g.*, C. Scott Hemphill & Bhaven Sampat, *Drug Patents at the Supreme Court*, 339 SCIENCE 1386, 1387 (2013); COMPETITION DIR.-GEN., EUROPEAN COMM'N, PHARMACEUTICAL SECTOR INQUIRY: FINAL REPORT para. 501, at 191 (July 8, 2009), https://ec.europa.eu/competition/sectors/pharmaceuticals/inquiry/staff_working_paper_part1.pdf.

companies obtaining them.[17] Nevertheless, the number of secondary patents is large and growing,[18] with pharmaceutical firms acknowledging that those patents have the intended purpose of "extending the term of the existing compound patent."[19]

Why the Board is especially important in overcoming improper secondary drug patents is another insight to be gleaned from these case studies. Members of the Board are required to have "competent legal knowledge and scientific ability,"[20] and that expertise has proven valuable to the correct disposition of drug patent cases that can involve difficult scientific facts. On at least one occasion the appellate court praised the Board for providing "ample" evidence in support of its conclusions; the fact that the Board is affirmed on appeal more frequently than the district courts further confirms its competence.[21]

The case studies further show that the outcome of inter partes review is not just that the challenger may enter the market, but that other generic manufacturers may do so as well. In several cases, cancellation of patents by inter partes review opened the door to market competition by third party competitors uninvolved in the proceeding. This is critical for lowering drug prices because savings from generic entry are sharply related to the number of competitors. Per the FDA study, a single generic brings prices down by about 39%, while six or more competitors drops prices by 95% on average.[22] Where inter partes review has enabled multiple generic competitors to enter the market, it has especially contributed to solving this American crisis.

A. Opioid Addiction

In 2008, British pharmaceutical firm Reckitt Benckiser reaped over 540 million on its

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[17] COMPETITION DIR.-GEN., EUROPEAN COMM'N, *supra* note 16, para. 504, at 192 (quoting pharmaceutical firm); *see* C. Scott Hemphill & Bhaven N. Sampat, *When Do Generics Challenge Drug Patents?*, 8 J. EMPIRICAL LEGAL STUD. 613, 644 (2011).

[18] *See* Robin Feldman, *May Your Drug Price Be Evergreen*, 5 J.L. & BIOSCIENCES 590, 630 & tbl.6 (2018); Hemphill & Sampat, *supra* note 17, at 619; Amy Kapczynski et al., *Polymorphs and Prodrugs and Salts (Oh My!): An Empirical Analysis of "Secondary" Pharmaceutical Patents*, 7 PLOS ONE No. e49470, 4 tbl.1 (2012), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0049470.

[19] COMPETITION DIR.-GEN., EUROPEAN COMM'N, *supra* note 16, para. 526, at 196 (quoting pharmaceutical firm).

[20] *See* 35 U.S.C. § 6(a).

[21] *See* Jason Rantanen et al., *Federal Circuit Statistics Update—September 2020*, PATENTLY-O (Sept. 15, 2020), https://patentlyo.com/patent/2020/09/federal-statistics-september.html.

[22] *See* CONRAD & LUTTER, *supra* note 9, at 2–3 & fig.

blockbuster opioid addiction treatment buprenorphine/naloxone, sold under the brand name Suboxone.[23] But it stood to lose that revenue stream when the company's federal regulatory exclusivity expired in 2009, opening the drug to generic competition.[24] In an effort to maintain its monopoly position, Reckitt Benckiser devised a scheme to switch buprenorphine patients from a tablet-form medicine to a "sublingual film" designed to dissolve under the tongue; patents on the latter formulation would have prevented generic entry through at least 2023.[25] Despite no evidence that the latter formulation was an improvement and indeed some indications that it was more dangerous to children, Reckitt Benckiser and its corporate successor Indivior propounded numerous false advertisements and studies claiming that the sublingual film was safer for households with children.[26]

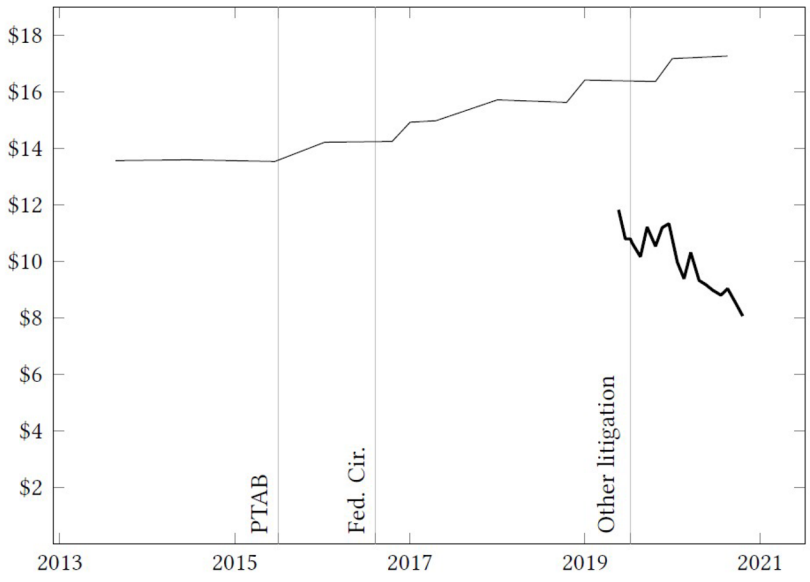

Figure 1: Brand and generic prices of buprenorphine 12mg/naloxone 3mg (Suboxone)

[23]*See* RECKITT BENCKISER GRP. PLC, ANNUAL REPORT AND FINANCIAL STATEMENTS 2008, at 20 (Mar. 2009) (applying currency exchange rate of 1.6).

[24]*See id.* at 18; Rebecca L. Haffajee & Richard G. Frank, *Generic Drug Policy and Suboxone to Treat Opioid Use Disorder*, 47 J.L. MED. & ETHICS 43, 44 (2019).

[25]*See* Haffajee & Frank, *supra* note 24, at 45.

[26]*See* Plea Agreement at Exh. B, paras. 18–26, at 5–8, *United States v. Indivior Sols., Inc.*, No. 1:19-cr-16 (W.D. Va. July 27, 2020) (Doc. No. 427-5).

sublingual film.

In July of 2020, Indivior pleaded guilty to fraud and agreed to a 290 million fine, following a 1.4 billion settlement by Reckitt Benckiser.[27] But the scheme was successful in its legacy: Most buprenorphine users switched to the film formulation, and Indivior discontinued its own sales of the tablet.[28] Undoing the fraud, then, required undoing the patents that monopolized the film formulation, and inter partes review was the tool to do so. In the 2015 proceeding , the Board found error in one of Indivior's key patents on the sublingual film; the Court of Appeals affirmed.[29]

In combination with other litigation on Indivior's other patents,[30] the inter partes review decision opened the door to generic competition on Suboxone film as of 2019. At least thirteen generics are now approved for sale, and prices have dropped about 50% compared to the peak brand price. Inter partes review created tremendous patient savings by enabling competition, despite a patent holder's brazen efforts to stifle it.

B. Insulin

Glargine is a modern formulation of insulin that releases itself slowly into the bloodstream, reducing the number of injections needed. Sanofi's patents on its glargine product, Lantus, were declared erroneous in 2019.[31] But generic entry was not immediately possible because Sanofi also held patents on the SoloStar injector pen device in which it distributed Lantus; regulatory approval required an equivalent generic injector.[32] To enable generic competition on glargine, then, several generic manufacturers sought inter partes review against Sanofi's SoloStar injector pen patents.[33]

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[27]*See id.* at 3 tbl.; Press Release, U.S. Dep't of Justice, *Justice Department Obtains $1.4 Billion from Reckitt Benckiser Group in Largest Recovery in a Case Concerning an Opioid Drug in United States History* (July 11, 2019), https://www.justice.gov/opa/pr/justice-department-obtains-14-billion-reckitt-benckiser-group-largest-recovery-case.

[28]*See* Haffajee & Frank, *supra* note 24, at 46, 48–49.

[29]*See BioDelivery Scis. Int'l, Inc. v. RB Pharm. Ltd.*, No. IPR2014-00325, slip op. at 2 (P.T.A.B. June 30, 2015) (final written decision), *aff'd without opinion*, 667 F. App'x 997 (Fed. Cir. 2016).

[30]*See Indivior Inc. v. Dr. Reddy's Labs., SA*, 930 F.3d 1325, 1330–31 (Fed. Cir. 2019).

[31]*Sanofi-Aventis Deutschland GmbH v. Mylan Pharm. Inc.*, No. 2012-1368, -1369, slip op. at 20 (Fed. Cir. Nov. 19, 2019) (nonprecedential).

[32]On the use of device patents to block generic drug competition, see Reed F. Beall & Aaron S. Kesselheim, *Tertiary Patenting on Drug–Device Combination Products in the United States*, 36 NATURE BIOTECHNOLOGY 142, 143 (2018).

[33]*See Mylan Pharm. Inc. v. Sanofi-Aventis Deutschland GmbH*, No. IPR2018-01678, at 2 (P.T.A.B. May 29, 2020) (final written decision), *appeal filed*, No. 20-1871 (Fed. Cir. June 10, 2020).

Challenges to the SoloStar patents revealed how little innovation the product accounted for. The supposedly novel injector pen was strikingly similar to the many other insulin injectors earlier on the market, with only the minor changes to features such as screw threads that the Board deemed obvious to one of ordinary skill in mechanical engineering.[34] In an effort to overcome this outcome, Sanofi contended that the SoloStar had performed superiorly in the market compared to other insulin pens, but the evidence before the Board proved almost the opposite: The Board credited testimony that the SoloStar was "not recognized as an unusually good pen" and was "in a statistical tie" with a competitor.[35] Market demand for the SoloStar appeared to be driven by consumer preference not for the device but for the glargine inside it.[36]

The apparent lack of valuable innovation in the SoloStar pen is consistent with the view, also posited in an antitrust case that the First Circuit recently allowed to proceed, that the SoloStar patents were no more than an "effective extension of Sanofi's monopoly."[37] Subsequent generic entry confirms that view: After successful inter partes reviews, Mylan received approval for and announced plans to launch a generic glargine injector pen, at a list price of 147.98 for five pens compared to 425.31 for the Lantus SoloStar.[38]

Notably, Mylan announced this 65% price cut while Federal Circuit appeals were pending on the SoloStar patents; the company stated it was "confident" that the appeals "will not affect commercialization."[39] That confidence reflects an ongoing recognition that the Board's inter partes review decisions are of such high quality—the Federal Circuit fully affirms the Board in 80% of appeals[40]—that pharmaceutical manufacturers are willing to stake millions in potential damages on at-risk launches based on those

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[34]*See, e.g., id.* at 34 (finding that "one of ordinary skill in the art would have reasonably expected the modified parts to perform the same function as before").

[35]*Id.* at 87–88.

[36]*See id.* at 87, 103–05.

[37]*In re Lantus Direct Purchaser Antitrust Litig.*, 950 F.3d 1, 2 (1st Cir. 2020).

[38]*See* Press Release, Mylan N.V., *Mylan and Biocon Biologics Announce Launch of Semglee (insulin glargine injection) in the U.S. to Expand Access for Patients Living with Diabetes* (Aug. 31, 2020), http://newsroom.mylan.com/2020-08-31-Mylan-and-Biocon-Biologics-Announce-Launch-of-Semglee-TM-insulin-glargine-injection-in-the-U-S-to-Expand-Access-for-Patients-Living-with-Diabetes; SANOFI-AVENTIS U.S. LLC, HOW MUCH SHOULD I EXPECT TO PAY FOR LANTUS? (Oct. 2019), https://www.lantus.com/-/media/EMS/Conditions/Diabetes/Brands/Lantus2/Consumer/Lantus-Pricing.pdf.

[39]*See* Mylan N.V., *supra* note 38.

[40]*See* Rantanen et al., *supra* note 21.

decisions.

C. Prostate Cancer

Abiraterone acetate, used to treat prostate cancer, has been known since at least 1994, and patents on the compound expired about 2014.[41] Janssen Biotech markets and holds patents to a formulation called Zytiga, in which abiraterone is prescribed for use in combination with "a therapeutically effective amount of prednisone," a well-known steroid.[42]

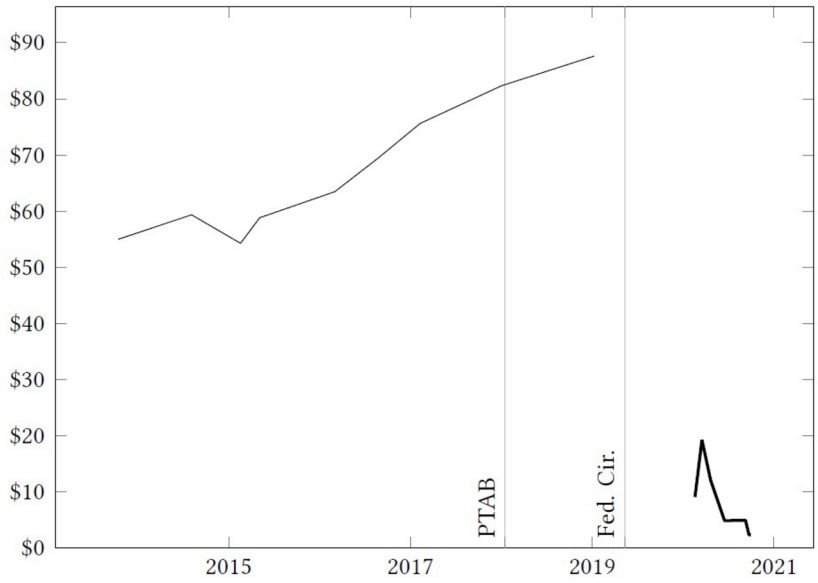

Figure 2: Brand and generic prices of abiraterone acetate 250mg (Zytiga).

In inter partes review, the Board deemed the combination patent erroneously obvious, and the Federal Circuit agreed in view of evidence that both abiraterone and prednisone were "individually considered promising prostate cancer treatments," and ordinary

[41] *See Abiraterone Acetate*, 10 DRUGS R & D 261 (2010); *A New Way to Treat Prostate Cancer: The Story of Abiraterone*, INST. CANCER RES. (May 26, 2011), https://www.icr.ac.uk/news-features/latest-features/a-new-way-to-treat-prostate-cancer-the-story-of-abiraterone.

[42] *See BTG Int'l Ltd. v. Amneal Pharm. LLC*, 923 F.3d 1063, 1066–67 (Fed. Cir. 2019).

scientists had no reason to doubt that the two treatments would be more effective together.[43] Indeed, evidence before the Board showed that combining steroids with other anti-cancer treatments was not just "common practice" but indeed "the standard regimen" at the time that Janssen's patent was applied for.[44]

Upon the Federal Circuit's conclusion that this obvious combination was unpatentable, generic competitors entered at a price of 2–19 per dose, compared to 88 for the brand. Inter partes review thus enabled almost 98% savings on a drug that the World Health Organization lists as one of the "essential medicines for priority diseases" that constitute "minimum medicine needs for a basic health-care system."[45]

D. Ulcerative Colitis

Mesalamine treats certain gastrointestinal disease that affects about a million Americans. While mesalamine was well-known and studied as early as the 1970s,[46] the firm Dr. Falk Pharma held a patent on an extended-release capsule formulation marketed as Apriso.[47] The patent was directed neither to mesalamine nor to the capsule formulation alone, both of which were old and well-known, but rather to the practice of administering those capsules without food or antacids.[48]

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[43]*Id.* at 1074.

[44]*Id.* at 1074–75.

[45]*See* WORLD HEALTH ORG., MODEL LIST OF ESSENTIAL MEDICINES 32 (21st ed. 2019), https://apps.who.int/iris/bitstream/handle/10665/325771/WHO-MVP-EMP-IAU-2019.06-eng.pdf.

[46]*See* A.K. Azad Khan et al., *An Experiment to Determine the Active Therapeutic Moiety of Suphasalazine*, 310 LANCET 892 (1977); John Mayberry, *The History of 5-ASA Compounds and Their Use in Ulcerative Colitis—Trailblazing Discoveries in Gastroenterology*, 22 J. GASTROINTESTINAL & LIVER DISEASES 375, 376 (2013).

[47]*See* U.S. Patent No. 8,865,688 (issued Oct. 21, 2014).

[48]*See id.* col. 34, ll. 15, 19–20.

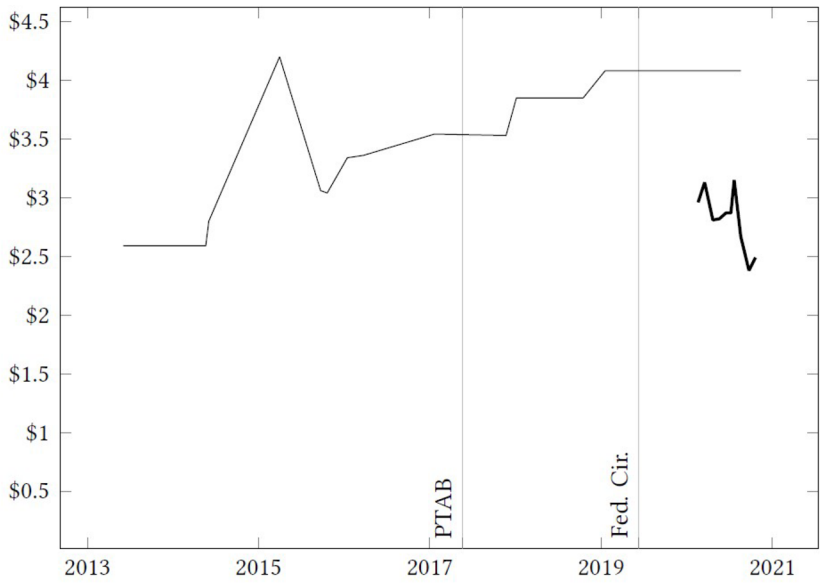

Figure 3: Brand and generic prices of mesalamine 0.375g (Apriso) extended release capsule.

In an inter partes review proceeding affirmed on appeal, the Board deemed the patent obvious. Regarding taking the drug without antacids, the Board concluded that doing so would have been obvious to any ordinary scientist, who would have known that antacids decrease stomach acidity (hence the name) and thus would undermine the capsule's acidity-dependent coating.[49] The Board found administration without food an even less compelling "innovation." Citing a decades-old academic paper on how food-triggered digestive processes affect drug absorption, the Board concluded that an ordinary researcher would have known that "a drug intended for the colon should be administered without food."[50]

Generic entry occurred about October 2019, and in the short time up to now, prices have come 42% down.

[49] *See GeneriCo, LLC v. Dr. Falk Pharma GmbH*, No. IPR2016-00297, at 26–27 (P.T.A.B. May 19, 2017) (final written decision), *aff'd*, No. 17-2312 (Fed. Cir. June 12, 2019) (nonprecedential).

[50] *See id.* at 36–37.

E. Heart Disease

Prasugrel is an anti–blood clot drug used to treat cardiovascular disease; the brand formulation is Effient. The patent on the drug itself expired in 2017, but Daiichi Sankyo also held later-expiring patents on "methods of using Effient with aspirin," which effectively extended patent protection by six years.[51]

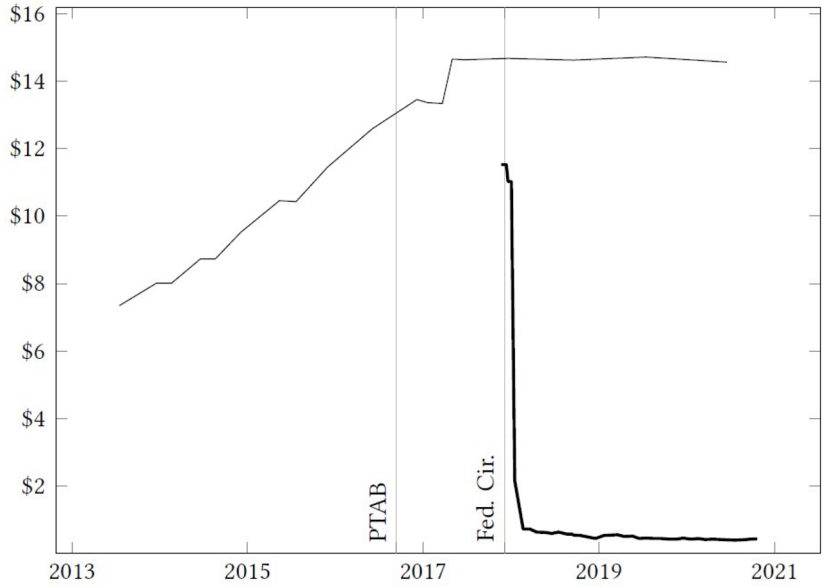

Figure 4: Brand and generic prices of prasugrel 10mg (Effient).

[51]Eli Lilly & Co., Annual Report (Form 10-K), at 10 (Feb. 21, 2017). Eli Lilly markets Effient in the United States.

Since aspirin is a blood thinner that also limits blood clots, the Board in inter partes review concluded that the combination of aspirin and prasugrel was obvious.[52] Tracing prasugrel's predecessors, the Board found consistent use of aspirin in combination with increasingly powerful anti-clotting agents, and concluded that an ordinary researcher "would have followed the rationale" of that prior art to "select[] the more potent, and preferred ADP-receptor blocking anti-platelet drug, i.e., prasugrel," as the predictable next choice for the combination.[53]

The costs of the improper Effient patent extension were made apparent once generic competitors entered in 2017, at prices 97% below the brand cost.

F. Anemia

Erythropoietin is a biologic compound used in the treatment of anemia. The compound is naturally produced by the kidney and was purified as far back as 1977,[54] but Janssen Pharmaceuticals held a patent reciting a dosing regimen of 5–30 days between doses.[55]

Hospira petitioned for inter partes review on the grounds that the dosing regimen had already been revealed in the same inventor's earlier patent filing from two years earlier; Janssen apparently agreed and directed the Patent Office to cancel the relevant patent claims.[56] Had Hospira not challenged the later-filed patent, Janssen would have enjoyed about two extra years of improper patent term. But because inter partes review resulted in cancellation of the patent claims, several erythropoietin biosimilars have now entered the market, saving patients about 57%.[57]

II. STRENGTHENING PATENT QUALITY BY UNDOING RECENT CUTBACKS TO THE EFFECTIVENESS OF INTER PARTES REVIEW

Inter partes review, as conducted by the Patent Trial and Appeal Board, has played an

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[52]*See Accord Healthcare Inc. v. Daiichi Sankyo Co.*, No. IPR2015-00864, at 22 (P.T.A.B. Sept. 12, 2016) (final written decision), *aff'd without opinion*, 706 F. App'x 679 (Fed. Cir. 2017).

[53]*Id.* at 19.

[54]*See* Takaji Miyake et al., *Purification of Human Erythropoietin*, 252 J. BIOLOGICAL CHEMISTRY 5558 (1977).

[55]U.S. Patent No. 6,746,002 col. 60, l. 6 (issued June 8, 2004).

[56]*Hospira, Inc. v. Janssen Pharm., Inc.*, No. IPR2013-00365, at 2 (P.T.A.B. Oct. 24, 2013).

[57]*See* Jacob Bell, *Pfizer Launches Biosimilar Version of Amgen's Epogen*, BIOPHARMA DIVE (Nov. 14, 2018), https://www.biopharmadive.com/news/pfizer-launches-biosimilar-version-of-amgens-epogen/542282/.

important role in overcoming patents of little public value that wrongfully force Americans to pay inflated drug prices. The stark cost savings of generic entry that follows from inter partes review reflects the ongoing importance of the Board's conducting such proceedings.

Yet recent changes by the Patent Office and courts have significantly diluted the IPR and PGR process to the detriment of the public. For example, the Patent Office recently adopted a "pilot program" for claim amendments that will allow Patent Owners to morph and adapt their patent claims throughout the IPR and PGR process. Congress should enhance the ability of PTO to cut through patent thickets, accelerate pharmaceutical price competition, and lower drug prices for patients and taxpayers. Among other things, it should:

- Eliminate the substantive differences between IPR and PGR by expanding the grounds available during IPR to include patent eligibility, disclosure, and obviousness-type double patenting—a ground that the PTAB already considers in ex parte reexamination.
- Confirm the longstanding judicial rule that actions dismissed without prejudice are treated as if they were never filed.
- Preclude the PTO from issuing a non-substantive institution decision when entirely unrelated parties independently pursue post-grant review on the same patent.
- Recognize the explicit statutory text that "[a]ny party to the inter partes review shall have the right to be a party to the appeal" and confirms that estoppel is injury-in-fact for standing purposes.
- Eliminate the PTO's self-described "counterintuitive" application of estoppel against winning IPR petitioners and confirms that estoppel—consistent with its common law meaning—only applies to losing IPR petitioners.
- Provide concrete deadlines for resolution of a request for rehearing by the PTO given the protracted delays in issuing rehearing decisions in some IPRs and PGRs.
- Reverse the PTO's inefficient practice of allowing patentees to amend their claims repeatedly during IPR.
- Clarify the much-litigated real-party-in-interest standard and adopting the PTO's longstanding practice of allowing a party to correct an improperly identified real-party-in-

interest without losing its filing date.

- Provide an IPR petitioner with a pre-institution reply as of right. Under the PTAB's current rules, the patent owner typically gets the last word even though it does not bear the burden of proof.
- Allow the Federal Circuit to review a legally or factually erroneous decision not to institute IPR or PGR.
- Restore the broadest reasonable interpretation standard as the relevant claim construction standard in post-grant proceedings, which allows PTO to more easily invalidate a patent that never should have been granted.

III. CONCLUSION

CAPA thanks the Subcommittee for its attention to this issue of importance to American patients and the public. If the Subcommittee or its members have questions or would like further information, we would be happy to discuss further.

ALLIANCE FOR AUTOMOTIVE INNOVATION

June 21, 2021

The Honorable Patrick Leahy
Chairman
Subcommittee on Intellectual Property
Committee on Judiciary
U.S. Senate
437 Russell Senate Building
Washington, DC 20510

The Honorable Thom Tillis
Ranking Member
Subcommittee on Intellectual Property
Committee on Judiciary
U.S. Senate
113 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Leahy and Ranking Member Tillis:

The Alliance for Automotive Innovation ("Auto Innovators") appreciates your continued commitment to strengthening our patent system and improving patent quality. As the singular, authoritative, and respected voice of the automotive industry, Auto Innovators welcomes the opportunity to provide perspective on these important issues.

As you are aware, the auto industry is a leader in innovation and uses cutting-edge advancements, constant creativity, and investments in research and development to bring the next generation of breakthrough automotive and mobility technologies to consumers. Auto companies are inventors, patent holders, and - more importantly - manufacturers that rely on patent quality to make and sell their products. These patents are essential to protecting the robust investments auto companies make in the new technologies that are transforming personal mobility. At the same time, however, auto companies face frequent lawsuits alleging patent infringement, many of which claim violations of poor quality patents that should never have been issued. For this reason, the auto industry is uniquely positioned to offer a balanced and reasoned perspective on this and other patent-related issues.

We support efforts to improve patent quality. One study estimates that "a surprising 27 percent of all patents would be found at least partially invalid if subject to an anticipation or obviousness decision."[1] This pre-issuance patent quality problem showcases the need for post-grant patent quality efforts like those created by the America Invents Act ("AIA"). Indeed, a recent study estimates that the positive impact of savings generated from AIA post-grant patent quality efforts amounted to an increase of 13,500 job years of employment, $2.95 billion in gross product, and $1.41 billion in personal income from 2014-2019.[2] However, auto companies are still forced to expend significant resources in litigation to defeat assertion of low-quality patents. This unnecessary patent litigation creates inefficiencies in the patent system and slows the ability of auto companies to innovate.

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[1] Miller, Shawn Patrick, "Where's the Innovation? An Analysis of the Quantity and Qualities of Anticipated and Obvious Patents" (February 10, 2012). Available at http://dx.doi.org/10.2139/ssrn.2029263

[2] The Perryman Group, "An Assessment of the Impact of the America Invents Act and the Patent Trial and Appeal Board on the US Economy" (June 2020). Available at https://www.ipwatchdog.com/wp-content/uploads/2020/07/Perryman-PTAB-Impact-Report-6-22-2020-0031.pdf

To improve pre-issuance patent quality at the Patent and Trademark Office and to reduce the burden caused by improperly issued patents, we recommend that patent examiners be provided additional time to review patent applications for patentability. The positive effects of granting examiners additional time to review patent applications has been well studied.[3] We further recommend that patent examiners be provided access to state of the art search tools to help with issuing higher quality patents.

In addition, Patent and Trademark Office policies should be reviewed and, where appropriate, modified to prioritize patent quality. For example, the count system should be reformed to shift the focus to maximizing patent quality rather than maximizing the rate of rendered patentability decisions. A comprehensive review should be conducted to determine whether the current funding system is adequate to sustain a high-quality patent system or whether changes are needed to prevent misaligned incentives.[4]

To prioritize and reward innovation, patent eligibility should be considered broadly. We believe that Section 101 has an important - but limited - role in weeding out low-quality patents. However, we suggest that the Committee consider ways to tighten up Section 103's fairly subjective obviousness standard. If Section 103 were a stronger filter for patentability, it could play an important role in helping to improve overall patent quality.

We appreciate your attention to this important issue and welcome the opportunity to provide any further information that could prove helpful to you in these efforts. We look forward to continuing to engage with you on patent quality and ways to improve the patent system to incentivize true innovation and prevent misuse.

Sincerely,

Hilary M. Cain
Vice President
Technology, Innovation, and Mobility Policy

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[3] Frakes, Michael D. and Wasserman, Melissa F., "Is the Time Allocated to Review Patent Applications Inducing Examiners to Grant Invalid Patents?: Evidence from Micro-Level Application Data" (July 2014) Available at https://www.oecd.org/site/stipatents/5_4_Frakes_Wasserman.pdf

[4] Landau, Josh, "Moving the USPTO From Red to Black" (June 10, 2021) Available at https://www.patentprogress.org/2021/06/10/moving-the-uspto-from-red-to-black/

June 23, 2021

U.S. Senate Committee on the Judiciary
Subcommittee on Intellectual Property
224 Dirksen Senate Office Building
Washington, D.C. 20510

Re: Statement of the United Inventors Association of the United States-
June 22, 2021 Hearing on Protecting Real Innovations by Improving
Patent Quality

Chairman Leahy, Ranking Member Tillis, and Committee Members:

The United Inventors Association of the United States is the largest non-profit inventor member organization in the country. We are dedicated to providing educational resources, primarily to independent inventors. A strong and efficient patent system is essential to our members, most of which are patent owners or have patent applications pending at the United States Patent & Trademark Office (USPTO).

We support the Subcommittee's interest in improving patent quality; a weak patent serves no commercial purpose and invites litigation that most independent inventors cannot afford to support.

To its credit, last year the USPTO initiated a program to migrate over 39 million Chinese, European, Korean, Japanese, French, and World Intellectual Property Organization patent documents and images into a new search tool that will be provided to all patent examiners.[1] The USPTO also started testing a Google/Accenture Chrome extension to include artificial

[1] Stefanos Karmis, Director of Patent Quality Assurance, USPTO, *FY2000 goal: Bridging The Gap to FY 2021 goal: Closing The Gap*, Private Patent Advisory Committee Quarterly Meeting (Feb.12, 2021); *see also* Jamie Holcombe, Chief Information Officer, and Rick Seidel, *Artificial Intelligence (AT)/IT Updates*, USPTO Private Patent Advisory Committee Quarterly Meeting (Feb.12, 2021).

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intelligence (AI) with over 300 Patent User Centered Design Council members who reviewed 700 plus patent applications to develop metrics. [2] In 2021, the USPTO expects to be able to

increase efficiency and reduce the cost of examinations by making at least one AI capability available to each examiner, complete the rollout of the new search tool, and lay the foundation for retirement of the legacy search system. [3] This will entail "ingesting" 70 million foreign image and text documents and deploying AI capacity to all examiners. [4] These impressive measures should dramatically improve the quality of all issued patents in the near future.

But more can be done. Recent research has shown, if patent examiners, with industry specific expertise and experience, had more time to conduct the necessary due diligence and worked in teams, fewer "weak" patents would issue or be invalidated later.[5] This can be accomplished without congressional appropriations. At present, there is $1.17 billion on the USPTO's balance sheet for past fees and surcharges (FY1990-FY2011) which is being held by the Department of Treasury. [6] Congress, however, has failed to release these much-needed funds which would go a long way to help examiners improve the quality of patents issued.

We support efforts your Committee can make to persuade Congress to release the funds earned by the USPTO so it can do its job of promoting the progress of science.

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[2] *Id.*

[3] *Id.*

[4] *Id.*

[5] Statement of Tahir Amin, Co-Executive Director of the Initiative for Medicines, Access, and Knowledge before the House Comm. on Oversight and Reform, 117th Con, (May 18, 2021) at 7 ("[T]he average review time at the USPTO is just 19 hours-roughly only 2 working days."); *see also* Picard PM, Bruno VPDLP, *Patent office governance and patent examination quality,* 104 J.PUB ECONOMICS, 14-25 (2011); Chien CV, *Comparative Patent Quality*, 50 ARIZ.ST.L.J., 71-140 (2018): Mark Lemley, MA, Sampat B., *Examiner Characteristics and Patent Office Outcomes*, 94 REV. ECON. and ST., 817-27 (2021).

[6] See https://www.uspto.gov/sites/default/files/documents/USPTOFY20PAR.pdf, at 136-37 Note 2 (audited by KPMG); *see also* Eileen McDermott, *PPAC Meeting: Filings Down Less Than Expected Overall, Office Calls on Congress to Release Previously Collected Fees*, IP WATCHDOG (May 9, 2021).

Thank you for your consideration and support of improving, not only the quality of patents issued by the USPTO, but also protecting and improving the patent system which has been an engine of innovation.

Sincerely yours,

Carmine Denisco

President, United Inventors Association

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Submitted to the U.S. Senate Judiciary Subcommittee on Intellectual Property for the June 22, 2021 Hearing "Protecting Real Innovations by Improving Patent Quality":

The US Manufacturers Association for Development and Enterprise (US*MADE) is grateful for the opportunity to submit for the record these comments on improving patent quality. Our members are also grateful to Chairman Leahy and Ranking Member Tillis for holding today's Judiciary IP Subcommittee Hearing on Protecting Real Innovations by Improving Patent Quality.

US*MADE is an American manufacturing coalition made up of a diverse group of companies and trade groups of varying sizes and industry sectors. Our members include a North Carolina father and son fishing tackle manufacturer at one end of the spectrum and an American semiconductor maker with manufacturing operations in over a dozen states at the other.

Manufacturers have reaped tremendous benefits from our patent system and value the patent system's critical role in fueling innovation in the U.S. Most US*MADE members are patent holders and some are the leading patent holders in their industry sectors.

They have also experienced what can happen on those occasions when the U.S. Patent and Trademark Office (USPTO) issues a "bad patent." A patent may be bad for any number of reasons. It might be overly broad; it might cover an area already covered by one or more other patents; it might be obvious or not truly represent a new or novel invention, and so on.

What our members have experienced in those instances has been a non-practicing entity (NPE) wielding these bad patents, using them to filing litigation or threatening to do so. In many instances, the royalty demands sought by the NPE – while outrageous given the low quality of the patent – are just low enough to make it more economical to pay the NPE off than to mount a winning defense. In addition, there is always risk that a jury with no expertise in the manufacturing or other technology at issue makes a mistake regarding the often highly complex issues of infringement or patent validity, providing the NPE the chance of an unjustified windfall at the expense of the manufacturer's business. These perverse incentives cause many American manufacturing companies to simply pay to license what are often worthless patents, sometimes for IP that is not even associated with the products they produce.

The USPTO does an excellent job. But, with over 600,000 new patent applications being filed and 300,000 new patents being issued annually, it is inevitable some number of bad patents may be granted.

US*MADE believes there are things that can be done to improve patent quality before patents are granted. Like many stakeholders in the patent system, we believe more resources should be invested in the process at the front end. Beyond perhaps the obvious (more examiners, better training for them), we would hope some of those resources would be put toward access to better prior art sources. More often than not it seems that outside sources are the ones bringing the best, most up-to-date prior art to the USPTO. We also believe a system in which applications each have a 'second set of eyes' on them from another examiner at certain milestone points in the prosecution could add substantial quality benefits.

We also strongly believe that making changes under 35 U.S.C. §112 could have a substantial impact on improving pre-issuance patent quality. 35 U.S.C. §112(a) states:

"The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms..." (emphasis added)

A common characteristic we see in bad patents is that the terms used in the patent's claims often do not also appear in the same patent's specification. This seems to run counter to the intention (if not the requirement) stated in 35 U.S.C. §112(a). Under the law as written, the specification is essential to determining what the patent is actually claiming. If the same words are not used in both the specification and the claim, this is more difficult to do.

Sometimes applicants or counsel for applicants may use different words in the specification and the claim for the purpose of introducing ambiguity to later argue in litigation that the claims are broad enough to cover post-invention improvements by others. If the same words were required to be used in both the specification and the claim, this sort of gaming of the system would be reduced.

Indeed, the recent Federal Circuit decision in *Hyatt v. Hirshfeld*, No. 18-2390 (Fed. Cir. 2021) perhaps best exemplifies how the USPTO can be mired with extra work because of abusive prosecution tactics, describing that 532 years would be required to ascertain priority dates and examine claims in about 400 applications. Although limiting patent terms to 20 years from the priority date has helped, applicants today can still engage in many of the abusive practices described in that case. Additional protective measures are still needed.

Currently, in the reissue or reexamination process, patent owners are required to identify where the support for the claim they are seeking to amend can be specifically found in the specification. Holding patent applicants to the same standard, pre-issuance, that they are held to post-grant would go a long way toward improving patent quality.

Such a change would be a benefit to patent examiners, who are seeking greater clarity and quality in the patents they grant; the public, who would benefit from more sound patents being issued; the courts, who would not have to wade through the confusion associated with intentionally vague patents; and entities like US*MADE's manufacturer members would be in a better position to evaluate a patent for potential licensing or litigation.

Similarly, in 35 U.S.C. §112(f) we often see patents in which the means for performing a specified function simply does not include the corresponding structure described in the specification. This certainly seems to run counter to the law as intended in this section and in 35 U.S.C. §112(b), which requires claims particularly point out and distinctly define the meets and bounds of the subject matter to be protected by the patent grant. Put simply, in any means + function claim, the means must include the corresponding structure described in the specification and do so using the same words and terms throughout.

Testimony of US Manufacturers for Enterprise and Development (US*MADE)
Submitted June 22, 2021
Beau Phillips, Executive Director
beau@resetpa.com

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