

INNOVATION NATION: HOW SMALL BUSINESSES
IN THE DIGITAL TECHNOLOGY INDUSTRY USE
INTELLECTUAL PROPERTY

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WEDNESDAY, JULY 11, 2018

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SMALL BUSINESS,

Washington, DC.

The Committee met, pursuant to call, at 11:06 a.m., in Room 2360, Rayburn House Office Building. Hon. Steve Chabot [chairman of the Committee] presiding.

Present: Representatives Chabot, King, Luetkemeyer, Brat, Kelly, Fitzpatrick, Marshall, Evans, Clarke, Adams, and Schneider.

Chairman CHABOT. Good morning. The Committee will come to order.

Today, the Small Business Committee will examine how small business owners in the digital technology industry use intellectual property protections to help their businesses and the issues they face when navigating the intellectual property process.

Digital technology allows small businesses to sell their products and services all over the world. In fact, 84 percent of small businesses use at least one major digital platform to provide information to customers. Digital technology also plays a vital role in the American economy, and the United States is the largest technology market in the world.

The tech industry accounts for approximately \$1.6 trillion in direct economic value in the United States, and net tech employment accounted for over 7 percent of the overall workforce in 2017.

As we learned from our hearing on intellectual property in May, intellectual property plays a vital role in protecting creative and innovative products and ideas, both here in the United States and abroad. America's intellectual property is worth \$6.6 trillion, and intellectual property-intensive industries employ over 45 million Americans. Our nation's small business owners are essential to producing new, creative, and groundbreaking products and ideas that strengthen our nation's economy. In fact, entrepreneurs and small business owners have generated about 70 percent of new jobs over the last 2 decades, and small businesses represent about 96 percent of employer firms in manufacturing industries with a high number of patents. Intellectual property also accounts for 52 percent of all merchandise exports in the United States.

However, the process for obtaining intellectual property protections can be daunting, even for the most experienced small busi-

ness owner. It can also be very expensive to hire professionals to traverse the intellectual property process.

Because of their limited financial abilities, small business owners are vulnerable to their innovations being stolen, both here in the U.S. and internationally, which can be financially devastating.

The FBI has found that intellectual property theft costs billions of dollars every year to America's businesses, and thieves are targeting small business owners and startups because of their limited abilities to fight back.

To combat this problem, this Committee unanimously passed H.R. 2655, the Small Business Innovation Protection Act of 2017 this past March, and I am pleased to report that it passed the full House yesterday.

This bipartisan legislation, which was sponsored by Mr. Evans and co-sponsored by Mr. Fitzpatrick on our Committee, would leverage existing resources at the SBA and the U.S. Patent and Trademark Office to better assist small business owners and expand the agencies outreach efforts to provide small businesses with the resources they need to address intellectual property issues.

Today, we will hear from experts on intellectual property and the digital technology industry on the role that intellectual property plays for this vital and growing industry. I look forward to hearing how intellectual property helps small digital technology businesses and what we can do to foster America's creative small businesses moving forward.

And I would now like to yield to the Acting Ranking Member, Mr. Evans, for the purpose of making an opening statement.

Mr. EVANS. Thank you, Mr. Chairman. Good morning.

Digital technology has become a vital part of nearly every industry. Over the past 3 decades, the tech sec has created 23 percent new businesses than the private sector as a whole. Technology innovation bolsters our economy making IP protection a vital part of the process.

Protecting the intellectual property rights for technology innovation can support long-term job growth, increase exports, and drive development. New business ventures rely on a system in which the ideas are protected.

Intellectual property is a \$6.6 trillion industry that accounts for over 1/3 of total U.S. gross domestic product, and small firms make up the vast majority of firms and intellectual property intensity industries. In fact, startups in high-tech hubs account for more than 40 percent of new jobs each year. These businesses have an enormous stake in ensuring the continued growth of intellectual property.

Patent protection helps innovators recoup the costs of research and development, capitalizing on their inventions, create jobs and grow the economy. It is also essential to ensure the availability of businesses to ensure their rights to both at home and abroad. Doing so is critical to protect the American economy's interests.

In 2016, Customs and Border Patrol received \$1.3 billion of intellectual property rights infringement goods across our borders. This theft can have a deep impact on small businesses that may have limited time and resources. This is especially true among women,

minorities, and other underserved business owners who already face obstacles obtaining IP protection and funding.

More than 80 percent of patents do not include women. This gap is likely because of the unrepresentation in the science, technology, engineering, and math fields. GDP per capita could rise up to 3.3 percent with the inclusion of more women and African-Americans in the initial stage of the process of innovation. Congress must address the inclusion of unrepresented groups to allow for additional small business growth.

This hearing will allow Committee members to hear from entrepreneurs on opportunities for growth in the digital technology industry and to understand what additional measures are needed to ensure their long-term success.

I thank our witnesses for being here, and I yield back the balance of my time. And I thank the Chairman.

Chairman CHABOT. Thank you very much. The gentleman yields back.

And I will now announce that if Committee members have opening statements prepared, that they be submitted for the record.

Without objection, so ordered.

And I would like to take just a moment to explain our lighting and timing rules. Basically, pretty simple. We operate under the 5-minute rule. You all get 5 minutes. We all get 5 minutes to ask questions, and there are some lights to assist you. The green light will be on for 4 minutes and then the yellow light will come on to let you know you have a minute to wrap up. And then the red light means stop. So you do not have to stop midsentence, but if you would stay within those parameters to some degree we would greatly appreciate it.

And I would now like to introduce our distinguished panel this morning. Our first witness will be Frank Cullen, who is the Vice President of U.S. Policy at the U.S. Chamber of Commerce's Global Innovation Policy Center. Mr. Cullen direct the center's domestic programs in promoting and protecting intellectual property rights in both the online and physical markets. He has extensive experience speaking on intellectual property issues, and we welcome you here today.

Our next witness will be Morgan Reed, who is the President of ACT, the App Association, a trade association representing over 5,000 app makers and tech companies. Mr. Reed specializes in intellectual property, security, privacy, connected health, digital trade, and business development. He also has experience as a coder and business owner and has testified before Congress in the past. And we welcome you here, Mr. Reed.

And our third witness will be Christopher Mohr, who is the Vice President for Intellectual Property and General Counsel at the Software and Information Industry Association, or SIIA. SIIA represents over 800 companies in the software and information industries. Mr. Mohr acts as SIIA's chief legal officer and principal spokesperson on intellectual property issues and has appeared before legislative, judicial, and administrative bodies on intellectual property issues, including the Supreme Court of the United States. So we welcome you here, Mr. Mohr.

And I would now yield to the acting Ranking Member for the purpose of introducing our fourth and final witness.

Mr. EVANS. Thank you again, Mr. Chairman.

It is my pleasure to introduce Mr. Christopher Israel, executive director of the Alliance for U.S. Startups and Inventors for Jobs, a coalition of inventors, startups, and research businesses that depend on patents. Prior to his role, Mr. Israel served as the U.S. coordinator for international IP enforcement and also served at the Commerce Department. He received his B.A. from the University of Kansas and his M.A. from George Washington University. I welcome Mr. Israel.

Thank you, Mr. Chair.

Chairman CHABOT. Thank you very much.

And Mr. Cullen, you are recognized for 5 minutes.

STATEMENTS OF FRANK CULLEN, VICE PRESIDENT OF U.S. POLICY, THE GLOBAL INNOVATION POLICY CENTER, U.S. CHAMBER OF COMMERCE; MORGAN REED, PRESIDENT, ACT, THE APP ASSOCIATION; CHRISTOPHER MOHR, VICE PRESIDENT FOR INTELLECTUAL PROPERTY AND GENERAL COUNSEL, SOFTWARE & INFORMATION INDUSTRY ASSOCIATION; CHRIS ISRAEL, EXECUTIVE DIRECTOR, ALLIANCE FOR U.S. STARTUPS & INVENTORS FOR JOBS

STATEMENT OF FRANK CULLEN

Mr. CULLEN. Thank you, Mr. Chairman. And also, I want to thank the Ranking Member Velázquez for the opportunity to testify at this important hearing.

The U.S. Chamber of Commerce's Global Innovation Policy Center is working around the world to champion intellectual property rights that are vital to creating jobs, saving lives, advancing global economic growth, and generating breakthrough solutions to global challenges.

The U.S. Chamber of Commerce is the world's largest business federation, and more than 96 percent of our member companies are small businesses with fewer than 100 employees.

As members of this Committee know well, small businesses employ more than half of all Americans, and the Chamber is proud to represent millions of these businesses.

Intellectual property, or IP as I think you all well know, is an umbrella term covering copyright, patent, trademark, and trade secrets. It is often the secret sauce that gives a new up-and-coming company its competitive edge. The loss of that edge through theft or other appropriation invites unfair competition that can devastate even the largest company, much less a small one.

The critical importance of IP was recognized in the Constitution where Article I, Section 8, Clause 8 provided that Congress shall have the power to: "Promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

Now, this set forth the fundamental policy approach that has undergirded America's rise to the largest economy in the world. This formula is straightforward: allow authors and inventors to own the intellectual property rights over their creations and inven-

tions and they will have an incentive to create, invent, and distribute to the benefit of all.

This formula is as true today as it has ever been. Yet, any commercial project carries the risk it will fail or not become commercially successful. And of course, there is the added risk that even if successful, copycats may attempt to free ride on the work of others and offer fake products at an artificially low price. This is precisely the form of unfair competition that IP protections are designed to prevent.

As Steve Jobs said, from the earliest days of Apple, “I realized that we thrived when we created intellectual property. If it were not protected, there would be on incentive for us to make new software or product designs.”

And it is worth noting that Apple, like so many other small businesses, started with an idea and the creative genius of two young inventors working in their garage.

By allowing innovators and creators the opportunity to run a business on their talent and ingenuity, IP rights drive U.S. competitiveness and economic growth. The Chairman noted the impressive economic numbers. The Department of Commerce estimates that more than half of our exports, \$842 billion, and almost 40 percent of all U.S. GDP can be directly tied to IP-intensive industries.

And for the past 6 years, GIPC has published an annual International IP Index. As we look over the course of our report, we see one clear pattern: strong IP environments tend to enjoy greater levels of research and innovation output. And as a top-scorer in its overall IP system, the United States has a competitive advantage over other countries.

Now, every market requires equitable rules, but an environment of overbearing regulation can strangle business growth, especially for small businesses with lightly and tightly limited resources. A marketplace that has no rules invites abuse and theft to the detriment of businesses and consumers alike.

As former Fed chair Alan Greenspan said, “Market economies require rules of law.” A system of intellectual property protections is one of the reasonable rules that creates an environment of fairness and promotes innovation and job growth.

Free trade agreements can also provide protections of IP rights for small business owners, creators, and inventors.

Now, in the digital environment and the technology that accompanies it, we have seen a great enhancement of the ability of businesses to connect with their customers far beyond the reach previously thought possible. They have provided new media for creative expression and new tools for innovators. However, this technology can be a double-edged sword.

While thousands of small businesses now have the opportunity to compete in the global marketplace, they are at risk of having their products ripped off by unscrupulous criminals.

So one of the problems we have as the Chairman alluded to is that most small businesses when they start out do not factor IP protection or an IP strategy into their business plan. They need to have education about these fundamental forums of IP protections and how copyright, patents, trademarks, trade secrets can really benefit them.

Obviously, we understand that we are doing business in the on-line environment and there are threats from counterfeiters. It not only affects a small businessman but it also potentially affects consumers. So it is important that the brand that has been established in a new up-and-coming company is not undermined by either the theft or by subpar products being put into the marketplace by criminal elements. Because when that brand is really reduced in terms of its value, it hurts both the company and ultimately the consumer's access to new products.

Obviously, I have additional information in my written testimony, and I welcome the Committee's questions. Thanks again for this opportunity to testify.

Chairman CHABOT. Thank you very much.

Mr. Reed, you are recognized for 5 minutes.

STATEMENT OF MORGAN REED

Mr. REED. Chairman Chabot, Ranking Member Evans, and distinguished members of the Committee, my name is Morgan Reed, and I am the president of The App Association, a trade association representing more than 5,000 app makers and connected device companies in a \$950 billion industry.

The app economy employs 4.7 million Americans and is outpacing nearly every other sector of the economy. In fact, we have over 500,000 open jobs waiting to be filled.

As our 2018 state of the app economy report, which you all have, shows, smartphones are the single most rapidly adopted technology in world history. Device ownership grew from 0 to 3.4 billion people in just a decade.

The broad reach of cloud plus mobile structure creates the conditions for rapid adoption and gives our member companies in all 435 congressional districts, including yours, access to markets around the world.

Let's take a moment to dig into that because it is easy for everyone to sit on the panel and say, well, we represent a lot of people, but let's give it some specificity.

So Chairman Chabot, in your district, we have Canned Spinach Designs. My friend, Andrew Savitz, built a company there that is a design and development firm, but they have also built a cool mobile app that allows large companies to offer discounts and benefits to their employees that they can pass on to their family.

Congressman Evans, in your district we have NEAT. NEAT extracts key information from your receipts and documents and integrates it with popular accounting and business software.

Congressman Luetkemeyer, in your district we have got CSPI. They do online banking services and they tie in the ability to take that picture of your check and they tie it back to your mobile app. That is the company that helps make that all possible.

Congresswoman Adams, in your district we have my friend, Douglas McDowell, who runs a company called Century One. They allow Microsoft data professionals to monitor, diagnose, and optimize the products in the environment and in the cloud for mobile.

Congressman Schneider, in your district, we have got Pathfinder. They are a health company, one of my favorite technologies that in-

corporates mobile tech, and they are doing it for both small and large companies.

Congressman Kelly, Next Gear Solutions, great product. They have built a mobile app that helps people who go in and solve—if you have a house that has had a fire or a flood, they are building the mobile app that allows the onsite professional to take pictures, instantaneously take notes, figure out how to resolve the problem, fix your house, get your family back in as quickly as possible.

Congressman Marshall, we have got Media Dime Solutions that builds a ton of mobile apps. They are in the Kansas First. They do website and graphics as well.

I have folks for everybody here, but as I am looking at my clock, I figure I would shorten it up a little bit and say that is the reality of the world we are living in. We are here to talk IP. That IP is not just in Silicon Valley. It is in every single one of your districts.

And a big part of that comes from the IP protections that are available. Our member companies not only rely just on copyright but also patents, trademarks, and trade secrets. And I would like to thank all of you for your support of the trade secret acts that passed last year.

One of the things to understand is how does it matter? Software is especially dependent on copyright. I know members of the Committee here are well aware of music and movie piracy, and that anti-copyright voices claim the problem is with the business model of copyright holders.

For my members they have heard, if you provide the app for free, nobody can steal it. I am here tell you today that free is not cheap enough. No matter what business or pricing model our members choose, piracy still occurs.

You might be thinking, how is that even possible? How do you steal a free app? Well, I will tell you.

One of our members had—one of their apps was downloaded 160,000 times for their free app. And yet, none of the revenue came to him. Well, free apps are usually monetized through advertising. In this case, a pirate took his app, moved it to a different ad network that fed the money back to the thief, not our member. To make matters worse, our member's app featured video components, so every time it was viewed through the pirated version of the app, our member was charged by his hosting service. Essentially, he was paying for the privilege to be robbed.

Beyond copyright, I want to talk for a moment about the importance of patents to our companies and their beneficiaries. We have members who have patents but all of our members depend on patented technologies.

I know many of my panelists will be talking about the USPTO, but I want to take a moment to talk about standards. Over the past 20 years, the United States has led the way in protecting IP and preserving fair, reasonable, and nondiscriminatory licensing terms for standards that allow companies to make innovations. Standards create the foundation for technology advancements and interoperability competing products while still maintaining fair, reasonable, and nondiscriminatory paths to compensation. We need to preserve a strong, voluntary standard system to ensure that en-

trepreneurs can create the next great innovation on top of those great standards.

Small businesses benefit the most from an effective standard system because it enables them to specialize and go head-to-head with big companies.

We urge members of the Committee to support the current voluntary standard system and the balance it strikes for IP rights holders.

I thank you for the hearing and look forward to your questions.

Chairman CHABOT. Thank you very much.

Mr. Mohr, you are recognized for 5 minutes.

STATEMENT OF CHRISTOPHER MOHR

Mr. MOHR. Thank you, Mr. Chairman.

Mr. Chairman, Ranking Members of the Committee, on behalf of SIIA, thank you for the opportunity to appear today.

SIIA is the principal trade association of the software and information industries. We represent over 700 companies that develop and market software and digital content for business, education, and consumers.

IP is at the core of SIIA's mission, and the association was founded on advocating for and enforcing its members' intellectual property rights. That priority has remained even as we have grown to represent 800-plus members, including software and cloud companies, financial information and database providers, educational technology companies, and online publishers.

Some of our member companies were born digital. They created and designed their business model for the internet. Others either have or are transitioning from an analog existence to an online one. Some members fund innovation by selling subscriptions. Others fund it by advertising. Others fund it by selling copies.

For all of our members, intellectual property and the integrity of that property has always been at the core of what they do, and it is growing in importance for all of our member businesses, especially the small ones.

The pace of innovation is accelerating. Patents continue to be granted in record numbers. It took over 200 years for the United States to issue 9 million patents. It took 3 years to get to 10 million. That growth trend is reflected all over the country.

For example, according to PTO statistics, in your home state of Ohio, there were approximately 108,000 utility patents granted in the years between 1963 and 2002. Between 2003 and 2015, about half that time, there have been 150,000 utility patents granted.

According to statistics compiled by the Copyright Alliance, Ohio's residents have registered about 76,000 copyrights. There seems to be an IP deluge, not a drought.

And that flood of innovation has been good for software and technology businesses of all stripes.

In your home state, Mr. Chairman, again, these are according to Copyright Alliance stats, the software industry supported nearly 80,000 jobs and contributed \$13 billion to the Nation's GDP.

And that has bled through to R&D. Since the Supreme Court's software patent decision in 2014, R&D spending for software grew

at a 27 percent rate, faster than the growth of all other industries, at least between 2014 and 2015.

For software and services, there are estimates that the R&D spending will grow to be about 24 percent of all R&D by 2020. And since 2014, the number of jobs created by software developers has increased 14 percent.

That is a very convoluted and probably over-statistical way of saying that Congress should be taking a bit of a victory lap.

The IP laws created by Congress are the engine that drives innovation, and from the standpoint of SIIA members, whether you are talking about copyrights, trademarks, patents, or trade secrets, that engine is purring. These laws are working to incentivize invention in the creation of expressive works while preventing acts of unfair competition against businesses small and large.

From a patent standpoint, the AIA, combined with the Supreme Court's decision in *Alice*, has helped to mitigate the still existing problem of patent litigation abuse. Bills like the one that you passed yesterday and your BIG Data for IP Act also help.

SIIA opposes rolling back either of these improvements, especially given the deluge of patents and growth in the software industry that is occurring under existing law.

With respect to copyrights, the substance of the law is working well, but administrative improvements would improve small business access, specifically by modernizing the Copyright Office.

On the whole, it is our view that current law is working very well.

Thank you again for the opportunity to appear before you today, and I look forward to the Committee's questions.

Chairman CHABOT. Thank you very much.

Mr. Israel, you are recognized for 5 minutes.

STATEMENT OF CHRISTOPHER ISRAEL

Mr. ISRAEL. Thank you, Mr. Chairman.

I would like to thank you and Ranking Member Velázquez, Mr. Evans, members of the Committee, for this opportunity to be here today.

It is an honor to participate in this important hearing focused on the role of intellectual property in supporting small business development and growth.

I am here on behalf of the Alliance for U.S. Startups and Inventors for Jobs (USIJ). USIJ is a coalition of over 30 startup companies and their affiliated executives, inventors, investors that depend on reliable patent protection as a foundation for their business.

It is difficult and perilous to start a new company from scratch. For companies built around a new inventory or committed to solving a complex problem, it also requires investors with a very strong appetite for risk.

The U.S. patent system is designed to incentivize and reward this risk.

Unfortunately, over the past 15 years, we have seen the foundations of the U.S. patent system eroded by court decisions and changes in U.S. law. This has resulted in the U.S. falling form

number one to number 12 in terms of IP strength according to the U.S. Chamber.

We believe there is a very strong correlation between the patent system and the willingness of entrepreneurs and investors to take risks on big breakthroughs and complex problems. USIJ is releasing today the results of a study we conducted on the trends in venture capital investment from 2004 to 2017, which I have included in my testimony.

I will touch on a few of the key conclusions and offer some recommendations on how Congress can the administration PTO can strengthen the U.S. patent system to better support startups in key tech sectors.

To be clear, not all small businesses and startups depend on patents for their success. Many do not, and some even find patents a burden. But companies that invest heavily in R&D to create breakthroughs in strategically critical technologies do depend on patents to protect them from predatory behavior of would-be competitors anxious to copy any new product or technology once it is proven workable.

As the U.S. patent system has slipped from the strongest in the world to number 12, we have seen the elimination of injunctive relief for patent owners, significant limitations on the ability of inventors to even obtain patents in key areas of life sciences and software, and a procedure at the U.S. Patent and Trademark Office that allows an open-ended opportunity for anyone to challenge any valid U.S. patent multiple times and often without any business reason for doing so.

So how is the market reacting to all of this? As you might expect in some ways, even though total venture capital in the United States has increased nearly fourfold over the last 15 years, the portion committed to small businesses and important technology sectors has declined significantly.

In 2004, 21 percent of all venture capital funding in the United States went to the following strategic patent-intensive sectors: internet networking, wireless communications, semiconductors, drug discovery, and medical devices. In 2017, only 3.2 percent of venture capital funding in the U.S. went to these sectors.

So who are the beneficiaries of this relative decline in funding for strategically critical technology? In 2004, 11 percent of all venture capital in the United States went to the following sectors: social network platforms, business-to-consumer technologies, financial services, and software apps. By 2017, 33 percent, 1/3 of all venture capital in the United States went to these sectors.

While the latter group has certainly led to some interesting products and services, created a lot of jobs, and led to some very well-known and ubiquitous global companies, these are not typically the sectors that are generally investing heavily to push the outer boundaries of science and technology to remain competitive in the global market.

These declines are fairly shocking unless one believes that the U.S. can maintain its technological leadership with minimal investment in startups that are working in the areas of new drug discovery, networking equipment, cybersecurity, AI, medical devices, biotech, semiconductors, computer hardware, and a host of other

core industrial sectors, while 1/3 of the funding for new companies in the United States goes to apps, social media, and online shopping and banking platforms.

The good news is that there are some specific things Congress and the USPTO can do immediately to revitalize the U.S. patent system for inventive small businesses. These include passage of the Stronger Patents Act. I would like to thank Ranking Member Velázquez and Mr. Norman for cosponsoring that piece of legislation. Providing statutory clarity for patentability for life sciences and software inventions under section 101 of the Patent Act.

In addition, PTO can make some needed reforms to change its post-grant review procedures. We strongly support the pending rule change to discontinue use of the BRI standard for claim construction. Patent owners should be allowed reasonable opportunity to amend their claims during a post-grant review proceeding. And USPTO should address serial attacks on patents held by small companies by larger competitors working in collaboration and with surrogates. This has become a major problem for technology startups.

Mr. Chairman, I appreciate the opportunity to participate in this hearing and look forward to all the questions.

Chairman CHABOT. Thank you very much.

And I will now recognize myself to begin the questioning. I am recognized for 5 minutes.

And I will begin with you, Mr. Cullen. In your experience, how much information on intellectual property do startups and small business owners typically need when developing their companies?

Mr. CULLEN. Well, at the very least, they need to understand which type of IP is going to be most applicable to their business. So education about what can benefit them in terms of their business plan and their product is essential. Obviously, there are costs associated with IP protections and that has to be factored into their business plan as well. These are widely divergent. For instance, at the Copyright Office, for \$55 you can get a copyright, but it is much more expensive if you are going to see a patent. You are talking thousands of dollars. So you have to really figure out what is the appropriate IP for you, what the terms are in terms of how long that IP protection will last, whether or not it is going to be relative to your business domestically or abroad, and whether you, of course, are going to do business in other markets. So education about all the types of IP that are out there and what is most applicable to your business model is probably the most fundamental thing you need to do.

Chairman CHABOT. Thank you very much.

Mr. Reed, I will turn to you next if I can. What are the best practices to combat online piracy and counterfeiting for app developers? And also, how do you fix the problem that you mentioned where the fellow had his free app not only stolen, but then he is getting charged for every one of its uses and the thief is getting the advertising revenue as well?

Mr. REED. Well, I think there are a couple of things. And I want to take a piece of what Frank just opened with. We always tell the story when we talk to our small business members about IP and we say it this way, if I walk up to you and I say, who in your office

handles your intellectual property? I always get a shrug or I am not sure. And if I say to the business owner, who in your office is in charge of birthdays, they always know who is in charge of birthdays. And what we say is your IP needs to be at least as important as who is in charge of birthdays on the calendar. So build a binder, start collecting everything. Your employee agreements. Anything else that you are doing. What are your vendor agreements?

One of the stories we have is one of our members lost \$3 million because one of his vendor agreements said that any work that he did for them was owned by the company that he was doing the work for. It is a completely reasonable thing. He did not know it was in his agreement. It cost him \$3 million on acquisition.

So at a minimum, the way I would address your question is make IP at least as important as birthdays. Know who handles it, know who is in charge of it, and how you are collecting it.

On to your larger question, on what do we do to protect. We have actually seen that there have been some real market improvements by the platforms here in the United States. Apple, in particular, has done a really good job of allowing our members to contact them and let them know about an application that is stolen or pirated or contains pirated content and get on top of it.

Globally, we still have a larger problem. We see that as an area of real concern. Around the world, jailbreaking phones or side loading applications is much more common than it is in the United States, and that is a real avenue. Unfortunately, it is also an avenue for 97 percent of the malware that is out there on mobile devices as well.

So quick answer, platforms are doing a fairly good job. They can get better. We also work with TAG on the advertising revenue. The acronym escapes me. It is the group for the advertisers that works on presenting click fraud and advertising fraud, but it is a problem that we are all working on and we are working on together because it is costing us millions of dollars.

Chairman CHABOT. Thank you very much.

Mr. Mohr, I will turn to you next. How important is it for software companies to have intellectual property protections? And which protections would you consider to be the most important for your members?

Mr. MOHR. It is critical. There are two, I think, that are most important. And that would be copyright and patent. And we have been historically extremely involved in enforcing our members' rights against pirates. And I think to riff off of what my friend just got into, there is another angle to piracy now because a lot of what happens sometimes is that your relationship with the software company is far more interactive than it used to be say 15 years ago. It is no longer the case where you load a CD into your computer and then never think about it again until you need something better.

Instead, what happens is there is an ongoing relationship with the software provider. When that software is altered and pirated, what happens then is the creation of consumer protection problems. There is intellectual property harm, of course, when if you are trying to sell copies and someone is ripping them off, then you have a revenue problem but that problem is internal to you. There

is an external problem now with people whose data or other information could be compromised.

The second thing is with respect to patent protection. Our members have patents. They have many, many, many patents. Their primary concern is that the system from a defensive standpoint prevents bad patents from being enforced. And that has two components, at least, maybe more.

The first component is on the front-end to ensure that applications are properly examined and good patents are issued. The second is after issuance, if the PTO makes a mistake that there would be a procedure by which those patents can be officially challenged. We believe that procedure exists under the AIA.

Chairman CHABOT. Thank you. I think I am going to have to cut you off there because my time has expired. And I apologize for not getting to you, Mr. Israel.

The gentleman, the Ranking Member, the gentleman from Pennsylvania is recognized for 5 minutes.

Mr. EVANS. Thank you, Mr. Chairman.

Mr. Israel, women, racial minorities, and low-income individuals seem to be significantly underrepresented in the innovation ecosystem. This is extraordinarily alarming as these individuals will face challenges in other areas of business capital. What steps should Congress take to help narrow the gaps?

Mr. ISRAEL. Thank you, Mr. Evans. It is a great question, and we would look forward to and welcome any opportunity to work with you and your colleagues to address it. We have got some really groundbreaking women members of our organization who have spent years and years building and creating companies. So there certainly is a huge opportunity for progress here.

You know, we think, just kind of fundamentally getting back to the first principal of ensuring that the patent system and the IP system, we are removing as many barriers as we can to get as many creative entrepreneurs into the system as possible. I think working with major universities and research institutions are such a great source of diversity and tremendous ideas and entrepreneurs, so I think we have talked about and would look forward to developing some ideas. Maybe working with larger research institutions and universities in every state in the country to help accelerate some of that integration of women and minority entrepreneurs and match them up with the venture capital and the support that they need to build great companies.

Mr. EVANS. To you, Mr. Reed or Mr. Cullen, specifically, what can Congress do? Tell me what you think Congress can do.

Mr. REED. I will give you a couple of examples. As I said in my opening testimony, we have 500,000 unfilled jobs. Unfilled. Not prospective, not hopeful, jobs that we do not have people for. So specifically, we see there are two items that we have been working on. One is we have got to get the K-12 education around this area earlier on. We would love to see a grant program, even a low dollar one, that helps to open the door so that when my members who want to donate time to educate students have a pathway into a school—right now when you knock on the door to say, hi, I am here to teach computer science, there is not even a person to talk to. You talk to the vice principal and they say, well, we do not even

have any way to even incorporate you into our curriculum. So there is the potential for a small, low dollar grant from the Department of Education to help those schools bring in the entrepreneurs, my members, and Chris's, into those schools.

The second area is my membership, we recently had 50 CEOs come to D.C. Many of them visited you. And I did a survey of the room and I said, how many of you are currently employing people who do not work in your office? One hundred percent. We had 100 percent of my members currently have employees that are not in their main office. And so that gets into issues around broadband access and how do we better utilize spectrum, like TV white spaces so that we can actually have people in other places.

I testified in another hearing with a gentleman from Mississippi where he was training coders in Mississippi. And I said to him then and I would say it now, if you train the people and give them the talent, if they have got broadband, I will employ them.

So when you ask the question of what Congress can do, we need better help on the education side and we need to make sure that spectrum is available for broadband in places that do not naturally have it. They are either rural or low income, and let's make that change.

Mr. EVANS. Mr. Cullen?

Mr. CULLEN. Thank you, Mr. Evans. And as my colleague said, it is a great question.

Certainly, I echo what my colleagues have said on the panel. Education is key, and we certainly commend the Committee for its work in passing important legislation this week which provides resources to USPTO and more resources to agencies such as the SBA and others to develop programs that can reach out to undeserved individuals who are trying to start businesses and really have the opportunity to employ Americans. So from our standpoint, we very strongly support legislation that provides those resources, whether it is in education or it is at agencies such as the USPTO or Small Business Committee, and we think we need to see more of that.

Mr. EVANS. I am going to stop with you real quick. I have only got like 51 seconds and this is for the panel.

We have heard conflicting information regarding the health of our Nation's existing patent system. How do we reconcile these views and balance the needs of truly innovative firms on both sides of the issue?

Mr. CULLEN. Well, we believe that innovation is driven when you have a strong IP system. It helps support it and drive it. And clearly, you need to have clarity in the patent system and you need to have a patent system that really is going to work for the inventors and the folks who really have to be able to assert those rights. From our standpoint, we think that predictability and a clear patent system is the most important.

Mr. MOHR. I think given the 9 seconds, 8 seconds left, as I said in my opening testimony, we want to make sure that the standard system is preserved and the intellectual property within the standard system both correctly rewards the people who invent it but also makes it a pathway to be used by everyone.

Mr. EVANS. Thank you, Mr. Chairman.

Chairman CHABOT. Thank you very much.

The gentleman's time has expired.

The gentleman from Missouri, Mr. Luetkemeyer, who is Vice Chairman of this Committee, is recognized for 5 minutes.

Mr. LUETKEMEYER. Thank you, Mr. Chairman.

Mr. Reed, I appreciate the shout out to CSPI. I actually know those gentleman personally. We actually are a customer of theirs. They are a true American dream story. They are three guys who started out as Burrows Repair, office repairmen, and Burrows decided to contract out the repair work and they became their own little company to contract with Burrows and then they went off and developed this product and now they are nationwide and mega, mega, mega millionaires. So I am in the wrong business, obviously. But thank you for that.

One of the questions I have got is with regard to, you know, the administration is concerned right now with trade, and one of the things that is involved in trade is protection of intellectual property. I know Mr. Reed, you talked about it a little bit, and then Mr. Cullen, you talked about it a little bit in your testimony, what are other countries doing to protect their inventors, their copyright stuff that is different from ours that we could use to help us, help our people? And how do we protect our people here from what is going on in the international little world of espionage here to go take our intellectual property where we—I do not know what the percentage is but I am sure we do most of it here in this country versus everybody else?

Mr. CULLEN. Well, thank you again for the question. It is an excellent one. Obviously, more needs to be done across the board and globally. American does lead. Our IP that the Chamber releases shows quite clearly the benefits of a strong IP system.

Now, you have seen different types of IP protections in different types of countries. Some of the things we do here in the United States vary a little bit. We have in the past looked at different ways to protect copyright in the online environment. Other countries have taken stronger measures to protect copyright in the online environment, such as in Great Britain and in other markets.

Mr. LUETKEMEYER. Should we not be taking a lead like that or are they off the charts with the way they are doing it?

Mr. CULLEN. Yeah. We are not advocating legislation. What we are saying is that there is still a significant problem that needs to be addressed. Some of this can be addressed through voluntary agreements between businesses and some of this can be addressed through simply educating consumers about what other legal choices are available to them. But when it comes to actual IP protections, one of the things we stress is that in our index you will see the clear benefit to having an overall strong IP system that covers the broad range of IP, and we would suggest that countries that have that type of system in place will be the most innovative.

Mr. LUETKEMEYER. Mr. Reed?

Mr. REED. I will echo mostly what Frank said. I think one of the interesting parts that you saw all of us look at each other when you asked that question, because it is an interesting formation of a question we had not really thought about. Because the United States is such a leader on intellectual property, on trade, we tend to be the people in the room saying how do we do the most for

Americans, and the rest of the world tends to be saying, well, you know, let's find some soft edges.

Now, that is not always true as Frank pointed out. In Europe, we see that there are some systems there where they are definitely adopting a stronger position. I think the part that makes it really interesting is how do we execute on what you described but make sure that we are not running into a situation where we create barriers. Because the reality is that the one place the United States has a trade surplus with every Nation in the world is in IP. And so we are always tentative about adopting the ideas of other countries if they are only adopting that kind of protection in order to squeeze out American competition.

So we sit in an interesting catbird seat when it comes to IP. We are better than everyone else at it and we want to stay that way, and so figuring out, how do we continue to innovative is going to be a critical part of it. And let's not make sure we fall into a case where they squeeze us out of opportunity.

Mr. LUETKEMEYER. Yes?

Mr. CULLEN. Just one last point. Free trade agreements can also play a significant role with strong IP chapters in terms of aligning IP protections.

Mr. LUETKEMEYER. I think that is one of the reasons the administration is looking at these trade agreements, you know, especially with China trying to steal everything, and also, for them to actually come in the back door of other countries, I mean, that is one of the reasons we are trying to get the EU and Canada and all those other countries at the table to be able to talk to them about, hey, you know, we need to have you help us protect our industries and our IP. And it seems to be that that is a big part of it.

I am about out of time here so I will yield back the balance of my time, Mr. Chairman.

Chairman CHABOT. Thank you. The gentleman yields back.

The gentlelady from North Carolina, Ms. Adams, who is the Ranking Member of the Subcommittee on Investigations, Oversight, and Regulations is recognized for 5 minutes.

Ms. ADAMS. Thank you, Mr. Chairman. And thank you, gentlemen, for your testimony, and being here today.

Mr. Cullen, as we seek to strengthen the patent system to better protect our inventors in the global marketplace, I believe it is equally important that we also strive to eliminate the gender, racial, and income gaps that currently exist here in the U.S.

As a first step to address the gender and race gap in patenting, would it be helpful for the SBA, USPTO, or other relevant Federal agencies to examine the gender, race, and income gaps in patenting and their impact on the American economy, small business development, and entrepreneurship?

Mr. CULLEN. Thank you, Congresswoman, for that important question. I agree wholeheartedly that anything we can do to help quantify that situation would be beneficial not only to those who are seeking opportunity but also to our economy at large.

I can tell you without reservation that the new director of the USPTO, Andrei Iancu has embraced, I think, a lot of novel approaches to strengthening both the USPTO and the patent system,

and I am confident that if you brought that idea to his staff and his team that he would be willing to take a look at that, and I think it is a very important initiative.

Ms. ADAMS. All right. Thank you very much.

Mr. Israel, a recent study found that obtaining a first patent plays a huge role in helping startups secure venture capital and other financial investments. In fact, startups that obtain their first patent are 33 percent more likely to obtain venture capital funding than startups that do not receive a patent at all. It is especially true for startups that had not already attracted significant investment prior to receiving the patent and companies with experienced founders and startups located outside of the geographic areas that traditionally attract investors like Silicon Valley. So can you comment on these findings and give us your opinion about what Congress can do to ensure that the patent system is accessible to underserved populations of entrepreneurs?

Mr. ISRAEL. Thank you, Ms. Adams. It is a great question and those statistics are well known and borne out in reality, and we can certainly provide specific examples of them. It is, as you say, a key indicator of the ability of a young company, particularly in a research and development intensive sector, life sciences, heavy technology, whether or not they are going to be able to secure the type of funding they need if they have got a strong patent portfolio. The types of companies that we work with and we see close up are the types that need anywhere from \$100 to \$250 million sometimes of venture funding to see their way through that initial idea all the way through to getting it to market and becoming a viable company.

So if we are as a Nation in the business of leading in these big areas that require a lot of heavy research and development, we need a strong patent system that maps up to it and that allows those inventors to get the resources they need.

So as I noted in my testimony, I believe we are actually falling short in a few key areas. When we have seen it in the trend lines in venture capital and where it is going and the inability of companies to get the patents that they need and secure the funding that they need. So we think it is essential that Congress step in and take up the question of patentability. Under section 101 under the Patent Act in areas like software and life sciences, the courts in some recent decisions have created some uncertainty there. We think it is critical that the Patent and Trademark Office, and I know Director Iancu is considering a number of reforms, look at some changes to correct how easy it is frankly for patents to be challenged, particularly by large companies against small startups who have patent portfolios, so this post-grant system at PTO we believe has become slanted towards and much more easy for large companies to target small companies and frankly take their intellectual property out and mitigate its impact in the marketplace.

So the trend lines are there. The evidence is very clear that if you have a strong patent portfolio, you have to have that if you are going to address investors and expect them to put a risk and take a risk with you in your company. That is a very true thing. And we think it is also true that unfortunately we have slipped in some of the areas that allow those small companies and startups to pro-

tect their intellectual property to give those assurances to the investors that they are working with.

Ms. ADAMS. Thank you, sir.

Mr. Chair, I yield back.

Chairman CHABOT. Thank you very much. The gentlelady yields back.

And the gentleman from Virginia, Mr. Brat, who is the Chairman of the Subcommittee on Economic Growth, Tax, and Capital Access is recognized for 5 minutes.

Mr. BRAT. Thank you, Mr. Chairman. Thank you all for being here with us today.

I had a breakfast meeting today on China and North Korea, and had an expert speaker come to us. You know, we are all debating playing eight-dimensional chess with many complex issues at the global level. And I said, what is the most serious? Right? The South Sea Islands, the military buildup, the tariff piece from China or intellectual property? He said, intellectual property. Most significant issue. And he said, look at what we are exporting to China. And we are losing our competitive advantage in intellectual property, relatively speaking, not absolutely.

And so I just want your take. Today we are discussing sort of micro-level issues on theft, privacy, et cetera. But if you can each just weigh very briefly in on the connections you see between the global economic competitive environment and the micro issues. I mean, are they related? How are they related in your minds? I would just love to hear the experts weigh in on the relationship between the Chinese stealing intellectual property. Does that manifest itself in what we are talking about today? And if so, how do you see that?

We can start with Mr. Cullen and work on down.

Mr. CULLEN. Thank you, Congressman. I appreciate the question.

It has a huge impact. It has a huge impact on small businesses who are having their products counterfeited, or folks, songwriters who are having their music pirated. So from our standpoint, we certainly have concerns about what is happening with the theft of intellectual property. Almost 90 percent of counterfeited goods come out of China and Hong Kong. So this has a huge impact, not only on all these companies but on the jobs they create. So we are deeply concerned.

GIPC has a dedicated program working with China. I would like to point out that one of the things we have to look at is the overall situation in China, not just how it is impacting us, and how we can help them move from essentially a counterfeit economy to a different type of model. And so from our standpoint, we are going to continue to work with our counterparts in China. There are some successes in law enforcement and other areas, but it is very tough sledding.

Mr. REED. I am going to take a page, since he said a lot of the key things, I think one of the things that is important for everyone here to understand is that my smallest member is an international player. If I think about Ann Adair, in Tampa, Florida, she is a tiny developer shop, and yet she has tens of thousands, and even hun-

dreds of thousands of customers around the world, including in China.

So one of the key elements that plays in this, all of what Frank said is critical, but we have to remember that what we are really looking for is, how do small businesses have access to that market? How do we help China get to the point where we are selling in to them? Because they want our apps. We know they want our apps because they are stealing them when it happens. But the point is there is demand, there is value, there is creation that exists there. And so I think what we are really looking for is how do we move to the state where the United States and our innovators and our small businesses are able to compete and provide products? Because that is the real growth possibility.

Mr. MOHR. Just quickly, trying not to repeat what everybody else said because I think we would be in agreement with all of it, I think what you see is if you have particular economies or particular cultures in which those property rights are not respected on a micro level, on a macro level you are going to have problems. And that is exactly what is happening. There are many tools that you have to use to change that perception. But that is a big problem with a lot of moving parts let's say.

Mr. BRAT. And if you guys want to help give us input on those tools—

Chairman CHABOT. Could you turn your mic on, please?

Mr. BRAT. Sorry, guys.

The gentleman this morning said we are not pushing hard enough. China is also using our banking system to launder money through; right? And we punched them a couple time, small banks. And we have tremendous leverage there.

Some of the tariff legislation right now is actually written through the section having to do with intellectual property. It is not just a tariff policy. It is through intellectual property, and I do not think that has gotten out. So if you all can weigh in and give us some input as a Committee in writing following this, what the levers that will be most effective to help the industry and help American workers, that would be great.

And finally, Mr. Israel, sorry.

Mr. ISRAEL. Congressman, appreciate that. And having spent some time with the U.S. government working on this issue, I welcome the chance to work with you.

I think two fundamental things are true at a very high level. I think, as I have stated, I think over the past decade or so we have in a number of ways systemically weakened the U.S. patent system. Some of it has been in pursuit of wringing out litigation abuses and patent trolls, but the reality is we have a weaker patent system today than we did a decade ago.

I also believe at a very fundamental level, the Chinese through their China 2025 strategy, which you probably spoke quite a bit about this morning, are strategically and tactically targeting dominance in the most critical technology sectors that exist today—artificial intelligence, robotics, life sciences. You go down the list. Computer networking, wireless. Those are exactly the sectors that the United States needs to have a very strong patent system in order to incentivize the best and brightest entrepreneurs we are going to

need, the type of investments we are going to need, and the type of strong companies that we are going to have to create to compete with the Chinese who are coming at us with everything they have got. Not all the good ideas and not all the best breakthroughs are going to come from big, large, multinational corporations. A lot of them, most of them, are going to come from small companies with creative ideas that need a lot of resources and need strong patents.

Chairman CHABOT. The gentleman's time has expired.

The gentleman from Iowa, Mr. King, is recognized for 5 minutes.

Mr. KING. Thank you, Mr. Chairman. I appreciate this hearing and the witnesses' testimony.

I would first turn to Mr. Israel. You said that our patent system protection is less than it was 10 years ago, and I agree. Could you identify why that is the case?

Mr. ISRAEL. Thank you, Congressman.

We have talked about a few of them this morning. As I noted, there have been some court cases that have made it extremely difficult and very unpredictable to get patents, for instance, in the software sector and the life sciences sector, and there is some work going on to examine that.

Mr. KING. If I could, I am particularly interested in your view on the change that was made in patent law to shift from first to invent to first to file. How has that impacted our patent protection?

Mr. ISRAEL. Well, I mean, it has brought us in line with global norms, but it has certainly put more pressure on small inventors to demonstrate to the patent office the validity and the strength of their patent. I would say in addition to that, a very big burden and challenge and obstacle that has been placed on small companies in particular is the post-grant review, so kind of the after-the-fact challenge system that exists at PTO that once you have a valid patent, as a company or as an inventor, you are pretty much—there is an open-ended ability to for anyone to come forward from anywhere in the world, really, and challenge those patents almost endlessly. And we see—

Mr. KING. Well, the scenario works out like this. If you are a garage or a home shop inventor, you generate the idea and then you do not have a very good system to go ahead and apply for the patent, and so the chance of a leak or a theft of that intellectual property being filed by a larger company that has got the network to do that happens more often than it did before. And then, even if you file, you are still subject to the litigation coming back at you from the other way. So, it advantages the large operations that have the administrative network and the skillsets and disadvantages the small. Would that be a fair analysis?

Mr. ISRAEL. We believe that to be true. That oftentimes you will see small companies that have breakthrough technologies, as soon as they are ready to go to market, they are targeted by larger competitors in the post-grant review process at the PTO.

Mr. KING. Thank you, Mr. Israel.

And I turn to Mr. Cullen. I noted that you said we needed help to help China in particular move from the counterfeit economy. I like the phrase "counterfeit economy." They have a substantial counterfeit economy. And then a lot of small things along the way as I listened to this. But I did not hear any big ideas. I heard a

little law enforcement here. I have been over there to beat on the Chinese and talk to them about what are you actually doing? And they assure us that they are bringing civil actions against the IP pirates that are active over there. And I say, hey, that is fine. What happens? Well, we fine them. And then once you fine them, who collects the money? Well, the government does. And they put it in their other pocket, because a lot of those are government-owned companies. And I said, is anybody getting any criminal charges against them? Well, one. Is he in jail yet? No. Or maybe not was more like the answer. It was not a straight answer.

So I will bring it to this. Sitting there in the third city meeting in China—it happened to have been in Beijing—it occurred to me that each one of those meetings was exactly the same script. And sometimes it is not that inscrutable. It came to me that their business model was we are going to steal your intellectual property. And then as a cost of doing business, part of their overhead is to wine and dine Americans that come over there to complain. But they never intend to do anything about it because they are getting rich off of the theft of our IP. In fact, it is a multibillion dollar strategic effort to steal the creativity of America. And those numbers range someplace between \$250 billion a year and up to \$600 billion a year, depending on whose estimates are there.

So from that meeting sitting over there, I am sure the Chinese hacked my email off my BlackBerry, but I wrote it sitting at the table and it was this: Draft a bill that directs a U.S. trade representative to conduct a study to determine the value of intellectual property theft stolen by the Chinese and apply a duty to all Chinese products coming to America in an amount equivalent to recover that loss, plus an administrative fee, and then distribute those proceeds to the rightful property rights owners. That is H.R. 1048.

Now, I want to ask you, Mr. Cullen, do you believe your organization could support a bill, such a bill?

Mr. CULLEN. I appreciate that question, Congressman. And creative approaches to these problems are what we need. I certainly cannot commit that we will support the bill. I am more than happy to take a look at it. You know, we have a lot of engagement with China, and I agree with you. This problem is so vast that we need to see some tangible results. Our companies, as Morgan referenced, want to do business and access that market, but if we are having our intellectual property stolen, it puts our companies at great risk. So I appreciate the creative approach but I cannot say we will support the bill.

Mr. KING. I would like to ask you and Mr. Reed to take this idea back to your people.

Mr. CULLEN. We shall.

Mr. KING. And contact me with a response on this. And I am happy to have a meeting and have a discussion to expand this further because it has gone too far, and Hollywood and Nashville did not want to touch it 10 years ago but now the president has this in his hand, so we need to get behind him and solve this problem. There is too much theft going on of IP and it is time to do something about it.

So if I asked you to do that, would you say yes, each of you gentlemen?

Mr. CULLEN. We appreciate the opportunity to commit to it.

Mr. KING. Thank you. And let the record show that Mr. Reed did as well. He nodded his head and he smiled. I think he smiled.

Mr. REED. Yes.

Mr. KING. Thank you very much, gentlemen.

Mr. Chairman, I yield back.

Chairman CHABOT. Thank you very much, Mr. King.

Rather than go through the closing statement that I had I will just conclude with a real short one. Put me on that bill. Very good. Thank you very much.

And we want to thank the witnesses for their excellent testimony here today and the great questions from both sides of the aisle, I think, on all this. It has been very helpful.

I would ask unanimous consent that members have 5 legislative days to submit statements and supporting materials for the record.

Without objection, so ordered.

And if there is no further business to come before the Committee, we are adjourned. Thank you very much.

[Whereupon, at 12:07 p.m., the Committee was adjourned.]

APPENDIX

Chairman Chabot and Ranking Member Velazquez, thank you for the opportunity to testify at this important hearing.

The U.S. Chamber of Commerce's Global Innovation Policy Center (GIPC) (www.theglobalipcenter.com) is working around the world to champion intellectual property rights as vital to creating jobs, saving lives, advancing global economic growth, and generating breakthrough solutions to global challenges.

The U.S. Chamber of Commerce is the world's largest business federation, representing the interests of more than three million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations. The Chamber is dedicated to promoting, protecting, and defending America's free enterprise system.

More than 96 percent of Chamber member companies are small businesses with fewer than 100 employees, and many of the nation's largest companies are also active members. We are cognizant not only of the challenges facing smaller businesses but also of those facing the business community at large.

Besides representing a cross-section of the American business community with respect to the number of employees, the Chamber also represents major classifications of American business—e.g., manufacturing, retailing, services, construction, wholesalers, and finance. The Chamber has membership in all 50 states.

As Members of this Committee know, small businesses employ more than half of all Americans, and the Chamber is proud to represent millions of these businesses. The U.S. Chamber launched its “Small Business Nation” campaign to help startups and small businesses succeed by promoting pro-growth policies and providing toolkits for entrepreneurs.

Introduction

Intellectual property (IP), an umbrella term covering copyright, patent, trademark, and trade secrets, is often the secret sauce that gives a new, up-and-coming company its competitive edge. The loss of that edge, through theft or other appropriation, invites unfair competition that can devastate even a large company, much less a small one.

The critical importance of IP was recognized in the Constitution, where Article I, Section 8, Clause 8 provided that Congress shall have the power to:

“Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries....”

This elegant articulation set forth the fundamental policy approach that has undergirded America’s rise from a fledgling agrarian nation to the home of the Industrial Revolution to the largest economy in the world. The formula is straightforward: allow authors and inventors to own the intellectual property rights over their creations and innovation, and they will have an incentive to generate and distribute, to the benefit of all.

This formula is as true today as it has ever been. Independent film companies and record labels, startup software companies, and cutting edge biopharmaceutical innovators all require initial outlays of cash, in some cases a very large amount of cash. Any project carries the risk that it will fail or not become commercially successful. These types of efforts also have the added risk that even if they are successful, copycats may attempt to free ride on the costs of development and offer the product at an artificially low price. This is precisely the form of unfair competition that IP protections are designed to prevent. As Steve Jobs said, “From the earliest days at Apple, I realized that we thrived when we created intellectual property. If it weren’t protected, there’d be no incentive for us to make new software or product designs.”¹

And it is worth noting that Apple, like so many small businesses, started with an idea and the creative genius of two young people working in their garage.

By allowing innovators and creators the opportunity to run a business on their talent and ingenuity, IP rights drive U.S. competitiveness and economic growth, and create high-quality American jobs. IP supports more than 45 million American jobs in 81 different industries. According to the Department of Commerce, IP-intensive industries make up more than half of all U.S. exports, or \$842 billion, and almost 40% of U.S. GDP.

For the past six years, GIPC has published its annual International IP Index. The Index provides a roadmap for countries to improve their IP systems and promote job growth, economic development, innovation, and creativity. As we look over the course of the report, we also see a clear pattern. Strong IP

¹ As quoted in a biography by Walter Isaacson.

environments tend to enjoy greater levels of research and innovation output. As a top-scorer for its overall IP system, the United States has a competitive advantage over other countries. The Index also shows that keeping an IP system strong and effective requires monitoring and regularly updating policies, and that “doing nothing is a recipe for stagnation.”

IP and Small Business in the Digital Economy

Every market requires equitable rules. An environment of overbearing regulation can strangle business growth, especially for small businesses with tightly limited resources. Just the same, a marketplace that has no rules invites abuse and theft, to the detriment of businesses and consumers alike. As former FED Chair Alan Greenspan once said, “Market economies require rule of law.”² A system of intellectual property protections is one of the reasonable rules that creates an environment of fairness and promotes innovation and job growth.

In addition to the IP laws and policies in place in various countries, free trade agreements (FTA’s) such as NAFTA can also provide protections of IP rights for small business owners, creators, and inventors.

The digital environment and the technology that accompanies it have greatly enhanced the ability of businesses to connect with customers far beyond the reach previously thought possible. They have provided new media for creative

² Speech, Stanford Institute for Economic Policy Research Summit (2004)

expression and new tools for innovators. However, this technology can be a double-edged sword.

While thousands of small businesses now have the ability to compete in the global marketplace, due to the reach of the internet and other technological advances, they have also been exposed to unscrupulous criminals who seek to profit at their expense and at consumers' expense. It is critical that small businesses understand the tools for protecting their IP and how to use them.

Education

Most small business owners are too busy trying to find a way to get their product into the marketplace or make payroll to think about IP as part of their original business plans. However, it is critically important that they understand how IP can help them succeed and which form of IP is most relevant to their type of business.

Copyright

Copyright attaches to a creative work of authorship the instant it is fixed in a tangible medium of expression. Enforcement of copyright requires registration of the work with the Copyright Office. The process is simple and the fee is a relatively modest \$55. But for small business creators who create many works, that fee can add up quickly.

Of all the IP-intensive industries, copyright-intensive industries were among the first to be transformed by the digital economy. In the music context, the

Recording Industry Association of America has observed that, “Over the past two decades, digital, Internet, and mobile technologies have revolutionized the way we create, find and enjoy music...”³

Early on, Congress recognized the need for some basic rules to deter and prevent copyright piracy and enacted the Digital Millennium Copyright Act (DMCA). The DMCA has two main features. One is a set of prohibitions designed to prevent the hacking of copyrighted works. The other is immunity from monetary damages for internet service providers under certain circumstances, providing they comply with various conditions, including removing access to infringing works through their systems.

This notice and takedown system, along with the immunity from damages, has come under greater scrutiny in recent years. While small businesses need to know their rights, there is no silver bullet to stopping online piracy and counterfeiting.

Trademark and Trade Secret

Even for an emerging small business owner, trademark registration can easily be obtained through the U.S. Patent and Trademark Office. While it is slightly more complex and expensive than a copyright registration, trademark registration is imperative to the protection of a new brand. It is also fairly simple, and can be accomplished with relatively little or no assistance from legal professionals.

³ RIAA, “Labels at Work – The Music Business in the Digital Age” (June, 2014)

Trademark is different in purpose from copyright and patent; it is designed to provide consumers with an indication of the source of a product, and it creates consumer confidence. Companies build brands that consumers trust and can hold accountable. Counterfeiters create cheap fakes that copy legitimate brands, an illicit business model built on deception.

Trade secrets are, by definition, not voluntarily disclosed. They retain their value only if they remain secret, and companies must take proactive steps to ensure these secrets are protected. Whether through hacking or industrial espionage, competitors steal these secrets to use them in competition with the victim.

The IP thieves in these contexts are among the worst actors IP-intensive industries are likely to face. The criminal networks behind these thefts take extensive measures to conceal their identity and locate themselves in countries with weak IP laws and/or enforcement.

In order to entice American consumers, criminals prey on customers who visit various online retail platforms. The cooperation of these online retail platforms through voluntary, business-to-business arrangements known as “voluntary agreements” is key to combatting the criminals in the online environment. GIPC has investigated IP issues in the online marketplace in detail and offers the following conclusions:

- Shopping on an illicit website can create vulnerabilities to malicious computer viruses. Even brief contact may expose consumers to prolonged risk of identity theft and other cybersecurity threats from criminal entities.

- While some platforms have begun working with the private sector to adopt swift takedown procedures and information sharing, more improvements are needed.
- Online retail platforms can continue to simplify processes for rights holders to register and request enforcement action; reduce timelines for takedowns; offer rating systems to the public to track seller history including IP violations; monitor high-risk sellers closely; suspend repeat offenders; and issue penalties for sellers of counterfeit goods.
- Recently, many online retail platforms have instituted brand registry programs to allow for a direct line of communication between the platform and the brand owner. However, these programs still present challenges to brands when they try to enforce their rights efficiently. When thousands of listings are suspected to be counterfeit on a single online retail platform, it is burdensome to individually enforce on each listing without a streamlined process.
- Online retail platforms can work to make important information available to consumers and rights holders alike. Platforms could offer details to consumers, such as seller information, seller history, seller reviews, and clear product photos and specs.
- Platforms could also offer information to brand owners, including listings that have been proactively and reactively removed, account information of sellers that have been suspended or banned from the platform, and the account information of repeat infringers. Automated tools, algorithms, and machine learning can be effectively used to proactively, and without many resources, address shortcomings in information sharing and prevent future bad actors from selling counterfeits on individual online retail platforms.

Patent

Patents are obtained through an application to the U.S. Patent and Trademark Office. The wording of the claims can determine whether the patent is granted or not and, if granted, they define the scope of the patent. It is highly advisable

to seek professional legal counsel for a patent application, and the fees over the course of the life of the patent are thousands of dollars.

Digital tools are helping scientists in cutting edge fields like biopharmaceutical research to produce new and better treatments. These tools can cost upwards of \$2 billion to develop and bring to market, so patent protection and ancillary laws and regulations that provide for an adequate time of market exclusivity are critical to maintaining the innovation life cycle.

Computer hardware and software are also highly patent-intensive. While this has led to major litigation battles among industry giants, patent protection remains critical for small business. One need only to turn on an episode of “Shark Tank” to hear the prospective investors ask again and again, “Do you have a patent on that?”

Businesses of all sizes benefit from a strong patent system that is characterized not only by predictability and consistency, but also by enforceability, all of which lead to confidence in patents, deterrence of infringers, and enhanced levels of innovation by both small and large enterprises.

Conclusion

As I have noted, the digital economy has created tremendous opportunities for small business owners to succeed, and is a source of economic growth and job creation that has transformed the ways companies conduct their business and consumers purchase goods.

IP can play a key role in helping small businesses succeed, both in the traditional marketplace and in the online ecosystem. To be successful, it is imperative that small business owners gain a fuller understanding of how IP relates to their specific business models and how they can protect themselves from those who would steal their products and customers.

I strongly urge small business owners to go to the IP sections of the Small Business Administration, U.S. Patent and Trademark Office, and U.S. Copyright Office websites for a wealth of information that may literally help determine whether these enterprises are destined to fail or become the next Apple or Nike.

I want to thank the Committee for this opportunity to testify and stand ready to answer any questions you may have.



Testimony of

Morgan Reed
President
ACT | The App Association

Before the
U.S. House of Representatives Small Business Committee
"Innovation Nation: How Small Businesses in the Digital Technology Industry Use Intellectual Property"





I. Introduction

Small mobile software companies like App Association members use a variety of intellectual property (IP) protections to produce the innovations that keep us safe, make us more productive, and enhance our lives. Too often, we think of small software companies as victims of overly-aggressive IP enforcement, rather than as IP holders themselves. But IP ownership is essential to success and innovation in the digital economy. As our 2018 State of the App Economy report reveals, the app economy is a \$950 billion industry that employs more than 4.7 million Americans and reaches 3.4 billion people with connected devices across the world.¹ As mobile access shifts from a value-add to a business necessity, our member companies are leveraging their IP—their patents, copyrights, trademarks, and trade secrets—to introduce new efficiencies that connect inventory management to sales departments, cash registers to the cloud, and provide the analytics and artificial intelligence that make it all work better.

We are fortunate to have an active feedback loop with many of our member companies across the congressional districts you represent, and we recently conducted a survey of them to gain insight into the meaning of IP in the hypercompetitive app economy. This survey yielded some interesting results, including experiences and insights to which I will refer throughout this written testimony. We found that most of our members own IP, and the issues they encounter have more to do with infringement of that IP than with potential infringement of others' rights.

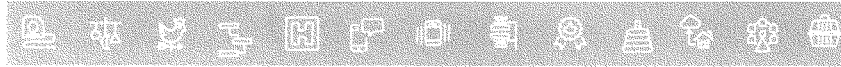
Simply put, IP is usually at the forefront of our members' minds. Whether they're deciding whether to file for a patent, addressing their work being copied in a foreign country, negotiating with a cybersquatter, or being hit with a patent infringement allegation, it is vitally important that the American IP system be accessible and useful to small, innovative, software-driven companies. We offer several observations about the state of IP protections and recommendations for how those protections could be strengthened.

II. Copyright

In general, federal law provides copyright protection to software as written works.² Because copyright need not be granted by a federal agency, copyright is the most common form of protection our member companies use. Even though copyright automatically protects their work, many of our members have opted to take the additional step to register it. The App Association continually reinforces to our members the importance of fully protecting IP rights through proactive registration of copyrights. App Association members have taken this to heart, registering various kinds of works. Of the member companies that say they registered at least one copyright, just under half of them registered their code, a little less than a quarter registered a graphic, and the rest registered other kinds of written work.

a. Copyright Enforcement

Skeptics of copyright infringement call into question whether copying a free app is really theft. Some of them have similarly argued that if a developer wants to avoid copyright infringement, the app should be provided for free in the app store. This way, they argue, nothing is lost if it's copied, and infringers have no incentive to copy it in the first place because it is free. Nothing could be further from the truth. Our members are no strangers to copyright infringement, even when they offer their content for free to legitimate consumers. The theft of free content happens so frequently that many are left to believe the phrase "free is not cheap enough." In a particularly egregious example, an Ohio-based member faced the challenges of having had a pirated copy of its free app downloaded thousands of times by foreign consumers. Many may believe an illegal download of a free app is harmless, but this is simply untrue. The revenue from this member's app—and that of other free apps—depended on an ad network. In this instance, the pirated app successfully posed as the legitimate app to the ad network, and all the ad revenue associated with the downloads of the pirated content was illegally routed to the infringing company. What's worse, our member's app included a video component, so each of the views—even those generated by the pirated app—added to our member's hosting service bill. In short, a foreign pirate stole our member's legitimate content, resulting in it losing a substantial portion of its ad revenue while forcing it to subsidize the pirate's business. Sadly, this scenario is all too common.



Fortunately, industry-led efforts to curb the practice of pirating apps and website content to steal ad revenue are producing results. The Trustworthy Accountability Group (TAG) has developed certification programs for companies throughout the digital advertising supply chain designed to help industry collectively fight ad-supported piracy, as well as to combat malware, stop ad fraud and increase transparency.³ The TAG Certified Against Piracy Program not only recognizes the IP theft problem, but effectively addresses the harms that come with such IP theft. Research conducted by Ernst & Young (E&Y) in 2017 found that anti-piracy steps taken by the digital advertising industry through the TAG certification have reduced ad revenue for pirate sites by between 48 and 61 percent, notable progress against E&Y's earlier finding of the \$2.4 billion problem of infringing content.

Websites and apps that host pirated content often do so to lure people with free content to infect their devices or computers with malware. The malware then enables the copyright pirate to hijack the user's device to make it click certain links or ads, send sensitive data, or perform other functions as part of a "botnet" network. The problems are so intrinsically linked that about one in three websites that host pirated content successfully infect the web visitor's computer with malware. Put another way, internet users are 28 times more likely to encounter malware from sites with pirated content.⁴

In other cases, bad actors use fraudulent ads posing as legitimate ads to implant malware directly onto a user's computer, a practice known as "malvertising." Although this so-called "invalid traffic" (IVT) has historically been more prevalent on desktop displays than mobile platforms, the migration of the threat as our interconnected world continues to move to mobile has substantially occurred. Research measuring the efficacy of TAG's Certified Against Fraud Program has shown that, among TAG-certified ad distribution channels, the IVT rate fell 83 percent, to just 1.48 percent for display ads, while the industry average outside of TAG-certified channels is about 8.83 percent.⁵

As part of TAG's continued fight against ad-supported piracy, it has compiled a continually updated list of pirated mobile apps that advertisers should avoid. TAG certification programs are important private sector initiatives that inspire confidence in the companies that depend on ad revenue to survive and grow. For consumers, successful industry-led efforts like this are vital to inspire trust in the mobile ecosystem.

b. The Role of Platforms

In yet another example, a European app developer copied one of our American member's educational apps almost exactly, but they made a few minor alterations to avoid an infringement claim. The App Association assisted with the company's initial outreach to the infringing company, but the infringer denied any liability and continued to sell its app. Ultimately, our member raised the matter with the Apple App Store platform. The platform helps companies resolve IP disputes under its terms of service which require an app publisher to attest to owning or licensing relevant IP to publish their app in the App Store.⁶ It was clear that the infringing company was in the wrong, and Apple barred its content from the platform. We were happy to help our member navigate the process and avoid costly litigation. And this conflict offered a learning experience for our other members, as we blogged about the process and shared tips and best practices for other software companies that encounter this kind of copyright infringement.⁷

The dispute resolution functions provided by platforms like Apple's are essential to help small business innovators reach a resolution without incurring devastating legal costs. Ensuring the infringer does not reappear with similar— but still infringing—content under a different name is often a difficult problem for platforms to solve, and thankfully there is robust competition between platforms on these kinds of services for app developers.



c. Small Claims for Small Businesses

Copyright infringement litigants would benefit from lower-cost options to ensure copyright enforcement. For example, Representatives Hakeem Jeffries and Tom Marino introduced the Copyright Alternative in Small Claims Enforcement Act of 2017 (CASE) Act this congress, which would establish a small claims court at the Copyright Office for copyright owners' infringement claims. For small businesses, the dollar amounts in copyright claims are often low. The CASE Act would offer a less resource intensive avenue for copyright enforcement than those available through the court system.

In general, the most difficult-to-reach infringers are overseas in jurisdictions that struggle with the rule of law, which enables pirates to hone their pirating skills through trial and error in app stores and websites without having to deal with law enforcement. A small claims option in the United States would help alleviate the cost burdens for infringement that occurs domestically, but it might not address the problem of reaching infringers overseas. The App Association actively supports the development of bilateral or multilateral agreements to incentivize foreign jurisdictions to develop and implement responsible IP enforcement mechanisms. We urge this committee to examine available resources for small businesses to enforce copyrights overseas and evaluate whether these resources could be enhanced or streamlined.

III. Patents

Roughly one in three App Association members have filed or been granted patents for software or hardware. Although copyrights are common and useful in the software context, they provide narrow coverage, protecting only the precise written software code. A patent, on the other hand, would cover the actual functions of a software program. For example, one of our members has a pending patent application for machine learning routing for web and mobile applications that relies heavily on JavaScript. Another member has patented an automated device registration system that has "laid important groundwork for the internet of things (IoT) industry," as highlighted in our recent blog commemorating the U.S. Patent and Trademark Office's (USPTO) 10 millionth patent.⁸ The CEO of another App Association member company owns a patent for technology that facilitates vehicle-to-vehicle communication. Our members rely on a wide variety of patents—and their utility beyond copyright protection—which speaks to the importance of patent protection for small, software-driven companies in the mobile economy.

a. Applying for Patents

Though patents have great importance to our members, many have encountered difficulty navigating the USPTO's patent application process. Delays in prior art reviews are frustrating, and our members often recount the difficult decision-making process when trying to determine whether to protect novel inventions by patenting them. The costs are great, particularly for software patents. According to IPWatchdog, attorney fees for filing a software patent can reach upwards of \$16,000, while a "relatively simple" invention like an umbrella or flashlight costs between \$7,000 to \$8,500.⁹

Notwithstanding the resource issues involved with applying for patents, we also believe that any effort to streamline application processes should avoid cutting corners. In other words, efforts to make reviews faster should not sacrifice the quality of the patents USPTO grants. Policymakers are now dealing with the fallout of improperly granted patents and the resources that need to be put toward improving the quality of patents. The USPTO must strike a difficult balance in improving patent quality while maintaining reasonably expeditious examinations.



b. Defending Against Patent Assertion

The existence of overly broad patents has been the most significant issue for small software-driven companies when defending against patent assertion. Therefore, we believe it is important to preserve the method to invalidate patents that should never have been granted. The American Invents Act of 2011 established post-grant review processes that are important to small mobile software companies' ability to challenge such patents.¹⁰ The Small Business Committee could weigh in—or ask the Small Business Administration (SBA) to weigh in—on behalf of small businesses in discussions to significantly change the inter partes review (IPR) process. The IPR process has been a useful and important means of reviewing the validity of patents that are overly broad and weaken the patent system for both IP holders and licensees.

c. Standards

Technical interoperability standards are extremely important to small software companies in the mobile economy. Standards like Wi-Fi, 5G, MPEG, and USB are necessary for the networks, programs, and devices App Association members use to reach their customers and clients. When members of standards-setting organizations (SSOs) work to have their patented technologies adopted as part of a standard, they must clearly state that they own patents on the technologies before a consensus technical standardization committee decides whether to incorporate it into the standard. Once accepted, the technology is potentially a standard-essential patent (SEP). In other words, any company that wants to make an innovative product or service using a standard must license those patents, or risk liability for infringement. SSOs also require SEP owners to license their SEPs on terms that are "fair, reasonable, and non-discriminatory (FRAND)" to any willing licensee. These crucial agreements offset the inherent anticompetitive issues associated with the ability to demand licensing royalties from those who implement widely-accepted standards like Wi-Fi. We believe SEP owners would otherwise be free to abuse their position by "holding up" standards implementers' ability to use the standard by leveraging the necessity of the standard to charge supra-competitive license fees, clearly raising antitrust concerns. Without transparency in standardization processes and without the FRAND commitment, such abusive licensing activity has and will continue to occur in the marketplace. The vigilance of U.S. antitrust authorities in this regard is essential to ensure unfair licensing practices by SEP owners do not harm consumers and the small businesses that create the mobile software products and services they want and need.

The App Association has long advocated for policymakers around the world to uphold the existing global consensus that antitrust authorities hold SEP owners to their voluntary FRAND promises, as a matter of competition policy. The App Association has even created a separate coalition called All Things FRAND (ATF), which has a steering committee of tech innovators directly impacted by FRAND abuse,¹¹ and ATF works closely with other affected industries.¹² The coalition reflects the sheer breadth of industries that care about the strength of standards, from software companies and tech manufacturers to tech-driven automotive companies and retailers. In fact, auto companies are some of the largest patent owners and standards implementers in the world. The United States and countries around the globe maintain robust competition oversight of SEP licensing practices. In recent months, there have been signals that a new approach could be forthcoming, in which SEP owners are no longer held to their FRAND promises. It is especially important for small businesses that U.S. competition authorities continue the global consensus approach, because small businesses are the least able to pay exorbitant licensing fees for their software or hardware to run on a standard. This committee could examine opportunities to ensure small business voices are heard in standards policy and ongoing SEP debates.



IV. Trademarks

Trademarks are important to our member companies' brands. Roughly half of our survey respondents say they've registered a trademark. Our members are cutting-edge creators who find new ways to turn mobile connectivity into entertainment and productivity, and they work hard to build their brands and protect the image they share with consumers. It is only natural that bad actors want to appropriate the success of our members' businesses through brand confusion. The App Association works with our members to advance their understanding of trademark rights and to encourage their trademark registration before a problem arises. We actively engage in key international policy fora like the Internet Corporation for Assigned Names and Numbers (ICANN) to ensure our members can protect themselves in the global digital economy.

a. Cybersquatting

Trademarks are uniquely important in the cybersquatting context. Cybersquatting refers to a situation where a company has trademarked the name of its brand, but an opportunistic actor—a "cybersquatter"—has purchased the domain name associated with the trademark. The cybersquatter then typically offers the domain name to the legitimate trademark owner at a grossly inflated price. More than 75 percent of our members who own a trademark have also experienced a domain name trademark issue like cybersquatting. In fact, many of our survey respondents said they have experienced multiple instances of cybersquatting. They sought resolutions in various ways, from hiring a lawyer and registering a costly complaint ICANN to simply paying the inflated price. But unfortunately, in some cases, the issue was not resolved.

Cybersquatting and other domain name system (DNS)-based trademark infringement continue to create serious problems for our member companies. We encourage this committee to examine the resources, outreach, and dispute resolution assistance available to small businesses in their efforts to protect their brands online. Our members remain a common target for cybersquatters, and there may be ways for this committee to level the playing field for small software companies.

V. IP Enforcement and Internet Governance.

The global nature of the internet has connected our members with consumers and markets they wouldn't have dreamed of reaching just a short time ago. However, this global reach has also enabled IP theft to occur anywhere in the world at any time. For this reason, one of the most important methods for IP owners to track and confront infringers is through the global databases of contact information, or the WHOIS database, which ICANN oversees. As a member of ICANN's Intellectual Property Constituency (IPC), we represent the views of App Association members as IP owners.

The WHOIS database is critical for enabling parties to contact the owners of website domains. The reasons for contacting domain registrants go beyond IP enforcement. For example, enforcement agencies use the database to confront companies suspected of violating antitrust, consumer protection, or drug interdiction laws. Other entities use WHOIS data to contact the legitimate owner of a domain if it has been hijacked or if there is a technical issue with the site. Unfortunately, with implementation of the European Union's General Data Protection Regulation (GDPR) this May, many groups have suggested the publication of WHOIS data violates GDPR's prohibition against processing personal information. Although ICANN is attempting to develop a GDPR-compliant means to ensure continued access to non-public WHOIS data, the European Data Protection Board responsible for enforcing GDPR has informed ICANN that its interim plan is not compliant with the law.¹³ Policymakers should know that ICANN is working toward a solution that is fully GDPR-compliant and should consider options to help ICANN meet its obligations while ensuring WHOIS remains useful for the enforcement of IP owners' rights.



VI. Conclusion

Our members rely on a diversity of IP protections, from trademark and copyright to patents and trade secrets. I commend the House Small Business Committee for holding this hearing to examine the ways in which small businesses in the digital technology field use IP to survive and grow. Smartphones have become the single most rapidly adopted technology in the history of the world, but the success, growth, and utility of this mobile-driven phenomenon depends on the ingenuity of the small businesses that create new frontiers of opportunity. We must utilize every means to protect this ingenuity and the ideas that will drive these innovations in the future.

End Notes

¹ http://actonline.org/wp-content/uploads/ACT_2018-State-of-the-App-Economy-Report_4.pdf.

² <https://www.copyright.gov/help/faq/faq-protect.html>.

³ www.tagtoday.net

⁴ <https://www.digitalcitizensalliance.org/clientuploads/directory/Reports/digitalbait.pdf>.

⁵ <https://docs.house.gov/meetings/IF/IF17/20180614/108413/HHRG-115-IF17-Wstate-ZaneisM-20180614.pdf>.

⁶ Apple's policy for developers: <https://developer.apple.com/app-store/review/guidelines/#intellectual-property>; Apple content review complaint portal: <https://www.apple.com/legal/internet-services/itunes/apptstorenotices/#?lang=en>.

⁷ <http://actonline.org/2017/08/30/omg-someone-copied-my-app-what-do-i-do-now/>.

⁸ <http://actonline.org/2018/06/19/patent-million-celebrating-ten-million-ideas-and-the-importance-of-intellectual-property/>.

⁹ <http://www.ipwatchdog.com/2015/04/04/the-cost-of-obtaining-a-patent-in-the-us/id=56485/>.

¹⁰ Pub. L. No. 112-29.

¹¹ <https://allthingsfrand.com/>.

¹² http://actonline.org/wp-content/uploads/05302018_Multi-Assn_DOJ-SEP-White-Paper_FINAL.pdf

¹³ <https://www.icann.org/en/system/files/correspondence/jelinek-to-marby-11apr18-en.pdf>.



**Statement of Christopher A. Mohr
Vice President for Intellectual Property and
General Counsel
Software and Information Industry Association
Before the House Committee on Small Business**

July 11, 2018

I. Introduction

Mr. Chairman, Ranking Member, and members of the Committee, on behalf of the Software and Information Industry Association (SIIA) and its members, thank you for this opportunity to testify before you today on the benefits of the intellectual property.

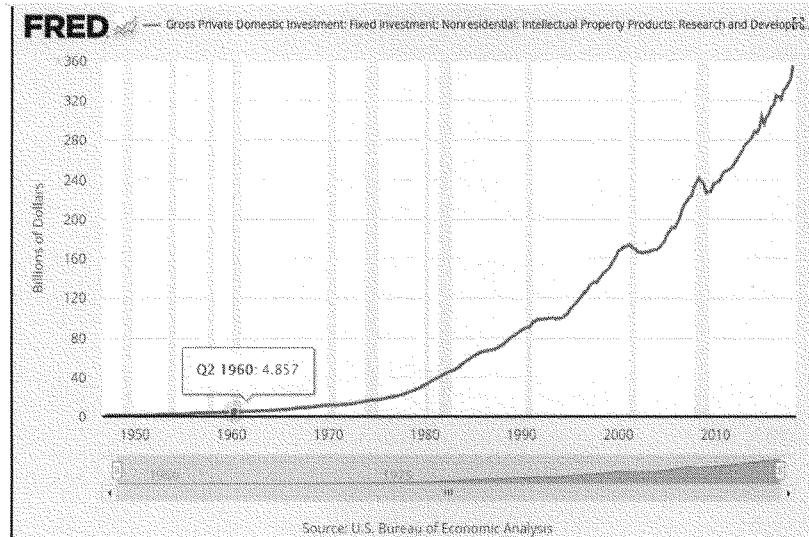
SIIA is the principal trade association of the software and information industries and represents over 800 companies that develop and market software and digital content for business, education, consumers, the Internet, and entertainment. SIIA's members range from start-up firms to some of the largest and most recognizable corporations in the world, and one of SIIA's primary missions is to protect their intellectual property and advocate a legal and regulatory environment that benefits the software and digital content industries. SIIA member companies are market leaders in many areas, including but by no means limited to:

- software publishing, graphics, and photo editing tools;
- corporate database and data processing software;
- financial trading and investing services, news, and commodities exchanges;
- online legal information and legal research tools and;
- newsletter, journal and educational publishing.

I am here today to talk about the many small businesses who are members of SIIA. Some are what you would consider pure "software companies." Others are publishers that have or are transitioning from a subscription and paper model to a digital model. In many respects, these businesses were, are, or are gradually becoming technology companies.

Small businesses depend on a sound and uniform intellectual property system. And I am happy to say that that system exists. According to the Patent and Trademark Office's most recent studies, intellectual property-intensive industries accounted

for 27.9 million jobs and over 38 percent of GDP.¹ Those working in these industries earned wages roughly 46 percent higher than those in non-IP intensive areas.² And fixed investment into intellectual property products is decidedly on an upward slope:



In 2015 alone, R&D investments in the software and internet industry grew faster than any other industry: “[s]oftware & Internet [R&D spending] grew at over 27%, far greater than the growth of all other industries from 2014 to 2015.”³ And that spending is increasing as a percentage of R and D generally, from

¹ U.S. Patent and Trademark Office, Intellectual Property and the U.S. Economy: 2016 Update, at ii (2016), available at <https://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf>.

² See *id.*

³ PwC, 2015 Global Innovation 1000: Innovation’s New World Order at 14, October 2015.

15% of total R&D spending in 2010 to 24% in 2020.⁴ Companies that reported faster revenue growth than their competitors allocated more R&D investment to software.⁵ That same positive trajectory is on the startup side as well: since 2014, venture capital funding for startup software and internet companies is up by 88% compared to the three years prior.⁶ And in 2016, venture capital raised \$41.6 billion for startups, the highest amount in 10 years.⁷

The picture of the American IP system is a resoundingly healthy one. R and D, venture funding, startup activity and even the number of patent filings have been on a steady climb since 2012.⁸ Current law both incentivizes innovation and creativity and protects brands and competitive advantages from unfair competition.

In what follows, I will lay out an overview of the four kinds of IP that SIIA members primarily rely on: patents, copyrights, trademarks, and unfair competition. We hope to give you some flavor of how those rights help our businesses grow from small ones to large ones.

⁴ (PWC, 2016 Global Innovation 1000, October 2016).

⁵ PWC, 2016 Global Innovation 1000, October 2016.

⁶ PwC / CBInsights MoneyTree™ data explore, available at <http://www.pwc.com/moneytree> (showing that U.S. VC funding for internet and software companies totaled \$55.13B for Q2 2011-Q2 2014; funding for Q3 2014-Q3 2017 totaled \$104.22B).

⁷ (2017 NVCA Yearbook). See also Patent Progress, Innovation is Alive and Well, <https://www.patentprogress.org/2018/02/08/innovation-alive-well-rd/>.

⁸ High Tech Inventors Alliance, Innovation is Thriving, available at https://docs.wixstatic.com/ugd/3929b0_74c746db8c9e4cf9ad37421bb614ec02.pdf.

I. Patents and Copyrights

The patent and copyright laws emanate from the grant of power in Article I, Section 8, clause 8 of the Constitution, which permits Congress to establish exclusive rights to authors and inventors for limited times. The Founders included that provision for two reasons: first, to unleash innovation by creating incentives to invent and create; and second, to create those incentives in a uniform fashion—in the words of the Federalist papers, “The states cannot make effectual provisions for either of the cases [patent or copyright]”.⁹ In other words, the Founders (as well as the Congress) envisioned a free-market system where everyone operated within the same, uniform set of rules.¹⁰ The calibration of particular policies, however, is Congress’s task, and it has executed that task admirably.

A. Patents

Congress passed its first patent law in 1790—one year after the Constitution was ratified.¹¹ At that time, an inventor would apply to the Secretary of State (Thomas Jefferson), the head of the Department of War (Henry Knox) and the Attorney general (Edmund Jennings Randolph) for a patent for their invention.¹² If the invention contained something new and useful, the inventor could exclude others from making, using or vending the invention for a period of fourteen years.¹³ In exchange, the patentee had to disclose his invention to the public.

The Secretary of State no longer examines patents. Times have changed. Nonetheless, our modern statute still contains the basic outlines of that first effort in the sense that there is an

⁹ The Federalist No. 43 (Madison).

¹⁰ *E.g.*, 17 U.S.C. §§ 106; 504; 35 U.S.C. § 271.

¹¹ Patent Act of 1790, 1 Stat. 109 (1790).

¹² *Id.* § 2.

¹³ *Id.* § 1.

administrative application process—though a much more complex one—followed by a patent grant from the executive branch.¹⁴ And it still represents a quid pro quo: the inventor discloses the workings of a process or device in sufficient detail to enable a person skilled in the art to make and use the invention once the patent has expired.¹⁵ That same disclosure and drafting warns those in a particular industry of the exact boundaries of the patent grant.¹⁶ Once the term of the patent—now 20 years—expires, those in the art are free to use the invention.¹⁷

Patentable subject matter consists of technological contributions except for abstract ideas, laws of nature, and natural phenomena.¹⁸ The light bulb, prescription drugs, sewing machines, telephones—all of these were the subject of patents obtained through the same general process. An applicant applies for a patent grant by submitting his proposed patent to the U.S. Patent and Trademark Office. That application includes relevant prior art, a description (explaining how the invention works and why it's worthy of protection) and claims that describe the scope of the exclusive rights which the inventor is claiming.¹⁹ There are certain

¹⁴ See generally *Oil States Energy Servs., LLC v. Greene's Energy Grp., LLC*, 138 S. Ct. 1365 (2018) (describing the evolution of the examination process).

¹⁵ E.g., *Universal Oil Prod. Co. v. Globe Oil & Ref. Co.*, 322 U.S. 471, 484, 64 S. Ct. 1110, 1116, 88 L. Ed. 1399 (1944).

¹⁶ See *id.*; see also generally *Johnson & Johnston Assocs. Inc. v. R.E. Serv. Co.*, 285 F.3d 1046, 1052 (Fed. Cir. 2002) (describing the role of the patent claims).

¹⁷ 35 U.S.C. § 154. Design patents, which provide protection for ornamental features and not functionality, last for fourteen years.

¹⁸ *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354, 189 L. Ed. 2d 296 (2014).

¹⁹ See 35 U.S.C. § 111; see also generally 1 Moy's Walker on Patents § 3:5 (4th ed.) (describing what must be put in a patent application).

limits—the invention cannot, for example, be obvious to one skilled in the art, and it is the PTO's job to ensure that the applicant's invention was not anticipated by what had come before.²⁰ And there is sometimes a back and forth between examiner and applicant, the extent of which varies by case.²¹ The result of that process is the right to exclude others from making, using or selling a particular invention.²²

For well over two centuries, the courts, Congress, and the Executive branch have administered this system, with Congress passing the laws, the Executive deciding whether patents should issue, and the courts determining infringement. While many of the substantive doctrines that exist today bear great similarity to those that existed at the time of the Founding, the administrative practice has greatly changed. In 1790 and 91, there were only 36 patents granted.²³ In 2015, there were 629,647 patent applications

²⁰ *E.g.*, 35 U.S.C. § 103 (stating that a patent may not be obtained “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious” to a person of ordinary skill in the art).

²¹ *See generally* 1 Moy's Walker on Patents § 3:2 (providing short overview of the application process, and an estimate).

²² 35 U.S.C. § 271(a).

²³ U.S. Patent and Trademark Office, U.S. Patent Activity, 1790 to the Present, available at https://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm. Statistics on the number of applications

filed.²⁴ In that same year, over 300,000 patents were granted, and there are over 2,000,000 patents currently in force.²⁵

Making sure that such a large volume of applications meets the statutory requirements represents an enormous administrative challenge. Examiners can spend on average only 19 hours examining each application through, including the initial review and the back and forth with the applicant.²⁶ Patent applicants are not required to look for prior art and bring it to the examiner's attention. Despite this, the Patent Office must grant the application unless it can prove that the claims do not meet the statutory requirements.²⁷

The task becomes much harder during a period of rapid technological change. In the early 2000s, the explosion of digital technology resulted in a flurry of bad patents that never should have been issued, especially in the areas of computer software and networking technology. Many of these covered abstract business methods are performed on a computer system or the Internet. That flurry of poor-quality patents resulted in a form of litigation abuse called patent trolling: a case in which a person buys a low-quality patent—such as claiming the exclusive right to settle financial transactions with a “data processing system”—threatens litigation

²⁴ U.S. Patent and Trademark Office, U.S. Patent Statistics Chart Calendar Years 1963-2015, available at https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm.

²⁵ See generally Dennis Crouch, The Number of US Patents in Force, Patently-O <https://patentlyo.com/patent/2014/10/number-patents-force.html>;

²⁶ Frakes, Michael D., and Melissa F. Wasserman, *Is the time allocated to review patent applications inducing examiners to grant invalid patents? Evidence from microlevel application data*, Review of Economics and Statistics 99.3 (2017): 550-563.

²⁷ Oil States Energy Services, LLC v. Greene's Energy Group, LLC et al., 584 U.S. ____ (2018) (No. 16-712), Br. for Intel et al. as *amici curiae* in support of respondents, at 29-32.

and settles for less money than it would cost to determine the patent's validity through the trench warfare of federal litigation.²⁸

Small business and startups in the tech sector were especially hard hit as they attempted to establish businesses with an Internet presence.²⁹ At the height of the litigation epidemic, 55% of unique defendants had revenues of \$10 million or less.³⁰ This is not surprising because small businesses are less able to take on the burden of fighting bad patents in litigation. As academic studies have reported, patent litigation, even the threat of litigation, and the pressures to negotiate a settlement, can have severe negative impacts on small businesses.³¹

²⁸ Alice Corp. v. CLS Bank Int'l, 34 S. Ct. 2347 (2014).

²⁹ See Appel, I., Farre-Mensa, J., & Simintzi, E., Patent Trolls and Small Business Employment. Harvard Business School (2017), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2887104. Bessen, The Evidence is in: Patent Trolls Do Hurt Innovation, Harvard Business Review, (Nov. 2014), available at <https://hbr.org/2014/07/the-evidence-is-in-patent-trolls-do-hurt-innovation>; Bessen & Meurer, The Direct Costs from NPE Disputes, 99 Cornell L. Rev. 387 (2013), available at <https://scholarship.law.cornell.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=4620&context=clr>; Cohen, L., Gurun, U., & Kominers, S. D. Patent trolls: Evidence from targeted firms. National Bureau of Economic Research, (2014) (No. w20322), available at <https://pdfs.semanticscholar.org/6bbe/1912f1820afab07cd1ba24ed19e2efe92201.pdf>.

³⁰ Chien, C., Patent Trolls by the Numbers, available at <https://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1610&context=facpubs>.

³¹ See Chien and Feldman, R. (2013), Patent demands & startup companies: The view from the venture capital community, 16 Yale J. L. & Tech. 236 (2013); Bessen, J., Ford, J., & Meurer, M. J. The private and social costs of patent trolls. 34 Regulation 26 (2011), available at <http://www.bu.edu/law/workingpapers-archive/documents/bessen-ford-meurer-no-11-45rev.pdf>.

Congress responded by passing the America Invents Act, legislation designed “to establish a more efficient and streamlined patent system that will improve patent quality and limit unnecessary and counterproductive litigation costs.”³² The creation of an inter partes review (IPR) proceeding was a centerpiece of that reform effort.³³ Although not as expensive as years of fighting in federal court, they are not cheap—the average cost of bringing a proceeding has been estimated as the low-to-mid six figures.³⁴ By Congressional design, the procedure requires that the petitioner front-load the substance of its case at the petition stage, acting as a deterrent against frivolous petitions. These proceedings balance the patent law’s incentives and the need for certainty against the strong federal policy that unpatentable inventions belong in the public domain. SIIA strongly supports the both AIA’s inter partes procedures, the continuing evolution and clarification on patent subject matter eligibility by the Supreme Court and the cumulative goals of improving patent quality to strengthen the U.S. Patent system.

A high-quality patent, defined as a patent that meets all the statutory requirements, is the sine qua non of a healthy patent system. The largest drain on innovation that our members face is

³² H. Rep. No. 112-98 (part I), at 40 (2011).

³³ *Id.* at 39 (“The decisions reflect a growing sense that questionable patents are too easily obtained and are too difficult to challenge. Recent decisions by the Federal Circuit reflect a similar trend in response to these concerns. But the courts are constrained in their decisions by the text of the statutes at issue. It is time for Congress to act.”) (internal footnote omitted); 35 U.S.C. § 321(c), 311.

³⁴ Rational Patents, Blog, IPR: Effectiveness vs. Cost (June 17, 2016), available at <https://www.rpxcorp.com/2016/06/17/iprs-balancing-effectiveness-vs-cost/>.

litigation abuse from non-practicing entities.³⁵ Despite some progress from recent court decisions and the AIA, our members still receive threats on highly suspect patents.

This activity remains a problem, and there is little return to the innovation ecosystem. Roughly half of the patent suits filed are filed by trolls,³⁶ and the mean legal cost of defense for small and medium size businesses is estimated to be at about \$420,000.³⁷ A recent survey of U.S. business found that “Patent licensing demands almost never result in technology transfer or new innovation in the computer industry, particularly when NPEs are doing the asserting.”³⁸ In contrast, when such demands come from operating companies, computer industry representatives are willing to change their products or create new ones.³⁹ And ironically, there is evidence that the threat tends to come right at the point when a

³⁵ The behavior of these entities is well-summarized by the FTC. See generally Federal Trade Commission, *Patent Assertion Entity Activity: An FTC Study*, at 3-5 (2016).

³⁶ See Feldman, Robin and Lemley, Mark A. “The Sound and Fury of Patent Activity,” Stanford Law and Economics Olin Working Paper No. 521 n. 16 and accompanying text (citing, inter alia Christopher A. Cotropia et al., *Unpacking Patent Assertion Entities (PAEs)*, 99 Minn. L. Rev. 649, 651–52 (2014); Robin Feldman et al., *The AIA 500 Expanded: The Effects of Patent Monetization Entities*, 17 U.C.L.A. J. Law & Tech. 1, 37 (2013)). See also generally Colleen V. Chien, *Patent Trolls by the Numbers* (Santa Clara Univ. Legal Studies Research, Working Paper No. 08-13, 2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2233041.

³⁷ Feldman, Patent Demands and Initial Public Offerings, 19 Stan. Tech. L. Rev. 52, 56 (2015) available at https://repository.uchastings.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=2417&context=faculty_scholarship.

³⁸ Feldman, Robin and Lemley, Mark A. “The Sound and Fury of Patent Activity,” Stanford Law and Economics Olin Working Paper No. 521 at (2018) at 6, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3195988.

³⁹ See *id.* at 51.

small business is about to expand and at one of its most vulnerable points—when it’s seeking to enter the public capital markets.⁴⁰ Despite the overall healthy picture of the software business, troll activity represents a tax on innovation. That tax is obviously a problem for large businesses but is an even bigger one for small ones.

SIIA fully supports efforts to improve patent quality. Mr. Chairman, we commend you for helping to ensure that the PTO has the tools to do its job and maintain patent quality. SIIA supports your legislation, the BIG Data for IP Act, (H.R. 5887) which ensures that the PTO keeps control over collected user fees, and will help the PTO give examiners access to more prior art. This kind of bipartisan, practical approach to legislation will only improve and strengthen our intellectual property system. At the same time, SIIA strongly opposes proposals, such as the STRONGER Patents Act (S.1390/H.R. 5340) and the recently introduced Restoring America’s Leadership in Innovation Act (H.R. 6264) that would roll back both Supreme Court decisions and the advances made through the AIA. Both would eviscerate the IPR process right and the Supreme Court’s advancements to the patent system at the time when they are showing some success in improving patent quality and lowering the amount of NPE litigation.

B. Copyright

If a healthy patent system represents the engine of invention, then copyright is the engine of expression. Like its patent cousin, the copyright system is firing on all cylinders, and its

⁴⁰ See Robin Feldman, Patent Demands and Initial Public Offerings, 19 Stanford Tech. L. Rev. 52, 54 (2016) (noting that the author’s “results provide evidence of a tactical strategy among monetizers to pursue demands against companies during one of the most public and vulnerable periods of a company’s development —the completion and aftermath of its IPO. The results were particularly striking for companies in the information technology industry that went public.”), available at https://repository.uchastings.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=2417&context=faculty_scholarship.

purpose is to harness the forces of capitalism to foster creativity. In 2016, the core copyright industries, defined as motion pictures, books, periodicals, software and video games, contributed \$1.2 trillion dollars to the U.S. economy, or 6.88 percent of GDP.⁴¹ Those industries have grown faster than the economy generally, and employees in the core copyright industries are 21 percent better compensated than workers in other industries.⁴²

Copyright has also been around for a long time Congress passed the first Act in 1790, which protected the reproduction published maps, books and charts.⁴³ The modern copyright act protects any “original” work of authorship from the moment of fixation and grants the copyright owner the exclusive right to reproduce, distribute, adapt, publicly perform and display its works.⁴⁴ Unlike a patent, the copyright’s existence does not depend on administrative action—it attaches automatically.

But there is an important limitation: the registration of a copyright is a prerequisite for filing a suit in federal court.⁴⁵ The main problem with the copyright system right now is not the substance of protection, but the administration of the registration and record-keeping process. Registration itself is not a terribly burdensome process. It can take ten months or more for the copyright office to issue a registration—an eternity in a world of

⁴¹ Stephen Siwek, Copyright Industries in the U.S. Economy: The 2016 Report, at 5 (2017), available at <https://iipa.org/reports/copyright-industries-us-economy/>.

⁴² Siwek, *supra*, at 8, 11.

⁴³ 1 Stat. 124 (1790).

⁴⁴ 17 U.S.C. §§ 102, 106 (scope of protection and list of exclusive rights, respectively).

⁴⁵ 17 U.S.C. § 411. Registration before infringement commences also entitles the copyright owner to statutory damages and attorneys’ fees. 17 U.S.C. § 412.

digital infringement.⁴⁶ Records reflecting registration and recordation of copyright ownership also enables the ready licensing of works of all kinds—from photographs to articles, and motion pictures.

As the Office responsible for administering all matters relating to copyright, few other government offices are more important to the growth of creativity and commercial activity in our nation than the U.S. Copyright Office. The ability of our nation's independent creators and small and large businesses to promptly register and record their copyright interests with the Office, and of the public to obtain copyright information that enables them to license copyrighted works creates new industries and spurs the economy, which in turn assists our global competitiveness and technological leadership.

Despite the critical nature of the services provided by the Office, many of these services have failed to keep pace with technology and the marketplace. While the Office should be held accountable for its shortcomings to some extent, in truth many of these deficiencies have been caused by many years of budgetary neglect and structural deficits that would make it difficult for any agency to merely keep pace, to say nothing about modernization.

Many of the challenges confronted by the Office can be traced back to the fact that the Copyright Office resides in the legislative branch, within and under the “direction and supervision” of the Library of Congress. As a department of the Library, the Office is obligated to use the Library's information technology systems, which are antiquated, incompatible and impractical in regard to the Office's underlying objectives and mission.⁴⁷

⁴⁶ U.S. Copyright Office, Registration Processing Times, available at <https://www.copyright.gov/registration/docs/processing-times-faqs.pdf>.

⁴⁷ See Hearing, The U.S. Copyright Office: Its Functions and Resources, House Comm. on the Judiciary, Feb. 15 2016, Testimony of the Software and Information Industry Association (Keith Kupferschmid, VP

SIIA's members, whether database companies, business-to-business publications, or specialized publishers, depend on these rights. For them—and SIIA—modernization of the Office is a top legislative priority. We supported S. 1695, narrowly tailored legislation which made the Register a presidential appointee, as well as broader legislation that takes the Office out of Library control.

II. Trademarks and Trade Secret Protection

Patents and copyrights are exclusively federal intellectual property—the states cannot interfere with the federal scheme. But there are other kinds of IP—also very important to SIIA members—trademarks and trade secrets—that are protected by both state and federal law, and which are important to SIIA members as well as almost any other kinds of business. In what follows, I will very briefly mention their federal aspects.

Unlike patents and copyrights, the federal trademark and trade secret statutes emanate from Congress's power under the Commerce clause in Article I, section 8 clause 3. In general terms, they protect intangible assets from misappropriation.

A. Trade Secrets

A trade secret is among the most common types of intellectual property protection. In order to be treated as a trade secret, its owner must take reasonable steps to ensure its confidentiality, and the information has to have some independent economic value.⁴⁸ Famous examples include Coca Cola's secret

for Intellectual Property and General Counsel), available at <https://judiciary.house.gov/wp-content/uploads/2016/02/Kupferschmid-SIIA-Testimony.pdf>.

⁴⁸ See 18 U.S.C. § 1839(3); *see also generally* Jaeger, 1 Trade Secrets Law § 3:34 (describing the definition of trade secret under the Uniform Trade Secrets Act).

formula, the recipe for Mrs. Fields Chocolate Chip Cookies, and how books get onto the New York Times bestsellers list.⁴⁹

For SIIA's members, trade secrets remain an important component of intellectual property protection. Trade secrets law protects customer lists and source code—two of our members' crown jewels. SIIA supported enactment of the Defend Trade Secrets Act of 2016, which provided nationwide discovery and a federal remedy for trade secret misappropriation. We have also opposed the mandatory disclosure of source code as a condition of doing business in foreign countries.

B. Trademark Protection

Trademark protection has existed—and continues to exist--as a matter of common law for hundreds of years. Federal trademark protection accrues simply by being the first person to use a word in association with particular goods or services, and it prohibits others from adopting confusingly similar marks.⁵⁰

The trademark can (but does not have to be) registered with the U.S. PTO through an administrative process that is not as difficult as a patent application, but still can be quite complicated. A trademark owner applies to the office for a registration, supplying a drawing of the mark and examples of how that mark is being used in commerce. A trademark examiner then will look at the samples as well as other registered marks to determine whether the applicant has met the statutory requirements, including avoiding confusion with other registered marks being used for the same general kinds of businesses. Correspondence typically ensues, and the process typically takes six months to a

⁴⁹ 10 Trade Secrets We Wish We Knew, available at <https://money.howstuffworks.com/10-trade-secrets3.htm>.

⁵⁰ Famous trademarks (e.g., household names) are also protected from dilution, which does not require a showing of confusion. *See generally* 15 U.S.C. § 1125(c) (federal dilution statute); 4 McCarthy on Trademarks and Unfair Competition § 24:67 (5th ed.) (providing overview).

year.⁵¹ A business that gets that registration enjoys certain advantages, including nationwide priority, the ability to stop infringing imports at the border, and presumptions as to validity.⁵²

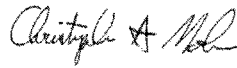
For small businesses, this can be quite important. Trademarks ensure that the producer of a good under a brand is associated with its quality. That goodwill is among the most valuable assets of a business, and trademark law protects it from free-riding.

III. Conclusion

All of these laws—patent, copyright, trademark and trade secrets—work together to create incentives that spur our members' creativity. We hope that this overview has been helpful to the Committee.

Thank you again for the opportunity to present our views.

Respectfully submitted,



Christopher A. Mohr

Vice President for Intellectual
Property and General Counsel

⁵¹ See, e.g., Section 1(a) Timeline, available at <https://www.uspto.gov/trademark/trademark-timelines/section-1a-timeline-application-based-use-commerce> (PTO describing time frames for different parts of the trademark application process when the applicant is using the mark in commerce).

⁵² See generally 3 McCarthy on Trademarks and Unfair Competition § 19:9 (5th ed.) (describing the benefits of federal registration).



Innovation Nation: How Small Businesses in the Digital Technology Industry Use
Intellectual Property

Testimony of

Chris Israel
Executive Director
Alliance of U.S. Startups and Inventors For Jobs

Before the

Committee on Small Business
U.S. House of Representatives

Wednesday, July 11, 2018

Chairman Chabot, Ranking Member Velázquez and Members of the Committee,

It is an honor to participate in this important hearing today focused on the role of intellectual property in supporting small business development and growth.

I am here on behalf of the Alliance for U.S. Startups and Inventors for Jobs (USIJ). USIJ is a coalition of over 30 startup companies and their affiliated executives, inventors and investors that depend on reliable patent protection as a foundation for their businesses.

It is difficult and perilous to start any new company from scratch. For companies built around a new invention or committed to solving a complex problem, it also requires investors with a strong appetite for risk. To incentivize risk from inventors and investors that results in true

technological breakthroughs, we have the promise of patent protection to help ensure returns despite this risk.

Unfortunately, over the past 15 years we have seen the foundations of the U.S. patent system eroded by court decisions and changes in U.S. law. The results should alarm members of this committee.

USIJ is releasing today the results of our study of trends in venture capital investment from 2004-2017 that I have included in my testimony. I would like to touch on a few of the key conclusions of our study and offer some recommendations on how Congress and the Administration can strengthen the U.S. patent system to better support startups in key technology sectors.

To be clear, not all small businesses and startups depend on patents for their success. Many do not and some even disdain patents as a burden. But companies that invest heavily in R&D to create breakthroughs in strategically critical technologies do depend on patents to protect them from predatory behavior of would-be competitors anxious to copy any new product or technology once it is proven workable.

Over the past 15 years, however, a concerted effort often under the guise of fighting "patent trolls," has resulted in the elimination of injunctive relief for patent owners, significant limitations on the ability of inventors to even obtain patents in key areas of life sciences and software, and a procedure at USPTO that allows an open-ended opportunity for anyone to challenge any valid U.S. patent, multiple times, and often without any business reason for doing so.

So how is the market reacting to all of this? As you would expect.

Even though total venture capital investment in the United States increased nearly fourfold over the past 15 years, the portion committed to small businesses in important technology sectors has declined significantly.

In 2004, 21% of all venture capital funding in the U.S. went to the following strategic, patent-intensive sectors:

- Internet networking and software
- Wireless communications
- Operating system software
- Semiconductors
- Drug Discovery
- Medical Devices

In 2017, only 3.2% of all VC funding in the U.S. went to these sectors.

So, who are the beneficiaries of this relative decline in funding for strategically critical technologies?

In 2004, 11% of all VC funding in the U.S. went to the following sectors:

- Social network platforms
- Software apps
- B2C technologies
- Financial services

By 2017, 33% of all VC funding in the U.S. went to these same sectors.

While the latter group has certainly led to some interesting products and services, and some very well-known and ubiquitous global companies, these are not sectors that are investing heavily to push the outer boundaries of science and technology to remain competitive in a global market.

These declines are shocking unless one believes that the U.S. can maintain its technological leadership with minimal investment in startups that are working in the areas of new drug discovery, networking equipment, cyber security, AI, medical devices, biotechnology, semiconductors, computer hardware and a host of other core industrial sectors, while one-third of the funding for new companies in the U.S. goes to apps, social media, and online shopping and banking platforms.

The good news is that there are some specific things Congress and the USPTO can do immediately to revitalize the U.S. patent system for inventive small businesses: These include:

- Passage of the STRONGER Patents Act
- Providing statutory clarity for patentability of life sciences and software inventions under Section 101 of the Patent Act.

In addition, USPTO can make some needed reforms to its post-grant review procedures:

- We strongly support the pending rule change to discontinue use of the BRI standard for claim construction.
- Patent owners should be allowed reasonable opportunity to amend claims during IPR proceeding.
- USPTO should also address serial attacks on patents held by small companies by larger competitors working in collaboration and with surrogates. This has become a major problem for technology startups.

Mr. Chairman I appreciate the opportunity to participate in this hearing and I look forward to your questions.

Dear Chairman Chabot:

Thank you for the opportunity to testify before the House Committee on Small Business on the important issue of How Small Businesses in the Digital Technology Industry Use Intellectual Property. It is my pleasure to provide the following responses to the additional questions from the Committee.

Questions from Representative Radewagen:

1. Why are patents important to startups? What role can patents play in reinvigorating startup formation?

Patented technology remains a critical tool for startups and small businesses. Whether it is a more efficient technique, added functionality, or an entirely new product, patented inventions are often the unique competitive advantage that sets products, technology, and companies apart from their competition. Without the ability to prevent free-riders from copying these breakthroughs and using them in competition with the innovator, small businesses would be at a distinct competitive disadvantage. Patent protection, and in some sectors ancillary laws and regulations, that provide for an adequate time of market exclusivity are critical to maintaining the innovation life cycle that allows for startups and small businesses to grow.

2. Doesn't the decline in U.S. patent strength relative to other countries affect the ability of entrepreneurs to attract capital from U.S. investors? What should Congress do about it?

Investing in innovation is risky business. The research may not pan out or it may not be marketable. In order to secure up-front capital, investors must have confidence that if the research yields a marketable product, that the patent system will ensure an opportunity to recoup their investment and profit from the risk. Uncertainty in the U.S. patent system undercuts that confidence for investment, especially for sectors like the biopharmaceutical industry, with tremendous upfront costs. Businesses of all sizes benefit from a strong patent system that is characterized not only by predictability and consistency, but also by enforceability, all of which lead to confidence in patents, deterrence of infringers, and enhanced levels of innovation by both small and large enterprises. The U.S. Chamber of Commerce is encouraged that

the new U.S. Patent and Trademark Office Director, Andrei Iancu, is actively working to address the uncertainty businesses and startups currently face.

3. A recent study found that obtaining a first patent plays a huge role in helping startups secure venture capital and other external finance. In fact, startups that obtain their first patent are 53 percent more likely to obtain venture capital funding than startups that don't receive a patent at all. This is especially true for startups that hadn't already attracted significant investment prior to receiving the patent, companies with inexperienced founders, and startups located outside geographic areas that traditionally attract investors, like Silicon Valley. Can you comment on these findings? What can Congress do to ensure that the patent system is accessible to underserved populations of entrepreneurs?

Investment is the lifeblood of our cycle of innovation and it should be reasonably available to all would-be inventors. The U.S. Chamber of Commerce supports Congress and the U.S. Patent and Trademark Office in providing reduced patent fees for independent inventors to facilitate those inventors' ability to obtain patents and thereby continue to create and innovate. Congress can help by ensuring that the U.S. Patent and Trademark Office can continue to afford such discounts for independent inventors by ensuring the USPTO is fully funded. USPTO is funded entirely by user fees, but in the past there have been instances where those fees were diverted away for unrelated government expenses. USPTO should be allowed to keep their current authority to set their own fees and be confident that the revenue received from these fees is not diverted, so it can be reinvested into our cycle of innovation.



**Answers to Questions for the Record Following a Hearing Conducted by the House Committee on
Small Business:
Innovation Nation: How Small Businesses in the Digital Technology Industry Use Intellectual
Property**

On July 11, 2018, the House Committee on Small Business convened a hearing at which Chris Israel, Executive Director of the Alliance for U.S. Startups and Inventors for Jobs (USIJ) testified. After the hearing Representative Aumua Amata Coleman Radewagen submitted the following questions. This document provides USIJ's responses.

Representative Radewagen:

Question: Why are patents important to startups? What role can patents play in reinvigorating startup formation?

Response: It is difficult and perilous to start any new company from scratch. The process requires visionary people willing to give up secure jobs, take risks and join companies that have a significant probability of failure. It also requires investors with a strong appetite for risk who are willing to invest in an often distant prospect of returns sufficient to justify such risk. For technologies having a long development cycle, these prerequisite conditions simply cannot exist without the security provided by a properly functioning patent system.

Enforceable patents are essential to startups for two very fundamental reasons:

- First that protect startups and small companies from the predatory behavior of would-be competitors anxious to copy any new product or technology once it is proven workable.
- Second, enforceable patents are also essential to allow those startups to attract the capital needed to build companies that can bring new and disruptive products to market. Without enforceable patents, there is simply no reason for investors or entrepreneurs to take the risks involved in challenging entrenched market players. Which, of course, is why some of large entrenched incumbents have labored so tirelessly for the last 15 years to eliminate the threat of upstart entrepreneurs invading their markets.

Question: Doesn't the decline in U.S. patent strength relative to other countries affect the ability of entrepreneurs to attract capital from U.S. investors? What should Congress do about it?

Response: Yes, it most certainly does. We appreciate the fact that the Committee dedicated significant time to this question during the hearing and this follow up question certainly adds an additional focus. We believe it is beyond dispute that the U.S. patent system has been weakened

significantly over the past decade.

During this time, the combined impact of a Supreme Court that appears demonstrably hostile to the enforcement of patents, a Department of Justice that openly promoted the interests of patent infringers over those of patent owners in the context of standard setting, and the devastating impact on investors and entrepreneurs of post-grant proceedings created by the America Invents Act has undermined the willingness of investors and entrepreneurs to undertake high risk, long term investments that depend upon patents. If our country wants to retain its leadership and dominance of science and technology and if our patent system is to serve its salutary promise of encouraging investment and innovation in the most important new technologies, it is imperative that we restore this lost confidence in our patent system.

While the patent system in the U.S. has become less supportive of startups and venture capitalists focused on R&D intensive disciplines such as life sciences, artificial intelligence, semiconductors and communications technology, our competitors have strengthened their patent systems to prioritize these industries. Here are some useful statistics to consider:

- China has surpassed the U.S. and now is the global leader in patent applications.
- The U.S. has fallen to 12th in the world in terms of the ranking of the strength of our patent system.
- The U.S. share of global venture capital funding was 81% in 2006, we slipped to 54% in 2017. China has absorbed much of this investment. Six of the top ten venture capital investments (measured by size of the investment in U.S. dollars) in 2017 were in Chinese startups.
- The 2018 Bloomberg Innovation Index put the U.S. in 11th place. We were ranked #1 as recently as 2013.

USIJ strongly supports the **STRONGER Patents Act** introduced by Representatives Steve Stivers and Bill Foster. This bipartisan bill would significantly strengthen the U.S. patent system by implementing measures to make it easier, less costly and more predictable for all inventive businesses to protect their patents. In addition, we are very supportive of the leadership of U.S. Patent and Trademark Office Director Andrei Iancu. He has spoken frequently of the need to reestablish the strength of the U.S. patent system and made some early decisions which confirm this commitment, including a proposed rule change that would discontinue use of the “broadest reasonable interpretation” (“BRI”) standard for construing claims in such proceedings and instead would use the standard applied by district courts in assessing the validity of an issued patent, namely the standard set forth in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*).

Question: A recent study found that obtaining a first patent plays a huge role in helping startups secure venture capital and other external finance. In fact, startups that obtain their first patent are 53 percent more likely to obtain venture capital funding than startups that don’t receive a patent at all. This is especially true for startups that hadn’t already attracted significant investment prior to receiving the patent, companies with inexperienced founders, and startups located outside of geographic areas that traditionally attract investors, like Silicon Valley. Can you comment on these findings? What can Congress do to ensure that the patent system is accessible to underserved populations of entrepreneurs?

Response: In a very complex and competitive environment for startups to attract the necessary capital, retain high-quality talent and commercialize a product in the marketplace, extensive research has clearly demonstrated that patents are a key differentiator. A 2015 study by the U.S. Patent and

Trademark Office found that startups that secure enforceable patents for their core innovations have 55% higher employment growth and 80% higher sales growth five years later. Startups with a strong patent portfolio also pursue more, and higher quality, follow-on innovation. Getting patents early in a company's life cycle also boosts a startup's subsequent growth and innovation by facilitating access to funding from VCs, banks, and public investors.

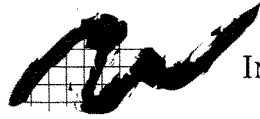
Specifically, regarding the impact that patents have on startups' ability to attract funding, the USPTO report adds this compelling data:

"We find that a patent grant increases a startup's chances of securing funding from VCs by 47%, and of securing a loan by pledging the patent as collateral by 76%, within three years of the patent decision. A patent grant also more than doubles the odds of the startup raising funding from public investors through an IPO. The effect of patents on raising VC funding is strongest for startups that (i) had raised little or no VC funding before the USPTO's decision, (ii) were founded by inexperienced entrepreneurs, (iii) are located in areas where attracting investors' attention is harder, and (iv) operate in the IT sector."

Question: You testified that USIJ's members include tech-based investors and entrepreneurs, as well as venture capitalists that rely on strong patent rights to ensure they can recoup their investment of time and treasure in the research and development (R&D) process. Can you expand on why strong patent rights are important to your members? Why are strong patent rights so important to R&D companies and other businesses that rely on patent licensing to commercialize their inventions?

Response: USIJ's members work in a number of complex technical disciplines including biotechnology, solar energy, advanced wireless technologies and medical devices. It is not uncommon for startups in these areas to require in excess of \$200 million in venture funding to even get to a place where they are ready to enter the market. This path can also take years and involve hundreds of employees working to solve complex problems such as how to build and sustain solar panels on communications satellites – a real problem tackled by our member Solar Junction. Without patent protections, this investment and these companies simply would never exist and we would lose all of their invention and job creation.

Patent licensing is indeed an important function that both facilitates significant business collaboration and drives substantial R&D. Some companies are simply very good at invention and innovation, but do not excel at manufacturing and marketing products. This is very evident in the information communications space. There are a handful of household names that aggregate and assemble countless technologies into the smartphones and other electronic devices we rely on everyday. However, there are hundreds of other companies that have invented the capabilities these devices rely on and are necessary in order for innovation and growth to continue. They must be able to rely on strong patent protection as a foundation of an effective licensing system. Here again, we believe that reforms such as the STRONGER Patents Act and an IPR process that is more balanced for patent owners will ensure that those who invent new technologies with the goal of licensing them to larger implementers can operate fairly and on equal footing.



INSTITUTE FOR WOMEN'S POLICY RESEARCH
Informing policy. Inspiring change. Improving lives.

**The Need to Promote Gender Diversity
 in Entrepreneurship, Innovation, and Patenting**

Written Testimony Submitted to the House Small Business Committee

**Jessica Milli, Ph.D.
 Institute for Women's Policy Research**

July 11, 2018

The Institute for Women's Policy Research conducts and communicates research to inspire public dialogue, shape policy, and improve the lives and opportunities of women of diverse backgrounds, circumstances, and experiences. IWPR was founded by labor economist and MacArthur Fellow Heidi Hartmann, and has an interdisciplinary staff of scholars in economics, sociology, and psychology. As a nonpartisan organization, IWPR ensures the independence of its research through rigorous internal and peer review processes.

IWPR has been researching issues related to diversity in innovation since 2016 when it released *Equity in Innovation: Women Inventors and Patents*. Since then, IWPR has been conducting follow-up research to be released in two forthcoming reports: *Innovation and Intellectual Property Among Women Entrepreneurs*, and *Closing the Gender Gap in Patenting, Innovation, and Commercialization: Programs Promoting Equity and Inclusion*.

IWPR's research finds that women patent inventions at much lower rates than men, which means that potential innovations to improve technology, treat illness, and improve everyday life are being left on the table. IWPR's 2016 report found that under 20 percent of all U.S. patents list one or more women as inventors, and just under eight percent list a woman as the *primary* inventor. The study also cited research showing that patents secured by inventor teams that included both women and men are cited more often in other patent applications than single-gender teams. Including women on an R&D project may lead to higher quality, more useful patents, yet at the current rate of progress, men and women will not reach parity in patenting for over three quarters of a century—in the year 2092.

Part of the disparity in patent holdings is due to the relatively low application rates of women—between 2000 and 2016, female inventors submitted just one third the number of patent applications as their male counterparts. Once applications have been filed, however, patent allowance rates are closer to parity. Another part of the issue is women's underrepresentation in patent-intensive science, technology, engineering, and mathematics fields, such as engineering and computer science. In 2010, women held just 19 percent of engineering degrees and 21 percent of computer science degrees. Other challenges, such as the need for policies and programs to help female scientists maintain work-life balance and to learn about and finance the patenting process.

Previous research has found that intellectual property rights, including patents, can play an important role in business success. Many lenders consider patent ownership, or at least having a patent application filed, an important factor in making their funding decisions: patent holders are more likely to receive private equity financing from venture capitalists and typically receive funding more quickly than entrepreneurs who do not hold patents. Patents have also been linked to greater market value among established businesses. Higher rates of patenting or other intellectual property holdings among women business owners could improve their access to financing and help them achieve their growth aspirations and maximize revenues. Further, new IWPR research shows that intellectual property rights may be associated with higher firm revenues—women-owned businesses that had a patent pending had average revenues more than 16 times higher than those firms without intellectual property rights, for example.

These findings suggest that women's underrepresentation among IP holders may put them at a disadvantage as business owners. IWPR's research shows that women have made substantial progress in increasing their representation among business owners, increasing their share from 16.8 percent of all employer firms in 1997 to 20.8 percent in 2015, yet many women business owners lack access to start-up capital, including venture capital, which can be crucial to the success of their business ventures. And while women-owned businesses already engage in research and development activities and produce innovative products at rates nearing or surpassing those of men-owned firms, they are less likely to hold intellectual property rights, suggesting that their innovative power could be better marshalled to benefit their businesses and promote economic and social progress more broadly.

A diversity of standpoints helps promote multidimensional and more rigorous approaches to solving social problems. When significant portions of the population are not represented in the innovative process, social and economic progress suffers. The exclusion of women, people of color, and members of other disadvantaged groups from invention, patenting, and entrepreneurship leaves a vast reserve of untapped potential that could be harnessed to help find solutions to the pressing issues of the day.

IWPR's latest report makes several research-based recommendations to help close the gender gap in patenting. First, we should increase women and girls' access to programs that support innovation activities and entrepreneurship in highly profitable industries. Programs that encourage women's business ownership can present data on industry segments most likely to provide strong business returns, along with information on how to enter those fields. In addition, communities, universities, and the public sector can implement programs likely to encourage and increase women's participation in intellectual property development activities.

IWPR's report, *Closing the Gender Gap in Patenting, Innovation, and Commercialization: Programs Promoting Equity and Inclusion*, profiles seven programs working to increase gender and racial/ethnic diversity in innovation and entrepreneurship, and identifies common program elements and promising practices. Programs featured in the report use a variety of approaches to promote relationships between women inventors and investors, provide education and coaching on the patent application process and other research and development activities, and guide women and communities of color through the process of commercializing innovation, to include market analysis, developing prototypes, and preparing pitch presentations. In addition, introducing girls and young women to inventing and intellectual property development through

science and math classes, after-school programs, and summer camps can highlight the benefits of developing intellectual property later in life.

We should also test and implement strategies to overcome implicit bias on the part of funders and investors. Women business owners' lower levels of funding can restrict the types of innovation firms can pursue, and IWPR's research shows that difficulty receiving funds is one of the primary reasons that women-owned businesses close. Venture capitalists and other investors have a major role to play in enabling women-owned firms to develop intellectual property and other innovations, and in helping women-owned businesses thrive more broadly. Investors should pursue intentional strategies to minimize the influence of bias in their investment decisions. For example, following formal or informal guidelines or quotas for investing across gender or racial/ethnic lines could help investors ensure they make equitable investment decisions. Additional research is needed to assess promising strategies for minimizing gender and racial/ethnic bias, unconscious or otherwise, in investment decisions.

Organizations and institutions can also take steps to support women entrepreneurs. Funds that target businesses owned by women and women of color can help mitigate bias and increase access to capital. A number of corporations and a handful of venture funds around the country target women entrepreneurs with promising product innovations. Programs and initiatives encouraging women's innovation should take steps to actively encourage participation of Hispanic, African American, and other underrepresented women.

Employers, funders, and educational institutions should also focus on increasing women's representation in patent-intensive STEM fields. Women's disparate participation in patenting has been linked to their underrepresentation in patent-intensive STEM fields such as engineering (Hunt et al. 2013). By pursuing strategies to increase women's participation in these fields, from early childhood exposure to science, to recruiting and retaining young women in patent-intensive college majors, women entrepreneurs will be more likely to innovate and to encourage and support other women's intellectual property development.

Finally, we need to improve data availability on women entrepreneurs, especially to allow disaggregation by gender, race and ethnicity. To track progress toward inclusion, large surveys and public agencies dealing with entrepreneurship and innovation should collect data on the gender and race/ethnicity of survey and program participants and make data available in a form that can be disaggregated.

Progress toward gender and racial/ethnic equity in innovation would also benefit society. Diverse contributions are essential to identifying and developing solutions to the pressing problems confronting individual communities and the world more broadly. An array of unique standpoints offer invaluable perspectives for innovation. By integrating more women and people of color into the innovation ecosystem, society will benefit from the contributions of more talented inventors and the ideas, products, and solutions they can develop if provided the opportunity.

**PATENTS SUPPORT SMALL BUSINESSES AND STARTUPS TO
BOLSTER U.S. ECONOMIC GROWTH
Submitted by The Innovation Alliance**

A study sponsored by the U.S. Patent and Trademark Office (USPTO) and Harvard and NYU business schools found a direct causal link between patent activity and survival and success of startups in the United States.¹ Patent-holding startups in particular enjoy tremendous net benefit over their counterparts who fail to patent their ideas.

Startups generate 20 percent of all new jobs in the U.S. each year.² These startups and small inventors rely heavily on patent protections to promote R&D. Small businesses in the United States employ 37 percent of all scientists and engineers, hold over 120,000 patents, and patent new technology at 16.5 times the rate of larger firms.

Patents are essential to a startup's growth in both employment and sales. Approval of a startup's *first* patent application increases its employment growth by 36 percent on average over five years. Startups granted a patent grow employment more than 7 percent more than companies without patents, and the gap only widens over time. The approval of a patent also improves sales growth over non-patent holding firms: startups with a patent grow their sales by an average of 51 percent more over five years than those that failed to obtain a patent. A separate study further found that startups that win the so-called patent "lottery" by drawing patentee-friendly examiners have, on average, 55 percent higher employment growth and 80 percent higher sales growth five years later.³ Additionally, a recent paper by researchers at MIT found that the likelihood of growth is five times higher for startups with trademarks and thirty-five times higher for startups that apply for patents.⁴

Securing patents also enable small firms to continue innovating. Startups whose first patent application is approved also apply for more patents, and those subsequent applications are approved at a nearly 18 percent higher rate, than startups whose first patent application is rejected. Moreover, subsequent patents for such firms are of higher quality, with 69 percent more citations for its patents than firms whose first application was rejected.

Startups that obtain a patent are more likely to go public or be acquired. A successful patent application increases a firm's likelihood of going public by over 150 percent. Patents also increase the likelihood a startup will be acquired by 84 percent over non-patent holding firms.

Patent-holding startups have a significantly easier time raising venture capital and other financing. A patent increases the probability of a startup obtaining funding by 2.3 percentage points which is a 53 percent higher probability than firms without patents. This effect is strongest for firms that had no VC funding prior to obtaining a patent, were founded by inexperienced entrepreneurs, and operate in geographical areas where entrepreneurs typically have difficulty attracting investors.

The value of intellectual property dramatically outweighs even the most dire estimates of the costs of trolls. Total economic activity from patents has been estimated at over \$8 trillion, over a third of U.S. GDP.

The invalidation of a patent right results in a significant decrease in future patenting by the inventor. The loss of a patent right due to invalidation causes, on average, a 50 percent decrease in future patenting in a five-year window by the patentee. Moreover, losing a patent right sharply increases the probability that a small firm exits the market entirely. Patent rights therefore affect not only the level of innovation by existing firms, but also bear upon the survival of entrepreneurial firms.⁵

The value added by IP-intensive industries increased substantially in both total amount and GDP share between 2010 and 2014. IP-intensive industries accounted for \$6.6 trillion in value added in 2014, up more than \$1.5 trillion (30 percent) from \$5.06 trillion in 2010. Accordingly, the share of total U.S. GDP attributable to IP-intensive industries increased from 34.8 percent in 2010 to 38.2 percent in 2014.⁶

In total, IP-intensive industries directly and indirectly supported 45.5 million jobs in 2014, about 30 percent of all employment. IP-intensive industries directly accounted for 27.9 million jobs either on their payrolls or under contract in 2014, and indirectly supported 17.6 million more supply chain jobs throughout the economy.

Private wage and salary workers in IP-intensive industries continue to earn significantly more than those in non-IP-intensive industries. In 2014, workers in IP-intensive industries earned an average weekly wage of \$1,312, 46 percent higher than the \$896 average weekly wages in non-IP-intensive industries in the private sector. This wage premium has largely grown over time from 22 percent in 1990 to 42 percent in 2010 and 46 percent in 2014. Patent- and copyright-intensive industries have seen particularly fast wage growth in recent years, with the wage premium reaching 74 percent and 90 percent, respectively, in 2014.

A separate study that examined the economic contribution of university inventions found that academic patents significantly impact U.S. industry gross output.⁷ Between 1996-2015, academic patents, and the subsequent licensing to industry, bolstered U.S. industry gross output by as much as \$1.33 trillion in 2009 U.S. dollars, U.S. GDP by up to \$591 billion, and supported up to 4.2 million person years of employment.

¹ Joan Farre-Mesa, Deepak Hegde, & Alexander Ljungqvist, *The Bright Side of Patents*, USPTO Working Paper NO. 2015-5 (Jan. 2016), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2704028.

² Ryan Decker et al, *The Role of Entrepreneurship in US Job Creation and Economic Dynamism*, J. Econ. Perspectives, vol. 28, no. 3, at 3, available at http://econweb.umd.edu/~haliwan/JEP_DHJM.pdf.

³ Joan Farre-Mensa, Deepak Hegde, Alexander Ljungqvist, *What is a Patent Worth? Evidence from the U.S. Patent "Lottery"*, Nat'l Bureau of Econ. Research Working Paper No. 23268 (2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2941246.

⁴ Catherine Fazio et al., *A New View of the Skew: A Quantitative Assessment of the Quality of American Entrepreneurship* (2016).

⁵ Alberto Galasso & Mark Schankerman, *Patent Rights, Innovation and Firm Exit* (2017).

⁶ Econs. & Statistics Admin. & United States Patent & Trademark Office, *Intellectual Property and the U.S. Economy: 2016 Update* (2016), <http://copyrightalliance.org/wp-content/uploads/2016/10/DOC-Report-Intellectual-Property-and-the-Economy-2016.pdf>.

⁷ Lori Pressman et al., *The Economic Contribution of University/Nonprofit Inventions in the United States: 1996-2015* (2017).

July 17, 2018

The Honorable Steve Chabot
Chairman
House Small Business Committee
U.S. House of Representatives
Washington, DC 20515

The Honorable Nydia Velázquez
Ranking Member
House Small Business Committee
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Chabot and Ranking Member Velázquez:

The Computer & Communications Industry Association (CCIA) respectfully submits this statement for the record to the House Small Business Committee in regards to the Committee's hearing held on July 11, 2018, "Innovation Nation: How Small Businesses in the Digital Technology Industry Use Intellectual Property."

CCIA is an international association that represents companies of all sizes in the high technology sector, including in computer software, e-commerce, telecommunications, Internet products services, semiconductors. CCIA members¹ include some of the largest patent holders in the world and collectively generate more than \$540 billion in annual revenues. Many CCIA members also have venture capital arms designed to help startups develop their own transformative technologies², as well as offering non-venture services employed by many startups.³ Through these funds and services, CCIA members both invest in and enable new technologies like artificial intelligence, automated drug discovery, autonomous vehicles, high-performance networking and computing, and more.

We write to correct certain errors and omissions in the testimony of Mr. Chris Israel, a witness at the hearing on behalf of the "Alliance of U.S. Startups and Inventors for Jobs" (USIJ) and to establish that he draws a conclusion unsupported by his data. These errors and omissions lead to an incorrect impression about the trajectory of venture funding in critical areas of technology, and an incorrect conclusion regarding the impact of changes in patent law on venture funding.

In summary:

- Much of the USIJ data is either incorrectly labeled, misleadingly labeled, or references an entirely different area of technology from the one it claims to describe.
- USIJ categorizes the importance of different sectors inconsistently, placing web browsers on par with pharmaceuticals while denigrating office software.
- USIJ omits relevant context that explains specific changes in VC funding.
- USIJ links declines in funding to events that occurred after the declines had already happened.

¹ A full list of our members is available at <https://www.ccianet.org/members>.

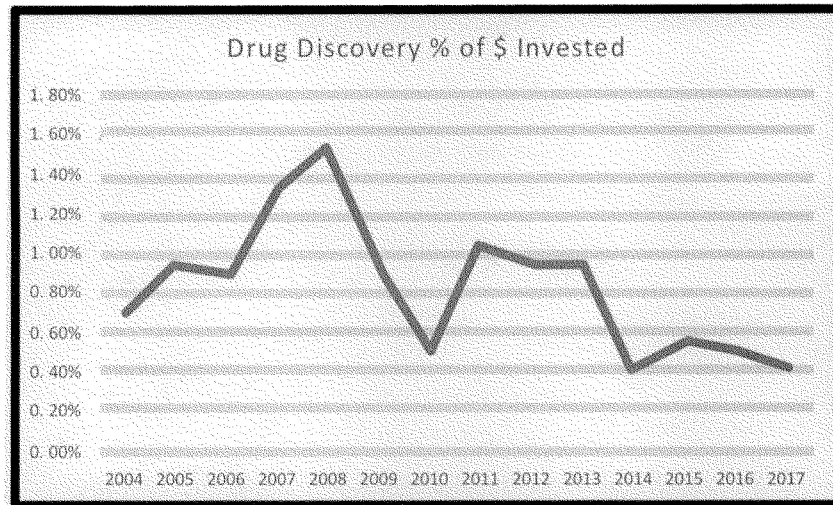
² See, e.g., GV (Google), Intel Capital (Intel), the Alexa Fund (Amazon), GPU Ventures (NVIDIA), and Samsung Ventures (Samsung).

³ See, e.g., Amazon Web Services, Google Cloud, and the NVIDIA GPU Cloud (forthcoming).

When viewed in light of the additional information provided below, CCIA believes that it is clear that venture capital funding remains healthy and that the attempt to blame patent law for illusory declines is contrary to both data and logic.

1. USIJ Has Provided Mislabeled Data

In reviewing the USIJ testimony from Mr. Israel, CCIA determined that USIJ provided a graphic describing the amount of VC funding provided to “drug discovery” startups.⁴ This graphic is reproduced below.



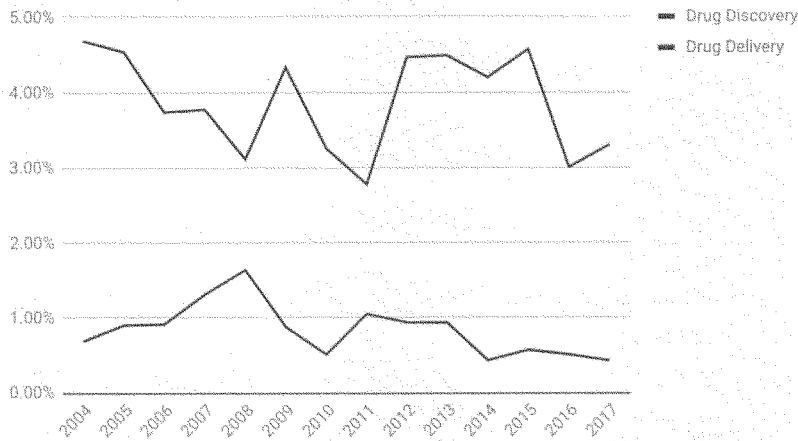
However, this data does not match the data provided by Pitchbook/NVCA, which USIJ has identified as the source of its data. It appears that USIJ labeled the data for “drug delivery” startups as that for “drug discovery” startups. “Drug delivery” is defined as “researchers and developers of medication delivery methods”, while “drug discovery” is defined as “researchers and developers of new drugs.”⁵

Below, we have provided a graphic illustrating the percentage of total VC funding for drug delivery and drug discovery.

⁴ USIJ Testimony, Appendix at 14.

⁵ NVCA/Pitchbook Yearbook 2018 at 65.

Drug Discovery vs. Drug Delivery



As is clear from the graphic, when the correct data is examined drug discovery funding is both significantly higher than drug delivery funding and has maintained approximately consistent funding at between 3-5% of the total VC funding invested over the entirety of the studied timeframe. No sustained decline is observable.

As USIJ correctly notes, total VC funding has nearly quadrupled over that timeframe, meaning that drug discovery funding has seen a steady increase over time.

2. USIJ Omits Important Data

The USIJ testimony provides the correct data for investment in “pharmaceuticals.” However, the use of this label obscures important information. Specifically, NVCA/Pitchbook reserves the “pharmaceuticals” category for investment into “manufacturers and distributors of established drugs/ pharmaceuticals.”⁶ In other words, “pharmaceuticals” is essentially defined as production of well-known drugs. Such production does not fall within “sectors that are investing heavily to push the outer boundaries of science and technology.”

As discussed above, USIJ failed to provide the correct data for drug discovery. In addition, USIJ completely omitted a critical area of life sciences investment—biotechnology. Biotechnology is the area of investment which produces new biologic drugs and has been one of the largest areas of recent VC investment. The graphic below illustrates the percentage of total VC funding provided within the areas of biotechnology, drug discovery, and pharmaceuticals.

⁶ See NVCA/Pitchbook Yearbook 2018 at 65.

VC Funding By Sector As % Of Overall US VC Funding



Drug discovery funding has received a steady percentage of all VC funding throughout the relevant timeframe. While pharmaceuticals have declined somewhat by percentage, this decline is more than made up for by the increased funding given to the promising new biological treatments enabled by biotechnology.

Taken as a whole, the percentage of overall VC funding given to the discovery of new drugs and manufacture and distribution of existing drugs has not exhibited an increasing or decreasing trend over the reviewed timeframe; in fact, it reflects a shift into development of new drugs and technology and away from investment in known drugs. USIJ has omitted the data that would illustrate this shift from his testimony.

3. USIJ Mislabels Categories

In another example, the USIJ testimony refers to “medical devices.”⁷ However, in the supporting appendix USIJ has provided a graph illustrating the “medical supplies” category.⁸ “Medical supplies” refers to “medical supplies that would be considered non-durable” and includes “syringes, diabetes supplies, bandages, and protective wear.”⁹ Investment in actual medical devices is tracked in the categories “diagnostic equipment”, “monitoring equipment”, and “therapeutic equipment,”¹⁰ none of which are described in the USIJ appendix. While

⁷ USIJ Testimony at 3.

⁸ USIJ Testimony, Appendix at 15.

⁹ See NVCA/Pitchbook Yearbook 2018 at 65.

¹⁰ See NVCA/Pitchbook Yearbook 2018 at 64-65.

bandages incorporate complex technology, they are not typically described as medical devices. The reference in his testimony to “medical devices” is thus inappropriate and is not supported by the data in his appendix.

Similarly, USIJ refers to “surgical devices.” This category only reflects devices used in surgery and does not include supporting equipment such as ultrasound machines (“diagnostic equipment”), heart-rate monitors (“monitoring equipment”), or pacemakers (“therapeutic equipment.”)

Finally, USIJ labels one graph with the category “app software.”¹¹ NVCA/Pitchbook does not provide an “app software” categorization. NVCA/Pitchbook does provide a category for “application software”, but that category refers to developers of software for specific tasks or applications—examples might include Microsoft Office, Oracle’s JD Edwards applications, and Adobe Reader—as well as being the catch-all category for software not placed within other categories.¹² It seems trivially apparent that the modern meaning of “app” is incorrectly applied here. The data reports 4% of all VC funding in 2004—four years prior to widespread availability of third-party ‘apps’—being dedicated to “app software.”

4. USIJ Inconsistently Categorizes The Importance Of Software Sectors

The mislabeling of “app software” discussed above is particularly important given USIJ’s identification of “Internet software” as patent-intensive “strategic software.” NVCA/Pitchbook defines “Internet software” as “software for accessing and manipulating internet content” which “includes internet browsers, and file transfer protocol (FTP) programs.”

While Web browsers and file-transfer programs are useful software, it is unclear what logic USIJ is applying that would label a Web browser patent-intensive “strategic software” but would not apply the same logic to other basic computer software like word processors and PDF readers, found in the “app software” category the USIJ testimony describes as “non-strategic software” that does not require invention protection.

5. USIJ Has Provided Data Of Unknown Provenance

There are other graphs which are of undetermined provenance.

For example, the USIJ testimony refers to a general “B2C” category. NVCA/Pitchbook data does not appear to contain any such categorization. There is an umbrella “consumer products and services” category, but that category encompasses everything from office supplies to consumer electronics to food to transportation and automotive. Of note, critically important advances like autonomous vehicles would be included within this category.

¹¹ USIJ Testimony, Appendix at 22.

¹² See NVCA/Pitchbook Yearbook 2018 at 66.

This is not the only category which appears to refer to a categorization other than that used by NVCA/Pitchbook. “Networking equipment” also appears to be absent from the NVCA/Pitchbook categorizations.

Given the errors in the data with correct provenance, the failure to identify the source of this data gives rise to questions about its accuracy.

6. The USIJ Data Lacks Important Context

In several cases, the USIJ data lacks context related to the venture capital environment, the industrial environment of a specific sector, or relevant individual venture capital investments.

While the USIJ testimony acknowledges that VC funding has increased nearly 400% over the timeframe he describes, it presents data as a percentage of total VC. Because of this, sectors that have seen consistent increases in VC investment are shown as decreasing. For example, even in drug delivery (the category USIJ misidentifies as drug discovery) funding has seen a steady increase. While drug delivery has shifted from approximately 0.75% of total VC funding to 0.4% of total VC funding, the fourfold increase in total VC funding over this timespan has resulted in drug delivery funding increasing from \$151.5 million to \$364.63 million. By presenting data only in percentages of the total amount spent, increases in funding for an industry are presented as decreases.

Some of the data also fails to support USIJ’s explicit linkage of the decline in investment to patent policy. As described above, the “networking equipment” data might potentially refer to “connectivity products” or “fiberoptic equipment.” However, the decline in these arenas is unlikely to be linked in any way to patent policy. In fact, the decline appears likely to be related to the over-investment and collapse in this sector in the early 2000s. Telecom companies poured money into building new infrastructure and built so much over-capacity that there were insufficient customers; many collapsed.¹³ The decline in investment reflects this collapse.

USIJ also provides a graphic illustrating “production semiconductors”, which are defined as “owners and operators of semiconductor foundries”—“companies that manufacture semiconductors, but are not involved in their design.”¹⁴ The decline in this category is tied to two changes in the semiconductor industry over that timespan, neither of which is related to patent policy.

First, there has been a general shift in the semiconductor industry business model. Semiconductor companies used to vertically integrate, both designing and producing their own chips. This model is vanishing, replaced by the “fabless” model in which companies design chips and have a foundry fabricate the chip for them. The separation between design and fabrication allows each entity to focus and specialize on the aspects of technology they excel at.

¹³ See, e.g., Starr, *The Great Telecom Implosion*, The American Prospect (Sep. 8, 2002) available at <https://www.princeton.edu/~starr/articles/articles02/Starr-TelecomImplosion-9-02.htm>.

¹⁴ NVCA/Pitchbook Yearbook 2018 at 66.

With the exception of a few companies like Intel and Samsung, most modern semiconductor companies are fabless.

Second, the cost of creating a new fab to produce chips has grown enormously. Modern fabs cost billions or tens of billions of dollars just to build the facility, with billions more required to develop new technology and to actually operate the fab.¹⁵ That amount is simply beyond the reach of venture-funded startups. But a semiconductor startup can relatively easily contract out for the manufacture of a chip they designed, using the fabless model. These paired changes explain the entirety of the decline in investment in the production semiconductor sector.

Changes in a given industry are not the only external factors of relevance to VC investment. USIJ provides a graph illustrating VC funding for consumer finance. However, this data does not appear to be reflective of a general trend towards consumer finance. The sharp increase in 2015 is essentially entirely due to a large investment in a single company, SoFi. A significant portion of the increase over background activity in 2017 is also due to SoFi. Absent these investments in a single company, consumer finance VC levels appear to have remained roughly consistent over the study period.

7. USIJ's Conclusion Is Unjustified By Its Data

USIJ's ultimate conclusion is that "the elimination of injunctive relief for patent owners, significant limitations on the ability of inventors to even obtain patents in key areas of life sciences and software, and a procedure at USPTO that allows an open-ended opportunity for anyone to challenge any valid U.S. patent, multiple times, and often without any business reason for doing so" have led to significant declines in VC investment.¹⁶ USIJ suggests that the appropriate response is to pass the STRONGER Patents Act, revise patentable subject matter, and roll back AIA procedures like IPR. This conclusion is unsupported by the USIJ's own data, and his own data implies that passage of STRONGER Patents, revisions to patentable subject matter, and the rollback of the AIA would create new declines.

Examining the graphs provided for the sectors USIJ identifies as of particular importance, the vast majority of the decline occurs in the 2004-2008 timeframe. From 2011 onward, investment in many of the sectors USIJ identifies as more important is roughly level.

As members of this Committee are no doubt aware, the AIA was passed in 2012. Asserting that declines in investment¹⁷ experienced prior to 2012 are due to a law passed in 2012 is simply incorrect. Similarly, the major decisions in patentable subject matter eligibility in life sciences were issued in 2012 and 2013. Asserting that declines in investment in life sciences, the majority

¹⁵ See, e.g., Ellis et al., *TSMC Ready to Spend \$20 Billion on its Most Advanced Chip Plant*, Bloomberg Tech (Oct. 6, 2017), available at <https://www.bloomberg.com/news/articles/2017-10-06/tsmc-ready-to-spend-20-billion-on-its-most-advanced-chip-plant>.

¹⁶ USIJ Testimony at 2.

¹⁷ This presumes that such declines are real, which is questionable at best for the reasons set forth above.

of which occurred in the 2004-2008 timeframe, are attributable to decisions made in 2012 and 2013 beggars belief.

Given the increase in investment that occurs roughly co-extensively with the AIA and patentable subject matter decisions, the causal link between patent law and VC funding suggested by this data is that the AIA and patentable subject matter decisions in the 2010-2014 timeframe have actually *increased* investment.

Finally, USIJ is flatly incorrect in its statement that injunctive relief for patent owners has been eliminated. While the *eBay* case unanimously determined that no presumption of injunctive relief applies, replacing it with the same equitable injunctive test that is applied in every other area of law, injunctive relief remains a regular remedy issued by district courts in patent cases. But even if USIJ were correct that injunctive relief became unavailable in 2006, that still would not explain why the declines in investment in his data began two years prior to that date.

USIJ's data simply does not support its conclusions.

8. New Areas Of Technology Are Important

The USIJ testimony complains that there's been an increase in investment in social networks, platforms, software apps, B2C technologies, and financial services. It claims that "these are not sectors that are investing heavily to push the outer boundaries of science and technology to remain competitive in a global market." That claim is incorrect as well.

For example, social network and platform companies have invested billions of dollars in developing new software improving the performance of databases and new technologies that enable more efficient data centers for large-scale computing. Without that kind of technology, data centers like the ones that are enabling current advances in AI¹⁸ and drug discovery¹⁹ aren't feasible. In fact, next week the National Institutes of Health will hold a workshop in which participants hear from "leading industry experts and scientists who are employing AI/ML in biomedical research settings."²⁰

Social networking and platform companies have also invested in basic AI research, producing tools like TensorFlow (Google) and PyTorch (Facebook). These tools are then released to the public for public usage. The direct products produced by these investments also have follow-on impacts, enabling others to push the outer boundaries of science and technology. Many small startups working in AI right now are creating new technologies built on a machine learning substrate. But that machine learning substrate likely utilizes one of the AI tools produced by a

¹⁸ See, e.g., MCubed Session on Reinforcement Learning (RL): a gentle introduction with a real application, available at <https://www.mcubed.london/sessions/reinforcement-learning-rl-gentle-introduction-real-application/>.

¹⁹ See, e.g., Mullin, *Rise of the smartish machines*, Chemical and Engineering News (Apr. 2, 2018), available at <https://cen.acs.org/articles/96/i14/Rise-smartish-machines.html.html>.

²⁰ See NIH Workshop: Harnessing Artificial Intelligence and Machine Learning to Advance Biomedical Research, announced at <https://datascience.nih.gov/community/2018biomedAI>.

social network or platform company, and many run on ubiquitous compute platforms like Amazon Web Services provided by B2C service companies.

Without understanding the importance of areas of software like platforms or B2C technologies, it's impossible to understand how best to support the development of cutting-edge technology. While semiconductors and pharmaceuticals are, and will remain, an important area of technology, failing to acknowledge the importance of new areas of research is dangerous and risks the United States falling behind.

9. Conclusion

Patents serve a useful purpose in our society. Insufficient patent protection will result in reduced investment, but too much protection will reduce investment by raising risk on innovators to unsustainable levels. Achieving that balance is critical and proper use of data is essential to ensuring that the balance is maintained.

Contrary to the testimony provided by USII, venture capital funding is in fact growing healthily—in fact, there was more U.S. venture capital investment in the first quarter of 2018 than in the entirety of 2009.²¹ Based on the actual data, this Committee should feel confident that the changes in patent law over the past 15 years have not harmed the incentives to invest in research and development; in fact, the data suggests that they have likely helped.

CCIA appreciates the Committee's consideration of this letter and is available to discuss our own analysis and conclusions at the Committee's convenience.

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²¹ See NVCA/Pitchbook Venture Monitor Q1 2018.

