



Patent Public Advisory Committee  
**2021 ANNUAL REPORT**

**Quality**  
**Predictable**  
**RELIABLE**  
**DURABLE**  
**Innovation**  
**Artificial Intelligence**  
**Inclusion**  
**Equitable**



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November 1, 2021

The President of the United States  
The White House  
1600 Pennsylvania Avenue, N.W.  
Washington, D.C. 20500

Re: The Patent Public Advisory Committee's FY 2021 Annual Report

Dear President Biden:

As Chair of the Patent Public Advisory Committee (PPAC) for the U.S. Patent and Trademark Office (USPTO or Office), it is my honor to present to you the PPAC's FY 2021 Annual Report (Report). This will be my final Report as Chair, as the second of my two terms expires at the end of the year, during which I served under Presidents Obama, Trump, and now you. My tenure has been rewarding and highly informative in terms of the inner workings of the USPTO, its interactions with its internal and external stakeholders, its people, its policies and practices, and importantly, its challenges domestically and abroad. If forced to choose one compelling observation I've witnessed of the USPTO, it would be its unique self-funded operations, which to a certain extent, affords the Office to act on such unforeseeable events, such as the shutdown due to the pandemic, quickly and effectively.<sup>1</sup> As mentioned in my cover letter to last year's annual report "... against all the challenges 2020 [and 2021] presented us ... the USPTO ... has performed steadily and steadfastly."

The Public Advisory Committees for the USPTO were created by statute in the **American Inventors Protection Act of 1999**. The PPAC advises the Under Secretary of Commerce for Intellectual Property and Director of the USPTO (the Director) on the management of the Patent side of the Office's operations. The PPAC consists of citizens of the United States chosen to represent the interests of

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<sup>1</sup> The USPTO was able to transition 13000 employees to remote access, including supplying each with the necessary connections and tools to work seamlessly from remote locations.

the diverse users of USPTO services, typically people who interact with the USPTO through being inventors or patent practitioners. The PPAC reviews the policies, goals, performance, budget, and user fees of the patent operations and advises the Director on these matters.<sup>2</sup>

In FY 2020, the PPAC focused on assessing the quality of the patent asset by reviewing how applications for patents were examined by the Patent Examining Corps (Patents) for allowance and how issued patents were reviewed in post grant proceedings by the USPTO's Patent Trial and Appeal Board (PTAB) for patentability. (See [2020 Annual Report](#))

For FY 2021, the PPAC focused on how best to modernize the U.S. patent system. Paramount to this effort was to seek ways in which to improve the quality of the patent asset by broadening the scope of our inquiry to investigating what tools and other resources are needed to maximize USPTO efficiencies in the areas of artificial intelligence, data collection and data sharing among the various business units within the USPTO, IT tools to thwart cyber-attacks, and cross-training between the Patents business unit and the Administrative Patent Judges of the PTAB. In addition, the PPAC is fully committed through its Innovation Expansion (IE) Subcommittee to finding ways in which to make USPTO services more accessible for those who lack the resources, know-how, or sophistication to navigate the patent system to adequately protect their intellectual property. Said more simply, the IE Subcommittee seeks to ensure that diversity, equity, and inclusion exists as part and parcel of the USPTO's operations.

The PPAC holds an unwavering belief that patents are critical to the nation's economic health, growth, and competitiveness. Because the U.S. patent system is so fundamental to the strength of our economy, it is imperative that the patent system is balanced and accessible to all innovating citizens. Small entities, such as mom and pop shops and start-ups, should be afforded equalizing protections against mighty corporations. To this end, the Office must maintain a nonpartisan and constant role in the Country's innovations. And, respectfully, the USPTO should never operate without a properly appointed Director, especially in light of the U.S. Supreme Court's decision in *United States v. Arthrex, Inc.* (summarized below), simply because of a new presidential administration. From the PPAC's vantage point, I can attest to the fact that the absence of a full-time appointed Director is disruptive to the USPTO operations. While interim directors make for good short-term place holders, they are often unable to make critical decisions on policy and administrative proceedings before the PTAB for lack of authority.<sup>3</sup> Bluntly, and as discussed in greater detail in the Report, to support a stable U.S. economy the Office must be able to serve the users of its services at the speed of business, not the speed of government.

The PPAC has seven subcommittees: (1) Patent Quality & Pendency; (2) Artificial Intelligence and IT; (3) Outreach: Domestic & International; (4) Patent Trial and Appeal Board (PTAB); (5) Legislative; (6) Finance; and (7) Innovation Expansion (IE).

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<sup>2</sup> Please refer to the PPAC's 2021 Annual Report, attached hereto, for Executive Summaries, details, recommendations, and hyperlinks to the various cited information referred to therein and here.

<sup>3</sup> I was pleased with your nomination of Kathi Vidal, a good friend and colleague, to take over the helm at the USPTO.

The PPAC formed the AI Subcommittee in FY 2020 to provide the USPTO guidance on pertinent AI-related issues and to ensure that the USPTO's leadership stance among the world's patent offices is secure. Having a robust AI system in place will serve many USPTO initiatives, the most immediate being data collection and sharing between Patents and the PTAB. Other implemented initiatives include, for example: improving external stakeholder accessibility to USPTO services, honing AI-related policies and regulations, as well as affording the Office firsthand insights and understanding of AI-related inventions. To define, build, and implement such a robust system would benefit from the USPTO having sustainable funding for evolving technologies and fulsome staffing of AI technical and strategic experts.

Moreover, in furtherance of [Congress's 2018 Study of Underrepresented Classes Chasing Engineering and Science Success \(SUCCESS\) Act](#), and the [USPTO's 2019 SUCCESS Report](#), the PPAC continues to encourage the Office to produce demonstrable progress in increasing the diversity of inventorship in our inventor community. With the formation of the IE Subcommittee, the PPAC continues to support and help advance the Department of Commerce (DOC) and the USPTO's commitment to increase diversity among the inventor community through dialogue with and on behalf of the external stakeholders. To achieve sustainable growth of the U.S. economy, the PPAC fully agrees with the Office's commitment to making the U.S. Patent System more accessible to all Americans, including underrepresented groups based on demographic characteristics, geography, and economic conditions. The PPAC is particularly pleased with the recent announcement that Secretary of Commerce Gina Raimondo will Chair the Council for Inclusive Innovation (CI<sup>2</sup>), formally the National Counsel for Expanding American Innovation (NCEAI) and look forward to CI<sup>2</sup> achieving its mission's goals.

The PPAC's recommendations to the USPTO presented in each section below are made with continuing optimism and caution, and all with the clear purpose of enhancing the quality of the patent system through the services rendered by the USPTO. Relatedly, the PPAC is gratified that the Senate Appropriations Committee has released the FY 2022 appropriations bill for the USPTO. These funds will provide the USPTO with the resources necessary to modernize itself in the areas described above and, more fully, below.

For the President's convenience, the following provides a summary of recent and most salient judicial opinions concerning patents.

### **US Supreme Court**

June 21, 2021: *United States v. Arthrex, Inc.*, 141 S. Ct. 1970 (2021)

- Arthrex held that the Patent Trial and Appeal Board's (PTAB) Administrative Patent Judges (APJ) are unconstitutionally appointed, as the Director of the Patent Office could not directly review or countermand decisions by APJs. That is, the Supreme Court held that APJs are considered "inferior officers" under the Appointments Clause, but the Director (a "principal officer" appointed by the President and confirmed by the Senate) had no oversight power over PTAB decisions. To remedy this and confer upon the APJs the necessary oversight from the Executive Branch, the Supreme Court ruled that the Director has the discretion to review decisions rendered by APJs and to issue final decisions on behalf of the PTAB.

June 29, 2021: *Minerva Surgical, Inc. v. Hologic, Inc.*, 141 S. Ct. 2298 (2021)

- Minerva upheld the validity of the doctrine of patent assignor estoppel, which prohibits inventors from challenging their patents after they have assigned the patents to another party. However, the scope of assignor estoppel was limited to apply only when the assignor's claim of invalidity contradicts explicit or implicit representations the assignor made in assigning the patent. For example, it would not apply in situations: (1) where the assignment purports to assign rights in future inventions, (2) where a later legal development renders irrelevant the assignor's original representations, or (3) the patent claims change post-assignment, such as if a pending application was assigned and the claims were later amended.

Oct. 13, 2020: *Arthrex*<sup>4</sup>

- SCOTUS granted cert on three petitions (referred to here as Arthrex) seeking review of a decision by the Court of Appeals for the Federal Circuit (CAFC). The CAFC held that administrative patent judges of the Patent Trial and Appeal Board (PTAB) of the USPTO must be appointed by the president and confirmed by the Senate. The CAFC further ruled that federal laws that restrict when officials can be removed from office do not apply to administrative patent judges (APJ) and remanded the dispute for a new hearing with a new panel of APJs. The CAFC also indicated that its ruling and remand remedy would apply to cases where the litigants argued that the judges' appointment violated the Constitution. The issues to be addressed are whether the APJs must be appointed by the president and confirmed by the Senate, and if so, whether the remedy that the CAFC imposed was appropriate.

Apr. 4, 2020: *Thryv v. Click-to-Call Technologies*, 590 U.S. \_\_\_\_ (2020):

- SCOTUS held that the USPTO has unreviewable authority to decide whether a party properly petitioned under the AIA within one year of being served a complaint for patent infringement.

Dec. 11, 2019: *Peter v. NantKwest, Inc.*, 589 U.S. \_\_\_\_ (2019):

- SCOTUS held that the USPTO was not entitled to reimbursement of attorneys' fees from patent applicants who file appeals against USPTO decisions.

June 6, 2019: *Return Mail v. U.S. Postal Service*, 138 S. Ct. 1853 (2019):

- SCOTUS held that a government agency cannot challenge patents using *Inter Partes* Review (IPR), post-grant review (PGR), and covered business method reviews (CBM), because the word "person" has long been presumed to exclude the government or any agency thereof and nothing in the AIA justifies displacing that presumption.

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<sup>4</sup> *United States v. Arthrex Inc* (19-1434), consolidated with *Smith & Nephew Inc. v. Arthrex Inc.* (19-1452), and *Arthrex Inc. v. Smith & Nephew Inc.* (19-1458).

Apr. 24, 2018: *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018):

- SCOTUS held that when the USPTO institutes an IPR, it must decide the patentability of all the claims the petitioner challenged.<sup>5</sup>

Apr. 24, 2018: *Oil States Energy v. Greene's Energy Group*, 138 S. Ct. 1365 (2018):

- SCOTUS held that post-grant challenges, specifically IPR challenges, are constitutional.

June 20, 2016: *Cuozzo Speed Technologies, LLC v. Lee*, 579 U.S. \_\_\_\_ (2016):

- SCOTUS upheld the USPTO's regulation requiring the PTAB to apply the broadest reasonable interpretation (BRI) standard in IPR proceedings and further held that the USPTO's decision to institute an IPR proceeding is not appealable to the federal courts

### **Court of Appeals for the Federal Circuit**

November 5, 2020: *Valeant Pharms. N. Am. LLC v. Mylan Pharms. Inc.*, 978 F.3d 1374 (Fed. Cir. 2020)

- Valeant held that in Hatch-Waxman Act patent suits over generic drugs, branded-drug makers can file suit only in locations where a generics maker is incorporated or where it performed actions related to its Abbreviated New Drug Application (ANDA) to market a generic drug. This case limits the proper venue to where “acts of infringement” occur, namely districts where actions related to the submission of an ANDA occur, and does not include all locations where future distribution of the generic products specified in the ANDA is contemplated.

February 11, 2021: *Amgen Inc. v. Sanofi, Aventisub LLC*, 987 F.3d 1080 (Fed. Cir. 2021)

- Amgen held that patent claims claiming antibodies based on what they bind to are invalid under 35 U.S.C. § 112 for lack of enablement because it would take undue experimentation to determine which of millions of antibody candidates would bind to a specific protein, thus weakening patents having functional claiming.

March 12, 2021: *Mylan Labs. Ltd. v. Janssen Pharmaceutica, N.V.*, 989 F.3d 1375 (Fed. Cir. 2021)

- Mylan held that PTAB decisions not to institute an *inter partes* review (IPR) are not appealable to the Federal Circuit for lack of subject matter jurisdiction. A party may still file mandamus petitions challenging a decision to not institute an IPR, though the mandamus standard will be “especially difficult to satisfy” and it is “difficult to imagine” a mandamus petition challenging a denial of institution satisfying this standard.

May 12, 2021: *Trimble Inc. v. PerDiemCo LLC*, 997 F.3d 1147 (Fed. Cir. 2021)

- Trimble made it easier for alleged infringers to file declaratory judgment actions in desired venues and avoid early dismissal based on lack of personal jurisdiction, if the patentee sends the infringer multiple patent licensing demand letters. That is, a patentee’s actions of repeatedly

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<sup>5</sup> Here, the USPTO implemented a policy that the PTAB must consider all claims and all challenges in the petition in view of SAS.

contacting an alleged infringer in the infringer's home venue can be sufficient to provide minimum contacts or purposeful availment for personal jurisdiction purposes.

June 11, 2021: *Yu v. Apple Inc.*, 1 F.4th 1040 (Fed. Cir. 2021)

- Yu held that a patent directed to a tangible digital camera was invalid under 35 U.S.C. § 101 for covering the abstract idea of enhancing photographs. This decision opens the door to challenging more mechanical patents on patent eligibility grounds.

### **Patent Trial and Appeal Board**

December 1, 2020: *Sotera Wireless, Inc. v. Masimo Corp.*, IPR No. 2020-01019 (P.T.A.B. 2020)

- Sotera, a precedential opinion, addressed how to apply the Fintiv factors when considering whether to deny institution of a petition under 35 U.S.C. § 314(a) when a district court proceeding is pending in parallel to the IPR.

In closing, on behalf of the PPAC, thank you for supporting the USPTO to promote innovation among all Americans and to grant high quality, durable patents to America's inventors. It is my fervent hope that there will be another opportunity to serve under your Administration, particularly in the areas of intellectual property, innovation, and the equitable balance in both areas. Until then, may this Report capture your interest in, and instill a deep appreciation of, the operations of the USPTO; the one U.S. government agency that is the steward of our nation's inventions and innovations.

The PPAC is available to discuss our recommendations in the Annual Report with you or your staff.

Very truly yours,



Julie Mar-Spinola

Chair

Patent Public Advisory Committee

U.S. Patent and Trademark Office

Enclosure: Patent Public Advisory Committee Fiscal Year 2021 Annual Report

Cc: The Honorable Richard Durbin, Chairman, Senate Judiciary Committee  
The Honorable Charles Grassley, Ranking Member, Senate Judiciary Committee  
The Honorable Patrick Leahy, Chairman, Subcommittee on Intellectual Property  
The Honorable Thom Tillis, Ranking Member, Subcommittee on Intellectual Property  
The Honorable Jerrold Nadler, Chairman, House Judiciary Committee  
The Honorable Jim Jordan, Ranking Member, House Judiciary Committee  
The Honorable Hank Johnson, Chairman, Subcommittee on Courts, Intellectual Property and the Internet  
The Honorable Darrell Issa, Ranking Member, Subcommittee on Courts, Intellectual Property, and the Internet  
The Honorable Gina Raimondo, U.S. Secretary of Commerce  
Andrew Hirshfeld, Performing the Functions and Duties of the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office

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## I. INTRODUCTION

There can be no dispute that all stakeholders and users of the United States patent system believe that only quality patents should be issued and enforced. Here, the Patent Public Advisory Committee (“the PPAC”) defines a quality patent as one that was thoroughly examined and prosecuted at the application for patent stage that can withstand post-issuance challenges. Quality patents afford patent holders reasonable reliance that they hold enforceable rights on the one hand, and inform the general public of the metes and bounds of duly issued patents to avoid infringement on the other hand.

In past years, the PPAC had focused primarily on the quality of the patent examination -- that is, the stage at which applications for patents are examined by the Patent Examining Corps (commonly and hereafter referred to as a unit as “Patents”, or individually as “Examiner”). The PPAC sometimes refers to this application stage as the “front-end” of the quality assessment. Since the value of the patent asset can often be measured by its durability, e.g., the patent is able to withstand post-issuance challenges to its patentability or validity, an examination of the quality of the post-issuance proceedings such as those before the USPTO’s Patent Trial and Appeal Board (“the PTAB”) is also necessary. The PPAC therefore broadened in FY 2021 the scope of its assessment of quality in FY 2020 to include post-issuance proceedings conducted at the PTAB, which we sometimes refer to as the “back-end” of the quality assessment.

As the PPAC reported in its [2020 Annual Report](#), it was observed that the two business units most pertinent to the PPAC’s focus on quality of the patent asset, namely Patents and the PTAB, worked somewhat independently of the other. For example, data collection, data sharing and cross-training between the two units was not easily accessible because they used different IT systems and data formats. Once the PPAC understood the need for greater continuity between the units, it turned its efforts on helping the Office “bridge the gap” between Patents and the PTAB. The first step was to implement and improve upon a two-way process and learning loop between the two units by updating the PTAB’s IT system to be compatible with Patents’ system.

In FY 2021, the PPAC continued its efforts from bridging the gap to closing the gap between Patents and the PTAB. Specifically, the PPAC endeavored to review and identify any inconsistencies between the two units (perceived or otherwise), determine the underlying cause, and then help the Office find ways to remove or minimize such inconsistencies. The PPAC’s goal in this exercise was, and will continue to be, to find the best approach for shifting the presumption of validity to absolute validity of quality issued patents. To this end, the PPAC is pleased to report that Patents and the PTAB are well on their way towards full cooperation and collaboration, including sharing data, cross training their respective teams, co-implementing new initiatives and pilot programs, engaging external stakeholders for feedback, and making available numerous outreach programs for the stakeholders’ benefit.

The PPAC would be remiss if it did not acknowledge the unique challenges presented to the USPTO in FY 2021 including, the protracted pandemic, the U.S. Supreme Court’s decision in *United States v. Arthrex, Inc.*, Nos. 19-1434, 19-1452, 19-1458, 2021 WL 2519433 (*Arthrex*) among others, active congressional inquiries and, most importantly, a Director not yet appointed.

As urged in the PPAC’s cover letter to President Biden, “the Office must maintain a nonpartisan and constant role in the country’s innovations. And, respectfully, the USPTO should never operate without a properly appointed Director, especially in light of the U.S. Supreme Court’s decision in *United States v. Arthrex, Inc.* ... simply because of a new presidential administration”. That said, the PPAC acknowledges and applauds Andrew Hirshfeld, performing the functions and duties of the Under Secretary of Commerce for Intellectual Property and Director of the USPTO, for his nimble handling of the USPTO’s operations during the very active, issue-packed interim.

In sum and on balance, the PPAC is pleased to report that the USPTO has made meaningful, demonstrative progress in all the salient areas affecting the reliability and durability of a U.S. Patent. This progress is laid out in greater detail below.

## **II. PATENT QUALITY AND PENDENCY**

The USPTO performs a variety of functions relating to patents. These functions include reviewing patent applications for compliance with the statutory requirements for patentability and promptly issuing patents for those applications that meet the requirements and rejections for those that do not. As detailed in this Report, the performance of the USPTO on these two patent functions is commonly measured by the metrics of pendency and quality. During FY 2021, the performance of the USPTO on these metrics is commendable.

Patent quality reflects the extent to which the USPTO, at the application and prosecution stage, correctly rejects applications that fail to meet statutory requirements and issues patents for those applications that do meet statutory requirements. The USPTO has goals for the compliance of the work product generated by Patents with respect to the statutory requirements. Each year, the USPTO reviews a random sample of this work product to evaluate its compliance. The USPTO made exceptional progress towards achieving its compliance goals this FY 2021.

Analysis of patent quality, however, does not end when a patent issues. Indeed, for a true assessment of patent quality, we must also consider whether the issued patents are durable; that is, are they able to withstand post-issuance invalidity and patentability challenges? Here, the PPAC’s assessment is limited to those challenges submitted internally, such as to the PTAB, and whether the statutory requirements are consistently applied. For example, the PTAB has issued decisions that appear inconsistent with actions previously taken by Patents, resulting in an apparent “gap” between these two internal offices. In FY 2021, with the guidance and support of the PPAC, the USPTO undertook a new initiative to close this gap, which we collectively anticipate will further improve the quality of examination and the reliability of issued patents for the benefit of inventors, applicants, patentees, and the public.

While the USPTO plays the lead role on ensuring quality, the USPTO does not play the only role. Applicants, inventors, and their legal representatives (patent agents and patent prosecution counsel) each play an important and unique role, too. This year, the USPTO continued to offer free educational programs to help applicants improve the quality of their applications and other submissions. These programs included Stakeholder Training on Examination Practice and Procedure (STEPP) for patent agents, patent attorneys and inventors, and virtual instructor led training (vILT). The PPAC encourages all stakeholders and users of the USPTO’s services to

take advantage of these programs and, importantly, to provide constructive feedback on the programs' usefulness and what other programs or initiatives are needed to improve overall patent quality.

Pendency, the second significant function of the USPTO, refers to the amount of time an application is pending or "live" before the USPTO. The USPTO has short-term average pendency goals and long-term absolute pendency goals. The short-term goals are historic in nature and reflect the USPTO's objective to reduce pendency across all applications. The long-term goals are more recent and reflect the USPTO's objective to provide certainty to applicants on the examination timeline. The USPTO made remarkable progress towards achieving both goals this year.

## **RECOMMENDATIONS**

The PPAC has three recommendations regarding how the USPTO can close the gap between Patents and the PTAB. First, the PPAC advises the USPTO to continue to implement and improve upon a two-way process and learning loop between the Patents and the PTAB. Both units should be given the necessary resources, tools, and data protocols to efficiently compile and effectively share their data. Also, both Patents and the PTAB should continue to engage in and expand coordinated internal training activities to help promote a consistent application of the statutory requirements. Second, the PPAC advises Patents to review all PTAB decisions that held a different result, i.e., a finding of invalidity or unpatentability to understand the reasons for the loss of one's patent rights. Patents should determine whether the gap arises primarily because of prior art, claim interpretation, or something else. For example, with respect to prior art, Patents should determine whether the gap arises because (i) the responsible Examiner did not have access to the prior art, or (ii) the Examiner had access to the prior art but did not consider it applicable, or (iii) if the prior art was disclosed, whether the file history provides sufficient explanations as to why the prior art was not applicable or determinative. If lack of access to prior art is responsible for the gap, the Patents should determine (i) why the Examiner did not have access to it and (ii) whether the Examiner reasonably could have been expected to find it in the time allotted for examination. Also, Patents should expand its search capabilities to bring more prior art into view during examination. Third, the PTAB should consider reviewing the work product of Patents in a way that promotes consistency between the business units and the reliability of issued patents. For example, the PTAB can expand its discretion in post-grant proceedings to give greater deference to the responsible Examiner's consideration of prior art cited during examination.

The PPAC has two recommendations regarding how the USPTO can improve STEPP and vILT. First, the PPAC recommends that the USPTO make STEPP training for inventors available more frequently. In this regard, the PPAC notes that STEPP training for patent agents and patent attorneys is given often on a quarterly basis, but STEPP training for inventors is less frequent. Second, the PPAC recommends that the USPTO provide certificates of completion to individuals who complete STEPP or vILT training. Certificates of completion can serve as an incentive for agents, attorneys, and inventors to complete the training, which will help improve the quality of applications received by the USPTO.<sup>6</sup>

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<sup>6</sup> One area of suggested training for applicants, to promote thorough examinations of their applications would be to submit comprehensive Information Disclosure Statements (IDS) and how to build a more complete file history by having more comprehensive exchanges with the Examiner throughout prosecution.

### III. PATENT TRIAL AND APPEAL BOARD

The USPTO mission to fulfill the mandate of Article I, Section 8, Clause 8, of the Constitution 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” carries through to the PTAB, which was established by the Leahy-Smith America Invents Act (AIA) as the final word from the USPTO in reviewing adverse decisions of Examiners upon applications for patents, appeals from reexaminations, and conducting derivation proceedings, *inter partes* reviews (IPR), and post-grant reviews (PGR). The PTAB carries out these proceedings through transparent and balanced procedures that lead to timely, consistent, and fair resolution of the issues that come before the Board.

In FY 2021, the PTAB continued to make progress in reducing the number of pending appeals and the pendency of appeals. The PPAC applauds the PTAB for this progress. With regard to trial proceedings, 93% of the trial proceedings are IPRs, and 7% of the trial proceedings are PGRs. The institution rate by petition for FY 2021 is 59% compared to 56% FY 2020, and slightly lower numerically and on par with FY 2017–FY 2019.

The U.S. Supreme Court issued *Arthrex*, addressing the Constitution’s appointments clause as it relates to PTAB administrative patent judges (APJs). The court found APJs are “principal officers” but tailored a remedy to ensure that APJs function as inferior officers. Specifically, the court held that “35 U.S.C. § 6(c) is unenforceable as applied to the Director insofar as it prevents the Director from reviewing the decisions of the PTAB on his own.” Immediately following the decision, the USPTO implemented an interim procedure for Director review of final written decisions in IPRs and PGRs. In this interim procedure, review may be requested by a party or initiated *sua sponte* by the Director. The current process is envisioned as an interim procedure that may change based on input from the public and experience with conducting Director reviews. PPAC congratulates the USPTO for its quick action to implement the interim procedure and to provide clear path forward for petitioners and patent holders.

In FY 2021, the PTAB has enhanced its “feedback loop” that provides data and information to Patents to inform gaps in search, training or otherwise inform quality improvements during examination. Furthermore, PTAB and Patents collaborate extensively to improve their respective processes. In conjunction with the Office of Patent Training, the PTAB hosts multiple webinars throughout the year where judges talk to examiners about different aspects of PTAB proceedings. The PTAB and Patents also run a program where, each year, about 20 examiners come on a temporary work assignment to the PTAB and work directly with judges. The examiners learn from the judges about the PTAB’s decision-making process, and the judges learn from the examiners about nuances of patent examination. The judges also have the opportunity to take advantage of technical and legal training Patents provides to examiners, so that the USPTO arrives at consistent outcomes. The PPAC appreciates this data sharing and cross training as important steps to improve overall quality.

The commitment to continuous improvement extends beyond internal data sharing, with training to external stakeholders. The PTAB continues to host regular Boardside Chat monthly webinars covering developments in AIA proceedings and *ex parte* appeals practices. This outreach included specific programming for the independent inventor community, as well as practitioners

new to PTAB practice. The Board launched an Inventor Hour webinar series in August 2021, with a new webinar set to be livestreamed every month. These webinars cover a variety of topics, such as PTAB basics, *ex parte* appeals and AIA proceedings, oral hearing protocols, judge and staff biographies, PTAB statistics, PTAB history, and case studies.

The PTAB also continues to provide guidance to practitioners through precedential opinions on the Director's use of discretion when deciding whether to institute IPR and PGR proceedings. Following the PTAB's designation of *Apple Inc. v. Fintiv, Inc.* as precedential last fiscal year, during this fiscal year, the PTAB designated *Sotera Wireless, Inc. v. Masimo Corp.* and *Snap, Inc. v. SRK Tech. LLC* as precedential. These additional precedential decisions provide further guidance to practitioners on the application of the *Fintiv* factors to institution decisions involving co-pending district court litigation. Recent data presented at the PTAB Bar Association Annual Conference (September 22-24, 2021) showed a steady downward trend in *Fintiv* denials as a percentage of all denials over the course of this fiscal year from a high in the 4<sup>th</sup> quarter, FY 2020.

## RECOMMENDATIONS

To enhance the durability of patents, the PPAC reiterates the importance of having a unified management of, and equal access to, data between PTAB and Patents. The progress from FY 2020 to FY 2021 is notable in this regard, but additional steps to enable continuous learning should remain a priority. Such data and information sharing will promote consistency between the business units and further the goal of high quality, durable patents.

The PPAC further applauds the use of precedential opinions and rulemaking to improve transparent and balanced procedures and encourages the PTAB to continue this practice so that proceedings are fair and predictable to all stakeholders.

## IV. INFORMATION TECHNOLOGY AND ARTIFICIAL INTELLIGENCE

In FY 2020, the PPAC created a new subcommittee for Artificial Intelligence (AI) in response to the important challenges resulting from the proliferation of AI technologies throughout many aspects of commerce and innovation. As the USPTO started to build and implement AI technologies in its processes and workflows, the intersection and opportunities for collaboration between AI and information technology (IT) became increasingly clear. For this reason, the PPAC combined the two separate subcommittees for IT and AI to facilitate further coordination, eliminate overlap, and minimize inefficiencies. This combined IT-AI subcommittee has resulted in increased agency-wide collaboration, with significant progress in both areas in FY 2021.

The IT and AI initiatives directly impact patent quality and the efficiency of the USPTO by improving the security and resilience of its IT systems and by leveraging AI to facilitate patent examination and, ultimately, agency-wide modernization. The USPTO's IT systems remained stable and secure during the pandemic, despite having to support one of the largest telework programs in the country and proactively fend off the continued threat of cyberattacks. The USPTO also continued to make progress on the deployment of AI tools to automatically classify patent documents and help examiners find relevant prior art. From a policy perspective, the USPTO maintained a close connection with other government agencies focused on AI as it

continued to examine the national and international implications of AI technologies for laws and institutions.

## **RECOMMENDATIONS**

The PPAC recommends that the USPTO's personnel working on IT and AI initiatives continue to partner closely together on developing and executing their respective strategies and roadmaps. In FY 2021, the PPAC focused its attention on greater intra-agency coordination, and the USPTO's IT and AI groups delivered excellent results by increasing collaboration through the sharing of data, processes, and best practices, as detailed further in this report.

The PPAC also recommends that the USPTO continue to work with the Department of Commerce and the White House Office of Science and Technology Policy to address the policy challenges arising from the proliferation of AI technologies. The PPAC will continue to identify and encourage the USPTO's collaboration opportunities in FY 2022 and advise the Office on its policies and goals in support of the 2018-2022 Strategic Plan with respect to IT and AI technologies.

## **V. INNOVATION EXPANSION**

The U.S. patent system was created to encourage and strengthen American innovation with the all-encompassing objective to keep the U.S. economy strong. It is also critical to our health, safety, and security. However, innovation in the U.S. is highly concentrated based on demographic characteristics, geography, and economic conditions, with underrepresented groups unable to fully engage or compete in, or even to take advantage of, the current U.S. innovation ecosystem. In FY 2020, the USPTO laid the groundwork for a focused initiative directed to inclusiveness in innovation. For example, the USPTO launched an online platform available on the USPTO website call the Expanding Innovation Hub (Hub), which provides resources for inventors and practitioners to encourage greater participation in the patent system. In addition, the USPTO established the National Council for Expanding American Innovation (NCEAI) comprising a cross-section of the U.S. innovation ecosystem to develop a national strategy on innovation and intellectual property. To better reflect an underlying intent behind the formation of the NCEAI, the USPTO announced on October 27, 2021, that the NCEAI has been renamed the Council for Inclusive Innovation (hereafter CI<sup>2</sup>). It was also announced that Secretary of Commerce, Gina Raimondo, will Chair CI<sup>2</sup>. The PPAC congratulates all concerned and looks forward to supporting Secretary Raimondo and CI<sup>2</sup> in achieving its mission to “assist the USPTO in developing a comprehensive national strategy to build a more diverse and inclusive innovation ecosystem”.

In FY 2021, the USPTO, together with the CI<sup>2</sup>, focused on developing a National Strategy for Expanding American Innovation (the “National Strategy”). As of the date of this Annual Report, that work is still in process and the National Strategy has not yet been released to the public.

The USPTO continues to promote this initiative through its expansive public outreach programming. Notwithstanding the challenges in event planning posed by the on-going COVID pandemic, in FY 2021, the USPTO enhanced and expanded several of its existing initiatives and developed new programming to make the patent system more accessible to underrepresented

groups. In addition, the USPTO offered numerous events throughout FY 2021 with greater attendance enabled by remote-access tools.

The innovation expansion found additional support this year with two Executive Orders issued by President Biden directed at racial and gender equity. There is still much work to be done to close the gap but as highlighted below, the USPTO made meaningful strides in FY 2021 toward this goal.

## **RECOMMENDATIONS**

The PPAC recognizes that a significant challenge exists for the USPTO in the data acquisition and analysis for underrepresented groups. The PPAC recommends that the USPTO continue to engage with other DOC bureaus and U.S. government agencies, including the Small Business Administration (SBA) and the Treasury, regarding the potential to share data and analyses relevant to the number of, and benefits from, patents applied for and obtained by women, minorities, and veterans.

The PPAC recommends further that the USPTO continue to engage the broader IP community, including the private corporate sector and academia to get more involved in STEM (science, technology, engineering, and math) and IP education, mentoring, and other efforts with unwavering dedication and speed to increase representation of women, minorities, and veterans in the innovation ecosystem. In particular, the PPAC encourages the USPTO to seek opportunities through its outreach programs to connect more closely with and learn from innovators and entrepreneurs from underrepresented groups.

For lasting positive impact, the PPAC urges the USPTO to work with the CI<sup>2</sup> to ensure that the national strategy on innovation and intellectual property maintains alignment with the long-term vision for an innovation ecosystem built on conscious inclusiveness, equity, continuity, adaptability, and sustainability over time. The PPAC also urges the USPTO to communicate more frequently with the public stakeholders on the status and projected timeline for the release and implementation of the National strategy.

## **VI. OUTREACH REGIONAL OFFICES AND INTERNATIONAL**

### **A. REGIONAL OFFICES**

The USPTO Regional Offices (“ROs”) find their statutory authority in the Leahy-Smith American Invents Act (“AIA”), with a two-fold mission: (1) recruit, hire, and retain top talent for the USPTO, and (2) serve IP stakeholders across the nation. The USPTO ROs—located in Detroit, MI; Dallas, TX; Denver, CO; and San José, CA—bring world-class IP services and quality training to innovators and entrepreneurs of all sizes across their respective regions. Following the success for the ROs, in 2019, the Eastern Regional Outreach Office (“EROO”) was created to serve stakeholders along the East Coast.

A significant amount of the overall IP education and training conducted by the USPTO is now provided by the ROs and the EROO. The over 500 trainings conducted by the ROs and EROO have resulted in the agency reaching over 40,000 stakeholders spread geographically across the United States. By leveraging strategic partnerships with local, state, and Federal partners, the

ROs and EROO have expanded the reach of USPTO resources to small businesses and underserved stakeholders and serve as the “last-mile” between the USPTO and prospective users of the IP system.

## **RECOMMENDATIONS**

The PPAC commends the ROs and the EROO for the progress they have made towards their congressional mandated mission and encourage them to continue to expand the breadth of their outreach in the coming years.

### **B. INTERNATIONAL**

The COVID-19 pandemic has continued to force the international patent community to rethink how it engages given that the format of meetings, which previously had predominantly been in-person, are now virtual. Despite these challenges, the USPTO continued its collaborative work with other intellectual property offices to achieve improvements for both applicants and participating offices. One example is exploring new models of patent work-sharing that build on the global success of the Patent Prosecution Highway (PPH), which continues to expand PPH and has proven to increase efficiencies and decrease costs for applicants filing in multiple offices.

In the area of international engagement, the USPTO published a report which looks at factors that have influenced the high rate of Chinese patent and trademark filings, which are the highest in the world. Beyond the usual market factors that drive such applications, the report finds that a number of non-market factors influence Chinese filings, such as subsidies and government mandates.

The USPTO has been working to identify ways to mitigate the effects of delays the COVID-19 pandemic has had on processing times for providing certified and legalized documents from the USPTO and the United States Department of State.

Finally, in December 2020, IP Attaché positions at the U.S. Embassies in New Delhi, Mexico City, and Beijing, and the U.S. Mission to the European Union in Brussels were elevated to the diplomatic rank of “Counselor”. This elevation provided these officers with greater access to senior government officials and to the Ambassadors at their respective embassies, enabling them to accomplish U.S. objectives more effectively.

## **RECOMMENDATIONS**

Recognizing the importance of IP to the global trade system and the mutual benefits of working cooperatively with other IP offices, the PPAC applauds the USPTO for the strides it has made despite the challenges to international engagement created by the pandemic. The PPAC particularly appreciates the USPTO efforts to date to assist applicants and rights holders in mitigating the unanticipated effects of the COVID-19 pandemic on patent procurement and enforcement.

The PPAC encourages continued efforts to eliminate processing delays for certified and legalized documents from the USPTO and the United States Department of State. The PPAC also urges the USPTO to continue to explore with its international partners, work-sharing arrangements and

other joint efforts to increase efficiency, quality, and predictability in patent examination globally. And finally, the PPAC is hopeful that the USPTO's engagement on the issue of the factors influencing patent filings in China will continue to have a positive effect.

## **VII. LEGISLATIVE**

Congress has expressed a great deal of interest in the oversight of the USPTO and potential legislation concerning intellectual property and patent law. Recent congressional action includes efforts to increase the transparency of patent ownership; patent subject matter eligibility; improving patent quality; PTAB post-issuance patent review; how to reduce patented pharmaceutical drug prices; the identification of barriers historically faced by women and minority inventors and how to remove them; and whether a non-USPTO agency's jurisdiction can be expanded to issue injunctive relief, in lieu of damages, for small inventors including women and minorities. The USPTO continues to monitor all intellectual property and patent law-related legislation and, at the request of members of the Senate, House, and Administration has and will continue to respond to informational requests and initiate activities and studies as requested.

## **RECOMMENDATIONS**

The PPAC recommends that the USPTO continue to inform and engage government and non-governmental stakeholders to ensure that any proposed legislative or administrative changes will not adversely affect the patent system that made the United States the most innovative and economically prosperous country in the world. We only need to look to the extraordinary success of the U.S. patent system in attracting decades of private investment that resulted in vaccines to allow the world to combat the recent COVID virus.

In addition, the PPAC recommends that the USPTO continue to be proactive in analyzing suggested legislative proposals, including patent subject matter eligibility (35 U.S.C. § 101) PTAB post-grant review proceedings; and efforts to interfere with or divest previously granted patent rights. The PPAC supports efforts to increase patent bar membership to include more women and minorities, so long as all professional technical expertise is demonstrated.

The PPAC applauds Chairman Leahy's appropriations bill (4,058,410,000) recommending releasing \$68 million that the USPTO collected from user fees. These funds are urgently needed to improve patent durability and enforceability, inventor's support, innovation expansion, and diversity issues that Congress has identified.

## **VIII. FINANCE**

As a fee-funded agency, the USPTO was challenged by the economic downturn associated with the global COVID-19 pandemic and the associated financial uncertainty. To prepare for the contingency of reduced fee collections, the USPTO implemented measures to reduce planned patent-related spending by \$15.5 million; additional contingency plans were prepared but not implemented. Patent fee collections stayed close to plan for FY 2020, and the final quarter of FY 2020, saw a surge in accelerated fee payments made in advance of the October 2, 2021 fee changes. This in turn, led to lower than anticipated fee collection during the first quarter of FY 2021. The PPAC commends the work of the Office of the Chief Financial Officer (OCFO) in

carefully monitoring collections and expenditures, adjusting spending plans accordingly, and preparing for a range of contingencies.

With the uncertain timing of economic recovery, it is crucial that the USPTO have access to all previously collected user fees. Although USPTO spending is limited by congressional appropriation, the Agency's money comes from user fees rather than federal taxation and borrowing. After the onset of the COVID-19 pandemic and accompanying economic contraction, the PPAC wrote a [letter to Congress](#), joined by the TPAC, requesting that \$1.023 billion of previously collected user fees deposited in the USPTO's treasury account be released to the USPTO. The PPAC believes these user-generated funds currently held in the USPTO's Treasury account are exclusively for use by the USPTO and therefore should be forthwith released for the sole purpose of supporting and modernizing USPTO operations.

In FY 2021, patent fee collections were 1.0% above and patent spending was 2.8% below the estimates included in the FY 2022 President's Budget. The operating reserve increased to \$476 million from \$395 million: this exceeds the recommended minimum level of \$300 million.

In FY 2021, the USPTO's appropriation authority was determined by Continuing Resolutions of October 1, 2020, December 11, 2020, December 18, 2020, December 20, 2020, and December 22, 2020, and the FY 2021 Omnibus and COVID Relief and Response Act which was enacted on December 27, 2021. The bill provided \$3.695 billion for the USPTO, of which \$3.251 billion was allocated to patents.

The Final Rule Setting and Adjusting Fees went into effect on October 2, 2020, except for the surcharge for non-DOCX filings, which is effective on January 1, 2022. The fee adjustment was a key step in assuring sufficient funding for USPTO operations, ongoing investments in key capabilities and a robust operating reserve.

The President's Budget for FY 2022 proposed spending of \$3.550 billion on the patents portion of USPTO operations. Unlike prior requests, the budget requested an appropriation level based on projected spending, \$3.994 billion in total, instead of projected fee collections. The Commerce, Justice, and Science (CJS) subcommittee of the House Appropriations Committee marked up the FY 2022 budget on July 12, 2021. On July 27, 2021 the PPAC together with the TPAC respectfully requested by [letter](#) that, consistent with past practice, Congress appropriate to the USPTO the Agency's estimated fee collection level of \$4.058 billion rather than the \$3.994 billion level requested in the President's Budget.

The PPAC is pleased to report that on October 18, 2021, the Senate Appropriation Committee released the FY 2022 appropriations bill setting the appropriations level at \$4.058 billion, along with a report stating:

*Since fiscal year 2005, the Committee has refused to divert patent and trademark fees to other purposes and has always appropriated USPTO an amount equal to the agency's estimate of patent and trademark fees, while also allowing USPTO to retain all unexpected revenue in excess of appropriated levels. As such, the Committee strongly disapproves of the new appropriation methodology proposed by the administration in fiscal year*

*2022 that would only provide USPTO with an appropriation equal to the agency's spending requirements and divert all additional expected revenue to the Patent and Trademark Fee Reserve [PTFRF]. In future fiscal years, the Committee expects the administration and the Department to revert to the longstanding practice of providing USPTO with complete and unfettered access to the amount equal to the agency's estimate of patent and trademark fees. (Emphasis added.)*

The FY 2023 budgeting process is underway. The PPAC received the USPTO's proposal for the President's Budget for FY 2023 in August 2021.

## RECOMMENDATIONS

The economic consequences of the current pandemic only heighten the importance of excellent financial management as called for by Objective 3 of the mission support goal of the USPTO Strategic Plan. The USPTO's mission in fostering reliable and certain patent rights remains critical for supporting innovation during and after the pandemic. Maintaining stable funding through the economic contraction is key to that mission.

The PPAC recommends that Congress release \$1.024 billion of previously collected user funds that are on deposit in the USPTO Treasury account. This money will help assure the continuation of quality timely examination and investments in modernization of the long-neglected IT infrastructure and USPTO operations during any temporary reduction of user fee collections.

The PPAC recommends continued prudent management of expenditures that takes into account a range of contingencies. In an uncertain economic climate, user fee collections may remain inherently unpredictable for some time. Careful prioritization will be important to protect the USPTO's mission.

As the economy recovers, the PPAC recommends that the USPTO eventually increase its operating reserve to a level that is sufficient to fund three months of operation. This will help protect USPTO operations from both future variability in fee collections and any lapses in appropriation authority.

Consistent with Objective 3 of the mission support goal in the USPTO Strategic Plan, the PPAC recommends that in future appropriation lapses, the USPTO should be able to spend the funds that it collects from users during such a time period. Fortunately, FY 2020 passed without any lapse in appropriation authority, but the risk remains of further occurrences in the future. Since the USPTO's collected funds cannot, by statute, be allocated to any other purpose, there is no benefit in restricting the Agency's access to them during an appropriation lapse. The USPTO should ideally be exempted from the appropriation process entirely. The appropriations process does not meaningfully affect the USPTO's expenditures over time in any event since the USPTO can only spend the funds that it collects from users.

The PPAC further recommends that the USPTO consider the necessity and extent of any further fee increases by balancing the needs of the Office for adequate funding with the economic

challenges faced by the user community. The biennial fee review commenced in FY 2017 has only recently culminated in the fee increase implemented on October 2, 2020. Subsequent fee reviews began in FY 2019 and FY 2021 and have not yet resulted in a proposed fee adjustment. It is important that fees continue to be aligned to the Office's cost of providing services, but the timing and magnitude of any new fee adjustment should consider economic conditions and the likely effect on user participation in the patent system.

## **I. PATENT QUALITY AND PENDENCY**

The USPTO performs a variety of functions relating to patents. These functions include reviewing patent applications for compliance with the statutory requirements for patentability and promptly issuing patents for those applications that meet the requirements and rejections for those that do not. The performance of the USPTO on these two patent functions is commonly measured by the metrics of pendency and quality. In this section, the PPAC reviews the performance of the USPTO on these metrics.

### **A. QUALITY**

Quality reflects the extent to which the USPTO, at the prosecution stage, correctly rejects applications that do not meet statutory requirements and issues patents for those applications that comply with the statutory requirements. Multiple stakeholders, particularly the USPTO, applicants, inventors, and their legal representatives such as patent agents and prosecution counsel, play vital roles in ensuring the quality of examination and issued patents. Quality can be evaluated in a variety of ways. For example, on the front end, i.e., during the application stage, quality can be evaluated directly by asking internal personnel and external stakeholders to review the work product of Patents for compliance with the requirements. On the back end, i.e., after patents have been issued, quality can also be evaluated indirectly by reviewing decisions from the PTAB. Sometimes, the PTAB has issued decisions that appear inconsistent with actions previously taken by Patents, resulting in an apparent “gap” or inconsistency between how Patents determined the invention patentable and why the PTAB later determined the patent not patentable. In this sub-section, the PPAC reviews the performance of the USPTO on the metric of overall patent quality, the efforts of the USPTO to close the gap between Patents and the PTAB, and steps applicants and other stakeholders can take to work cooperatively with the USPTO to improve the quality of examination and issued patents.

#### **1. Performance on Quality**

Applicants, agents, attorneys, and inventors expect the USPTO to conduct quality examinations of their patent applications and issue reliable, durable patents. In the view of these stakeholders, quality examinations include identification of all relevant prior art, correct application of the statutory requirements for patentability, and stating clear and complete rejections in the prosecution history for future reference and consideration. The USPTO leverages all available resources, including its personnel, its data, and its performance tools, to provide quality examinations.

#### **2. Internal Review**

The USPTO has given supervisory patent examiners and its internal Office of Patent Quality Assurance (OPQA) the responsibility of evaluating the compliance of the work product of Examiners with the statutory requirements and implementing remedial measures as necessary. In this sub-section, the PPAC focuses on the role of the OPQA.

Each year, a team of quality specialists from OPQA reviews a random sample of the work product of Examiners to evaluate their compliance with the statutory requirements for utility and eligibility (35 USC §101), novelty (35 USC §102), non-obviousness (35 USC §103); and invention disclosure (35 USC §112). These metrics are known as the “compliance indicators.” OPQA uses the results of its review to identify quality trends during examination and determine whether any changes need to be made to ensure the quality of examination. These changes can include enhanced training for the Examiners.

In FY 2021, the USPTO established 35 USC §101 >97%, 35 USC §102 >95%, 35 USC §103 >93%, and 35 USC §112 >93%, as the goals for the compliance indicators for the work product of the Examiners. As of Oct. 1, 2021, OPQA completed 12,036 reviews of work product for the FY 2021 compliance indicators. Based on these reviews, the USPTO expects that OPQA will determine the compliance indicators for work product to be at least 98.3% for 35 USC §101; 95.0% for 35 USC §102; 90.7% for 35 USC §103; and, 92.2% for 35 USC §112 in FY 2021. Compared to FY 2020, the USPTO maintained or improved its performance on all indicators this year. Also, the USPTO continued to make steady progress towards achieving its goals for the indicators.

OPQA also operates an “acolades” program to encourage the generation of quality work product. More specifically, during its review of work product, OPQA identifies the use of best practices and designates certain instances of work product as warranting an “acolade.” This program provides positive feedback to the Examiners and provides recognition in the form of commendatory letters from the Director of OPQA to the Examiners. In FY 2021, OPQA drafted 2,188 accolade comments during its review of work product.

Beginning in FY 2020 and continuing through FY 2021, the USPTO implemented the examination time, application routing, and performance appraisal plan (commonly referred to as “TRP”) initiative to enhance the quality of examination even further. In this initiative, the USPTO revised the time allotted to Examiners to examine patent applications, revised the routing of patent applications for examination, and revised the patent examiner performance appraisal plan.

As part of the TRP initiative, the USPTO now employs a more flexible and dynamic approach to the allotment of time for Examiners to examine a patent application. The new method bases time allotment on an application’s Cooperative Patent Classification (CPC) “picture,” which represents the full scope of technology covered in an application and accounts for multi-disciplinary inventions. The changes to examination time also allow for a thorough examination tailored to specific attributes of an application, including the overall number of claims, the length of the specification, and the number of pages in any filed information disclosure statements. Also, during routing of applications for examination, the USPTO now places a greater emphasis upon matching the technologies described in the applications with the technology backgrounds and experience of the Examiner. As a result, Patents is better able to assign applications that are much closer fits to its expertise and experience. Additionally, the USPTO has updated the performance appraisal plan for the Examiners to include a listing of best practices in the areas of search and application of the statutory requirements. The updated plan places a greater emphasis on finding the best prior art as early as possible, with the goal being to make the examination timeline more consistent with patent term adjustment (PTA) requirements. The updated plan

also provides Examiners with a list of exemplary practices for searching, improving clarity of the written prosecution record, and adhering to principles of compact patent prosecution, with the goal being to improve the quality of examination. The PPAC lauds the USPTO for undertaking the TRP initiative.

Currently, at the request of Congress members, the USPTO is developing a pilot program under which full prosecution of subject matter eligibility issues will be deferred. The goal of the program will be to determine whether the quality and efficiency of examination can be improved by delaying full prosecution of eligibility issues until the application satisfies the other statutory requirements. The program is based on the premise that eligibility issues may be resolved by satisfaction of non-eligibility requirements for patentability (e.g., novelty, non-obviousness, adequacy of disclosure, and definiteness). As such, deferring full prosecution of eligibility issues until the non-eligibility statutory requirements are satisfied may lead to an examination that is more efficient and higher quality. In the pilot, participating applicants may defer responding to eligibility rejections until after non-eligibility issues have been resolved.

### **3. External Review**

External review refers to a process in which the overall examination quality of the USPTO is evaluated by external stakeholders, including applicants, agents, attorneys, and inventors. The USPTO has administered an External Quality Survey (EQS) to external stakeholders semi-annually since FY 2006. The EQS is a statistically meaningful survey designed to collect the perceptions of external stakeholders on key features affecting the quality of examination. The collected perceptions are incorporated by the USPTO into continuous efforts to improve the quality of examination.

External stakeholders have a very favorable view of overall examination quality, as evidenced by the results from the most recent administration of the EQS. The EQS gives stakeholders the opportunity to rate overall examination quality along a spectrum, from very poor to excellent. In the most recent survey, conducted in FY 2021 Q4, the USPTO reported 65% of responses in the good/excellent category, the highest-ever percentage in that category. In contrast, the percentage of responses in the poor/very poor category was 6%. The USPTO presented the results from this survey during the PPAC quarterly meeting held on May 6, 2021.

### **4. Closing the Gap**

In FY 2021, with the PPAC's continuing focus and guidance on overall patent quality, reliability, and durability, the USPTO began an initiative to close the gap between Patents and the PTAB. The expression "closing the gap" can be understood in the following way. Examiners are responsible for examining applications and issuing final rejections or patents, as appropriate. The PTAB is responsible for deciding a variety of patent legal matters, including *ex parte* appeals of final rejections filed by applicants, and post-issuance requests filed by petitioners, such as IPRs and PGRs, to review the patentability of issued patents. A "gap" between these two branches can arise whenever the PTAB issues (i) a decision in an *ex parte* appeal that reverses a final rejection or (ii) a decision in a post-issuance proceeding that holds a claim of an issued patent to be unpatentable. "Closing the gap" refers to steps that can be taken by Patents and the PTAB to promote predictability through consistent application of the statutory requirements for

patentability and strengthen the reliability and durability of the patent right. Closing the gap will provide benefits to inventors, applicants, patentees, and the public. These benefits include continuing to provide a meaningful incentive to inventors, applicants, and patentees to make the sacrifices necessary to develop and commercialize their inventions for the public good.

Also in FY 2021, the USPTO began to use readily available information and readily accessible tools to close the gap. Currently, the USPTO's efforts are focused upon data collection, data flow to serialized applications, and surveys. Each of these is discussed below.

Data collection is a simple and powerful tool that is being used to close the gap. Recently, Patents and the PTAB have started to work together on continuing to implement and improve upon a "learning loop" for Examiners. In this loop, the PTAB collects and transmits quantitative data from its decisions to Patents in a form that Patents can use. As an example, the PTAB has started to include summary tables in its decisions. These tables summarize the rulings on each rejection and each claim. These decisions also identify the relevant statutory requirements. Patents has begun to incorporate these tables and other quantitative data from the PTAB into examiner training and examination improvements.

Data flow to serialized applications is yet another tool that is being used to close the gap. Serialized applications are applications that claim the benefit of the filing date of previously filed applications, such as continuation, continuation-in-part, and divisional applications. Patents ensures that any relevant information from a post-issuance proceeding on a parent patent flows through to the examination of all serialized applications. As such, an Examiner who is examining a continuation, for example, of a patent that was reviewed by the PTAB in a post-issuance proceeding will have access to all papers and decisions in the proceeding.

Surveys are another tool that is being used to close the gap. Patents recently sent surveys to the PTAB, soliciting their view on their work product. This work product includes final office actions and appeal briefs prepared by Patents. The survey asked the PTAB to evaluate a variety of topics focused on quality, including how well the Examiners responded to arguments raised by applicants and cited evidence to support its positions in its work product. Patents incorporated the results of the surveys into examiner training.

## **5. Applicant Role in Quality**

While the USPTO plays the lead role in ensuring the quality of examination and issued patents, the USPTO does not play the only role. Applicants and their legal representatives (e.g., patent agents and patent counsel) play a vital role as well. Collectively, they directly affect quality when they decide on the (a) completeness of their information disclosure statement, (b) content to include in their applications, (c) their responses to office actions, and (d) their other submissions. Applicants indirectly affect quality when they take advantage of programs offered by the USPTO to help them better understand the examination process. The PPAC comments briefly here on ways in which applicants can positively affect quality.

The USPTO periodically conducts a survey of a random sample of Examiners at all personnel grades and in all technologies that asks them to evaluate those factors that most highly correlate with the quality of the applications that they review. Referred to as the internal quality survey,

this survey is conducted semi-annually and coincides with the administration of the EQS discussed above.

The USPTO conducts this survey to identify the factors that most significantly affect the ability of Examiners to provide a quality examination, in the view of the Examiners themselves. Based on the most recent survey, which was conducted in FY 2021 Q2, the USPTO identified a key driver of quality: citations to the specification that provide support for claim amendments. The USPTO identified a number of other drivers of quality, including the thoroughness of applicants' responses to rejections in office actions; the clarity and completeness of applicants' specifications; applicants' preparation for interviews; and, applicants' identification of the applicability of references in information disclosure statements. The USPTO presented the results from this survey during the PPAC quarterly meeting held on May 6, 2021.

The reason why citations to the specification have the highest correlation to quality in the view of Examiners is enlightening. Generally, applicants are permitted to amend their claims during prosecution, but only to the extent that the amendments are supported by their original application. Examiners must determine whether amendments are supported and issue rejections for unsupported amendments. Sometimes, Examiners can perform keyword searches for claim terms in the specification to determine whether claim amendments are supported. But often, claim amendments are more nuanced than keyword matches. As a result, Examiners can spend considerable time on this task, rather than on examination for patentability against the prior art. Applicants can help Examiners focus their time on examination against the prior art by identifying the specific portions of their original applications that support their claim amendments. Examiners can quickly review this identification and then focus their time on examination against the prior art. The PPAC encourages applicants to consider providing more complete citations to the specification whenever they make claim amendments.

The PPAC also encourages applicants and their legal representatives to engage Examiners more often and directly via phone or video interviews. Such interviews are powerful tools to promote quality by directly educating the Examiner on the subject invention (i.e., bringing your invention to life) and by clearly articulating the distinctions between the subject invention and prior art.

The USPTO provides two programs to help applicants better understand the examination process. These programs are stakeholder training on examiner practice and procedure (STEPP) and virtual instructor led training (vILT). Both programs are free and are based on training provided to Examiners. STEPP is provided to agents and attorneys; STEPP is also separately provided to inventors. STEPP training centers on how Examiners review applications. For example, STEPP training reviews how Examiners read applications for the first time; how Examiners search the prior art and conduct reviews for patentability; how Examiners map prior art to claims; and, how Examiners write office actions. vILT provides training on timely topics, such as subject matter eligibility; vILT training is similar to the training provided by the USPTO to Examiners on the same topics. STEPP and vILT are both premised on the proposition that applicants will be better positioned to enhance the quality of examination and issued patents when they have a better understanding of how Examiners "think." The PPAC encourages all stakeholders and users of the USPTO's services to take advantage of these programs and, importantly, to provide constructive feedback on these programs' usefulness, and what other programs or initiatives are needed to improve overall patent quality.

## **B. PENDENCY**

### **1. Introduction**

Pendency refers to the amount of time an application is pending or “live” before the USPTO. The pendency performance of the USPTO is typically reported in terms of months, i.e., the number of months during which applications are typically pending, and volume, i.e., the number of application filings and the unexamined patent application inventory. In this sub-section, the PPAC reviews the pendency performance of the USPTO on applications and petitions.

### **2. Monthly Pendency of Applications**

Historically, the USPTO measured the monthly pendency of applications only on an average basis. The USPTO used two statistics for this purpose: first action pendency and traditional total pendency. First action pendency measured the average number of months from the filing date of an application to the mailing date of a first office action. Traditional total pendency measured the average number of months from the filing date of an application to the final disposal date, i.e., abandonment or issuance of a patent. Between FY 2010 and FY 2020, the USPTO strived to reach two average pendency goals: a first action pendency of 10 months and a traditional total pendency of 20 months. Over time, the USPTO made steady progress towards meeting the 10/20 goals and reducing average pendency. More specifically, in FY 2010, first action pendency and traditional total pendency stood at 25.7 and 35.3 months; by FY 2020, the USPTO had significantly reduced these metrics to 14.8 and 23.3 months, respectively.

In its prior Annual Reports, the PPAC lauded the USPTO for its progress on reducing average pendency but suggested that the 10/20 goals should not be the sole focus of its reduction efforts. Indeed, as stated by the PPAC in its 2017 Annual Report, “applicants base their perception of the efficiency of the USPTO on the timeliness of the examination of their own applications, not applications on the whole.” The PPAC thus recommended that the USPTO consider incorporating absolute pendency goals in its performance metrics. More specifically, the PPAC recommended that the USPTO adopt the prompt examination guarantees of the American Inventor’s Protection Act of 1999 (AIPA) as its absolute pendency goals.

Under the terms of the AIPA, each application is guaranteed a prompt examination that meets several requirements, including 14 months from the filing date of an application to the mailing date of a first office action and 36 months from the filing date of an application to the issue date of a patent. These guarantees are commonly referred to as the AIPA, PTA, or 14/4/4/4/36 time periods. In contrast to the 10/20 goals, the AIPA time periods are absolute per application requirements, not average goals across all applications. Under the AIPA, the USPTO is required to award PTA to any patent whose examination did not meet these time periods, subject to deductions for applicant delays.

More recently, the USPTO broadened its pendency focus to include absolute pendency goals in addition to its historic average pendency goals. The USPTO transition towards including absolute pendency goals formally began in FY 2017. In its FY 2017 Performance and Accountability Report (PAR), the USPTO stated its intent to analyze its pendency performance with respect to both the 10/20 average pendency goals and the PTA absolute pendency goals.

The transition continued in FY 2020, when the USPTO formally broadened its pendency focus to include long-term “90/90” PTA absolute pendency goals in its FY 2020 PAR. The “90/90” goals refer to achieving 90% of total performance, i.e., mailed actions, and 90% of total inventory, i.e., remaining inventory, within the AIPA timeframes. Since FY 2020, the USPTO has been committed to maintaining or exceeding the short-term average pendency goals of 15 months or less for first action pendency and 24 months or less for total pendency while continuing to strive towards its long-term absolute pendency goals of 90/90.

During FY 2021, the performance of the USPTO against its short- and long-term pendency goals was exemplary. More specifically, the USPTO achieved a total pendency of 23.3 months for FY 2021, equal to its FY 2020 total pendency mark. Maintaining low total pendency in the face of great uncertainty demonstrates that the USPTO is efficiently disposing of applications at all stages of prosecution. Also, in FY 2021, the USPTO achieved a total PTA compliance for all mailed actions of 83% and a total PTA compliance for all remaining inventory of 86% for FY 2021. PTA compliance of mailed actions remained steady compared to FY 2020, while the PTA compliance of the remaining inventory fell slightly by 2% compared to FY 2020, largely due to pandemic-related productivity losses. These results show that the USPTO is steadily continuing its march to reach its 90/90 goals.

The PPAC lauds the USPTO for its successful efforts at reducing pendency across all applications and its continued progress towards reaching its 90/90 goals. The PPAC notes that these achievements are even more significant given the COVID-19 pandemic. While the pandemic has certainly affected *where* the patent examining corps works, the pandemic has not meaningfully affected *how* efficiently the patent examining corps works. In response to the pandemic, the USPTO transitioned to a mandatory telework posture beginning in FY 2020 (specifically, March, 2020) and then to a maximum telework posture later in FY 2020. The USPTO maintained this maximum telework posture throughout FY 2021. Currently, as of the end of FY 2021, nearly all of the patent examining corps works remotely full time, compared to approximately 64% pre-pandemic. The PPAC lauds the USPTO for continuing to make progress towards its pendency goals with a largely remote workforce.

The USPTO is now de-emphasizing its short-term average pendency goals in favor of its long-term absolute pendency goals. As part of this transition, the USPTO is placing a higher priority on examining older applications. This change in emphasis explains why first action pendency is estimated to increase in FY 2021 compared to FY 2020. In the view of the PPAC, the certainty in the examination timeline provided to applicants by the absolute pendency goals creates a level of predictability that helps them make more informed and timelier decisions about patenting and commercializing their inventions.

### 3. Volume

Application filings and the unexamined patent application inventory reflect the pendency performance of the USPTO in terms of volume rather than months. The USPTO computes application filings as the number of new utility, plant, and reissue (UPR) filings. This statistic includes continuation, continuation-in-part, divisional, and Request for Continued Examination applications. The USPTO computes the unexamined patent application inventory as the number of new UPR applications that are in the examination queue and awaiting a first office action by

Patents at any given time. This statistic includes continuation, continuation-in-part, and divisional applications.

Over the past decade, application filings have steadily trended upward. Indeed, application filings in FY 2010 numbered 328,222 new filings and steadily increased to 450,976 filings in FY 2020. In FY 2021, the USPTO received 450,436 application filings, or approximately 0.1% less than FY 2020, a remarkably small decrease given the disruption caused by the COVID-19 pandemic. As such, FY 2021 will mark the first year in recent history in which application filings have decreased year over year. The PPAC believes that this decrease can be attributed to the continuing adverse effects of the COVID-19 pandemic upon inventors, applicants, and their businesses. As support for this belief, the PPAC notes that FY 2008 was the last year in which application filings decreased year over year; not coincidentally, FY 2008 was marked by a global financial crisis. The USPTO expects, however, that application filings will again trend upwards in FY 2022. As of October, 2021, the USPTO estimates that application filings for FY 2022 will be approximately 1.5% greater than FY 2021.

In the same decade, the unexamined patent application inventory has steadily trended downward. More specifically, the inventory in FY 2010 was 718,885 unexamined applications and has decreased to 642,450 unexamined applications as of the end of FY 2021, an approximately 11% decrease. The steady decrease in the unexamined patent application inventory can be attributed to the effective marshaling of the patent examining corps by the USPTO. Such a steady decrease is remarkable given the continuing increase in application filings over the same period. The unexamined patent application inventory corresponds to about 17 months' worth of application filings.

#### **4. Petitions**

The pendency of petitions is another measure of the pendency performance of the USPTO. A petition may be taken to the Director from any action or requirement of an Examiner that is not subject to appeal, in cases in which a statute or rules specify that the matter is to be determined by the Director, and to invoke the supervisory authority of the Director in appropriate circumstances.<sup>7</sup> The USPTO provides a Web-based ePetition option for many types of petitions, including time-sensitive petitions such as petitions to withdraw an application from issue after payment of the issue fee. The ePetition interface automates the petition process by allowing petitioners to directly input the requisite information and receive an ePetition decision. These ePetitions are automatically granted by the USPTO provided the petitioner complies with the ePetition filing requirements and inputs the requisite information for a grantable petition. Examples of petitions that may not be filed via ePetition include petitions to withdraw a holding of abandonment, petitions to review the finality of office actions and petitions to review restriction requirements.

The Manual of Patent Examination Procedure (MPEP) identifies the petitions that can be filed to the USPTO Director. The Director has delegated the authority to decide petitions to various offices within the USPTO. The Office of Petitions decides more than 40 types of petitions,

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<sup>7</sup> See 37 CFR 1.181.

including the most commonly filed petitions. For more information see MPEP 1002.02.

In a typical year, the Office of Petitions decides more than 40,000 petitions, roughly half of which are petitions for Track 1 examination and petitions for the patent prosecution highway (PPH). Both petition types are requests to accelerate examination that promote a reduction in application pendency when the petition is granted. Often, these petitions are filed by applicants who need to obtain a patent more quickly to promote commercialization of their innovations. These applicants include small businesses and independent inventors. Over the last several years, the Office of Petitions has made great progress on reducing the pendency of Track 1 and PPH petitions. In FY 2021, the average pendency of Track 1 petitions was 54 days, the average pendency of PPH petitions was 43 days, and the average pendency of all petitions in the Office of Petitions was 71 days; over 80% of all petitions were decided within five months. In this context, average pendency means the average number of days from the petition being filed to the petition being decided.

## II. PATENT TRIAL AND APPEAL BOARD

The PTAB was established by the Leahy-Smith America Invents Act (AIA) to review adverse decisions of examiners upon applications for patents, to review appeals from reexaminations, and to conduct derivation proceedings, IPRs and PGRs. These duties establish the PTAB as an integral component of the patent system in that the PTAB provides a determination regarding the merits of an invention and is therefore essential to the overall mission of the USPTO to provide timely predictable and reliable patent rights – patent rights that the public, inventors, and investors can rely upon to foster innovation, competitiveness, and job growth.

For this reason, The USPTO’s 2018–2022 Strategic Plan sets forth a specific objective directed to the PTAB, Objective 4: Enhance Operations of the PTAB. As detailed in the Strategic Plan, the USPTO is undertaking a variety of initiatives to meet this Objective, including:

- A. Resolve appeals and *IPRs* matters in a timely manner;
- B. Streamline procedures and standards where feasible and appropriate to ensure balance and predictability;
- C. Emphasize overall written quality, well-supported reasoning of orders and opinions, and decisional consistency;
- D. Increase internal and external engagement on PTAB operations to promote understanding; and
- E. Develop and enhance tools to promote transparency and enable increased use of operational data.

These initiatives reflect the PTAB commitment to provide transparent, consistent, and balanced resolution of the issues that come before the Board.

In FY 2021, due to the COVID-19 pandemic, the PTAB remained in maximum telework and continued to hold remote hearings at a steady volume for both *ex parte* appeals and AIA trials. The PTAB continued to reduce the average pendency of *ex parte* appeals and meet all AIA trial deadlines, almost all of them without extensions.

The PTAB continued a number of programs designed to address stakeholder feedback and improve procedures, including the Motion to Amend (MTA) Pilot Program, Fast-Track Appeals Pilot Program, and Legal Experience and Advancement Program (LEAP). In addition, the PTAB created the new Fast-Track Pilot Program for Appeals Related to COVID-19. The PTAB also worked with Patents through information sharing and training to improve PTAB processes and issued decisions further developing the law under 35 U.S.C. § 325(d), which takes into account the work done by Examiners during examination when considering whether to institute an AIA trial. Finally, the PTAB continued providing extensive outreach to stakeholders through Boardside Chats, the new Inventor Hour webinar series, and other speaking engagements.

The PTAB remained focused on operations improvements during FY 2021. The PTAB continued its transition to a single, integrated IT system, known as P-TACTS (formerly PTAB Center). The PTAB held AIA trial hearings via video and introduced a video option for *ex parte*

hearings. Further, the PTAB began offering video hearings to members of the public/media. The PTAB also continued to improve its website by consolidating and streamlining information.

After the Supreme Court’s decision in *Arthrex*, the USPTO implemented an interim procedure for Director review of final written decisions in IPRs and PGRs proceedings. In this interim procedure, review may be requested by a party to a PTAB proceeding or initiated *sua sponte* by the Director. This change ensures administrative patent judges (APJs) function as “inferior officers” under the Constitution’s appointments clause, in accordance with their appointment by the Secretary of Commerce.

## **A. ARTHREX**

### **1. Overview**

On June 21, 2021, the U.S. Supreme Court issued a decision in *United States v. Arthrex, Inc.*, Nos. 19-1434, 19-1452, 19-1458, 2021 WL 2519433, addressing the Constitution’s appointments clause as it relates to PTAB administrative patent judges (APJs). The court considered whether APJs are “principal officers” who must be appointed by the President with the advice and consent of the Senate, or whether they are “inferior officers” who can be appointed by the Secretary of Commerce. The court found that APJs are insulated from supervision under 35 U.S.C. § 6(c), because “the Director cannot rehear and reverse a final decision issued by APJs.” The court provided a tailored remedy to ensure that APJs function as inferior officers. Specifically, the court held that “35 U.S.C. § 6(c) is unenforceable as applied to the Director insofar as it prevents the Director from reviewing the decisions of the PTAB on his own. The Director may engage in such review and reach his own decision.”

### **2. Director Review**

Consistent with the *Arthrex* decision, the USPTO implemented an interim procedure for Director review of final written decisions in IPRs and PGRs. In this interim procedure, review may be requested by a party or initiated *sua sponte* by the Director. A party may request Director review of a final written decision in an IPR or PGR by concurrently filing a request for rehearing by the Director and submitting a notification of the request via email to the Board. In the interim procedure, an advisory committee established by the Director evaluates requests for Director review and advises on whether PTAB decisions merit review. If the Director initiates a review *sua sponte*, the parties to the proceeding will be given notice and may be given an opportunity for briefing. The current process is envisioned as an interim procedure that may change based on input from the public and experience with conducting Director reviews. More information on the [interim Director review process](#) is available at the USPTO website.

## **B. QUALITY IMPROVEMENT INITIATIVES**

### **1. “Enabling Continuous Learning”**

As noted in the Quality and Pendency Section of this Report, the PTAB and Patents collaborate extensively – both in data sharing and in training — to improve their respective processes. In conjunction with the Office of Patent Training, the PTAB hosts multiple webinars throughout the year where judges talk to examiners about different aspects of PTAB proceedings. The PTAB

and Patents also run a program where, each year, about 20 examiners come on a temporary work assignment to the PTAB, and work directly with judges. The examiners learn from the judges about the PTAB's decision-making process, and the judges learn from the examiners about nuances of patent examination. The judges also have the opportunity to take advantage of technical and legal training Patents provides to examiners, so that the USPTO arrives at consistent outcomes. Additional initiatives have also been described in other portions of the report.

The PTAB has also taken steps to improve its processes by considering work already done by Patents. Specifically, 35 U.S.C. § 325(d) provides the USPTO discretion to deny a petition where “substantially the same prior art or arguments were previously presented to the Office.” The PTAB issued a precedential decision, *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469 (PTAB Feb. 13, 2020), that set forth a framework on how to evaluate a petition under 325(d). The framework is a two-part test:

- (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and
- (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

*Id.* at 8. The PTAB has issued decisions applying the framework set forth in *Advanced Bionics*. They have proven fact intensive. See, e.g., *Balt USA, LLC v. MicroVention, Inc.*, IPR2020-01259, Paper 10 (PTAB Jan. 21, 2021) (institution denied where there had been considerable back and forth between the examiner and applicant concerning a reference relied on in the petition); *Roku, Inc. v. Universal Elecs., Inc.*, IPR2019-01615, Paper 12 (PTAB Apr. 17, 2020) (institution granted where the PTAB found the examiner overlooked certain teachings in a reference relied on in the petition and cited in an information disclosure statement), *NXP USA, Inc. v. Impinj, Inc.*, IPR2020-00544, Paper 8 (PTAB Sept. 1, 2020) (institution granted where petition relied on thesis that was more comprehensive than art of record from the same author); *GlaxoSmithKline Consumer Healthcare Holdings (US) LLC v. Cipla Ltd.*, IPR2020-00371, Paper 7 (PTAB July 31, 2020) (institution denied where examiner made specific finding that the claims overcame prior art relied on in the petition). The PTAB will continue to develop this area of law so that it is as clear and predictable as possible. The PPAC commends the PTAB for the use of precedential opinions and rulemaking to improve transparent and balanced procedures and encourages the PTAB to continue this practice so that proceedings are fair and predictable to all stakeholders.

The PTAB has also assisted Patents with improving its processes by taking into account work already done by the PTAB. For example, the post-grant outcomes program makes available materials from an AIA proceeding relating to a patent to an examiner examining applications related to that patent. The PTAB is also assisting Patents with developing an improved process to capture data when issued claims are later determined to be unpatentable during an AIA proceeding.

## 2. Rulemaking

- a. Final Rule on Instituting on All Challenged Patent Claims and All Grounds and Eliminating the Presumption at Institution Favoring Petitioner as to Testimonial Evidence

On December 9, 2020, the USPTO issued a Final Rule concerning Rules of Practice for Instituting on All Challenged Patent Claims and All Grounds and Eliminating the Presumption at Institution Favoring Petitioner as to Testimonial Evidence. The rule amends 37 C.F.R. §§ 42.108(a) and 42.208(a) to bring them into alignment with the PTAB's practice, after *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018), of either instituting review on all of the challenged claims and grounds of unpatentability presented in the petition or denying the petition. The rule also deletes 37 C.F.R. §§ 42.107(c) and 42.207(c), which eliminates the presumption that a genuine issue of material fact created by the patent owner's testimonial evidence filed with a preliminary response will be viewed in the light most favorable to the petitioner for purposes of deciding whether to institute a review. Finally, the rule amends 37 C.F.R. §§ 42.23, 42.24, 42.120, and 42.220 to allow (1) replies and patent owner responses to address issues discussed in the institution decisions, and (2) sur-replies to principal briefs (i.e., to a reply to a patent owner response or to a reply to an opposition to a motion to amend). The [Final Rule](#) is available at the Federal Register website.

- b. Final Rule on Allocating the Burden of Persuasion on Motions to Amend (MTA)

On December 21, 2020, the USPTO issued a Final Rule concerning Rules of Practice to Allocate the Burden of Persuasion on Motions to Amend in Trial Proceedings Before the Patent Trial and Appeal Board. The rule, which amends 37 C.F.R. §§ 42.121 and 42.221, expressly assigns to the petitioner the burden of showing the unpatentability of substitute claims proposed in a motion to amend. Additionally, the rule expressly assigns to the patent owner the burden of showing that a motion to amend complies with certain statutory and regulatory requirements. The rule also provides that, irrespective of the parties' burdens, the Board may, in the interests of justice, exercise discretion in granting or denying a motion to amend, but only for reasons supported by readily identifiable and persuasive evidence of record in a proceeding. The USPTO anticipates the Board will exercise its discretion only in rare circumstances, and in such cases, the parties will have an opportunity to respond. The [Final Rule](#) is available at the Federal Register website.

## 3. Programs

- a. MTA Pilot Program

The PTAB extended its MTA Pilot Program until September 16, 2022. Information on the [extension](#) is available at the Federal Register website. This program initially became effective on March 15, 2019, and provides a patent owner with two options not previously available: (1) a patent owner may choose to receive preliminary guidance from the PTAB on its MTA, and/or (2) a patent owner may choose to file a revised MTA after receiving the petitioner's opposition to the original MTA and/or after receiving the PTAB's preliminary guidance (if requested). If a patent owner does not elect either the option to receive preliminary guidance or

the option to file a revised MTA, AIA trial practice, including MTA practice, is essentially unchanged from the practice prior to the MTA Pilot Program. More information on the [MTA Pilot Program](#) itself is available at the Federal Register website.

b. Fast-Track Appeals Pilot Program extension

The PTAB extended its Fast-Track Appeals Pilot Program until July 2, 2022. Information on the [extension](#) is available at the Federal Register website. This program initially became effective on July 2, 2020, and allows appellants to advance their *ex parte* appeals out of turn for a petition fee of \$420. For fast-track status, *ex parte* appeals must have had a PTAB docketing notice issued and appellant must file a petition under 37 C.F.R. § 41.3 with the petition fee. The PTAB has set a target of issuing a merits decision within six months of granting a petition. Through August 2021, however, the average decision time has been about two months, with 185 fast-track appeals decided. More information on the [Fast-Track Appeals Pilot Program](#) itself is available at the USPTO website.

c. Fast-Track Pilot Program for Appeals Related to COVID-19

Effective April 15, 2021, appellants with COVID-related appeals are able to request fast-track status with no petition fee. Under this program, applications must claim a product or process subject to an applicable FDA approval for COVID-19 use. Eligible *ex parte* appeals must have had a PTAB docketing notice issued and appellant must file a petition under 37 C.F.R. § 41.3 certifying the application involved in the *ex parte* appeal claims a product or process that is subject to an applicable FDA approval for COVID-19 use. PTAB is targeting a merits decision within six months from the date a petition is granted. More information on the [Fast-Track Pilot Program for Appeals Related to COVID-19 Pilot Program](#) is available at the USPTO website.

d. Legal Experience and Advancement Program

The PTAB continued to operate the Legal Experience and Advancement Program (LEAP), which launched in May 2020. LEAP aims to foster the development of the next generation of patent practitioners by providing opportunities to argue before the Board for patent agents and attorneys who are new to practice. Patent agents and attorneys must have had three or fewer substantive oral arguments in any federal tribunal, including the PTAB, and seven or fewer years of experience as a licensed agent or attorney. LEAP practitioners are typically granted up to 15 minutes of additional argument time in PTAB oral hearings, and they may seek assistance from more experienced counsel during an argument. Through August 2021, there have been 66 requests from 43 different firms for LEAP practitioners to argue before the Board.

The PTAB also provided webinar training and oral argument practicums to help prepare LEAP practitioners for actual hearings before the PTAB. Most recently, in September 2021, PTAB held a webinar on preparing for an AIA argument and hosted an AIA trial mock argument in which practitioners presented arguments before a panel of APJs, who then provided detailed feedback. More information on the [Leap Program](#) is available at the USPTO website.

## **C. OPERATIONAL EFFORTS**

### **1. IT Improvements and Upgrades**

The PTAB has made meaningful improvements to its IT operations and processes in conformance with the USPTO's "Agile" New Ways of Working and has significantly increased end user involvement in IT planning and development. The PTAB continued its conversion efforts from multiple, non-integrated IT systems to a single, integrated IT system, known as Patent Trial and Appeal Case Tracking System (P-TACTS, formerly PTAB Center). P-TACTS will provide all members of the PTAB with a single, unified interface for managing cases and decisions across all the PTAB's jurisdictions. It also will provide external customers an improved simple, single user interface to make filings in all types of proceedings and to minimize administrative filing errors. Further, P-TACTS will improve data analytics and provide management with a comprehensive and more reliable data source for enhanced management of PTAB operations, workload, and work assignments, as well as more comprehensive reporting of information to PTAB internal and external stakeholders. The PTAB further developed support in P-TACTS for the automated collection of both *ex parte* appeal and AIA proceeding outcome decision information from the decision documents themselves to improve the ability to respond to requests for information. The PTAB continues to receive feedback about P-TACTS and will adjust and evolve based on agency and customer needs.

### **2. Hearings Operations**

Due to the ongoing effects of the COVID-19 pandemic, the PTAB continued its remote hearing process where all participants, both internal and external to the USPTO, appeared via telephone for *ex parte* appeal and reexamination hearings, and via video or telephone for AIA trials. The PTAB also continued to provide audio access to the public/media to hearings that did not discuss confidential information. Based on stakeholder feedback, the PTAB recently implemented a video appearance option for *ex parte* appeal and reexamination hearings and began to phase out audio access to the public/media in favor of video access. Since the implementation of all-remote PTAB hearings on March 16, 2020, through August 31, 2021, the PTAB has successfully conducted 1,011 all-remote *ex parte* appeal hearings, 654 all-remote AIA trial hearings, and processed over 420 requests for public/media access to hearings, granting over 95% of them.

### **3. The PTAB Website**

The PTAB continues to make improvements to the accessibility of relevant information on its website. Recently, the PTAB reformatted and updated the "New to PTAB" portion of its website to make introductory information on AIA proceedings and *ex parte* appeals easily available for those new to practice before the PTAB. The PTAB is in the process of reviewing all of its web content to consolidate and streamline Board information and present it in an intuitively organized fashion. The PTAB seeks to provide stakeholders with quick and easy access to Board decisions, latest developments on practice before the PTAB, and upcoming PTAB events.

### **4. External and Internal Training**

In FY 2021, the PTAB continued its Boardside Chat series with monthly webinars covering

developments in AIA proceedings and *ex parte* appeals practices. In August, the Board and the American Intellectual Property Law Association (AIPLA) coordinated a virtual Bench and Bar program that covered a wide array of topics, including various AIA trial considerations, developments in *ex parte* appeals, oral argument practice tips, *Arthrex* and the new interim Director review process, LEAP, expanding American innovation, and diversity in the IP community.

The PTAB also expanded its stakeholder outreach efforts with a particular focus on the independent inventor community, as well as practitioners new to PTAB practice. In particular, the Board launched an Inventor Hour webinar series in August 2021, with a new webinar set to be livestreamed every month. Each Inventor Hour webinar will cover a variety of topics, such as PTAB basics, *ex parte* appeals and AIA proceedings, oral hearing protocols, judge and staff biographies, PTAB statistics, PTAB history, and case studies. The PTAB also created an *ex parte* appeal template intended to help *pro se* appellants as well as less experienced practitioners to draft appeal briefs. The *ex parte* appeal template was introduced in a Boardside Chat in May 2021 and is featured in the “[New to PTAB](#)” webpage on the USPTO website.

The PTAB conducted many internal continuing education programs for Board members focusing on diversity, collaboration, and wellness. In FY 2021, the PTAB coordinated training on communications in a diverse workplace and delivered several engaging presentations on diversity. The PTAB also launched a series of presentations focusing on “A Day in the Life” of individuals in different roles at the Board. And the PTAB also held numerous events focusing on professional and personal interests, as well as health. As a result of these internal training efforts, the Board has increased the engagement of its members and become a more collaborative and resilient organization, even during mandatory full-time remote work due to the COVID-19 pandemic.

## **D. EX PARTE APPEALS**

### **1. Statistics**

The PTAB continued to work through its oldest *ex parte* appeals to achieve an average appeal pendency of 13.1 months for the time period of May 2021 to July 2021, as compared to 13.5 months over the same period in FY 2020. Pendency is calculated as average months from the PTAB receipt date to final decision. The appeals statistics can be found on the [PTAB statistics](#) webpage on the USPTO website.

### **2. Ongoing Activities**

In order to meet *ex parte* appeal pendency goals, the PTAB continued a number of initiatives, including the Quarterly Appeals Closeout program, technology rebalancing, and just-in-time docketing.

#### **a. Quarterly Appeals Closeout program**

The PTAB implemented the Quarterly Appeals Closeout program in FY 2018 to help maintain or reduce maximum pendency. Each quarter, a maximum pendency target is set, and judges work to decide all *ex parte* appeals older than the target. At the end of the second quarter of FY 2018,

the maximum pendency was approximately 27 months. Maximum pendency is calculated by counting the number of months the oldest undecided appeal has been on the PTAB’s docket. The PTAB has steadily reduced the maximum pendency over time. Indeed, by the end of the third quarter in FY 2021, the maximum pendency was approximately 21 months, which is a 22% decrease since the end of the second quarter of FY 2018.

#### b. Technology rebalancing

Technology rebalancing, evaluated quarterly, works to balance average pendency by technology. Judges self-identify into technology clusters and are assigned *ex parte* appeals from those identified technology areas, as needed, for balancing pendency. In the second quarter of FY 2020, the average age of appeals from the date they were received at the PTAB until final decision was 10.0 months for biotech, 13.0 months for chemical, 18.1 months for electrical, 10.2 months for mechanical, and 9.1 months for business methods. Thus, for the third quarter of FY 2021, judge resources were shifted from deciding biotech and business method appeals, where pendency was the lowest, to deciding electrical appeals, where pendency was the highest.

#### c. Just-in-time docketing

Just-in-time docketing works to help balance appeal pendency by optimizing the number of *ex parte* appeal cases on the docket of a judge at a given time. Docketing in this way reduces the possibility that *ex parte* appeals will accumulate on a judge’s docket if a judge becomes unavailable unexpectedly. The PTAB maintained the number of appeal cases for judges automatically paneled on *ex parte* appeals at 12 per judge, and maintained the maximum number of appeals for judges not automatically paneled on appeals (i.e., judges who also handle AIA proceedings) at six per judge.

### 3. Outreach

The PTAB implemented several outreach efforts specific to *ex parte* appeals. In one effort, the PTAB identified ways for appellants to shorten the time from a final rejection to a merits decision from the Board in an appeal. Specifically, in a Boardside Chat on February 18, 2021, the PTAB introduced the “one-year *ex parte* appeal,” which is a roadmap for decreasing the time to a PTAB decision on appeal, including exercising diligence in filing briefs and taking advantage of the PTAB’s Fast-Track Appeals Pilot Program. In another effort, the PTAB compared options available to an appellant after a final rejection. Specifically, in a Boardside Chat on July 15, 2021, the PTAB provided information to help applicants decide whether to file a Request for Continued Examination (RCE) or an appeal to the PTAB. More information can be found at the [PTAB Boardside Chats](#) webpage on the USPTO website.

### E. AIA PROCEEDINGS

In FY 2019 and FY 2020, the PTAB conducted studies to present outcomes of concluded AIA cases in those fiscal years “by petition,” “by patent,” and “by claim.” In FY 2021, the PTAB began reporting those outcomes on a quarterly basis.

Broadly speaking, looking at concluded cases through the first three quarters of FY 2021, roughly one-third of all petitions have received a final written decision from the PTAB, roughly one-third of all petitions have resulted in a settlement between the parties before receiving a final written decision from the PTAB, and roughly one-third of all petitions have not been instituted by the PTAB. The roughly one-third that reached a final written can be broken out as follows when considering all possible outcomes: the PTAB found all instituted claims patentable in 5% of cases; mixed results (some instituted claims patentable and some instituted claims unpatentable) in 5% of cases; and all instituted claims unpatentable in 16% of cases. The outcomes were similar for “by patent” and “by claim.” The AIA trial statistics can be found on the [PTAB statistics](#) webpage on the USPTO website.

### **III. INFORMATION TECHNOLOGY AND ARTIFICIAL INTELLIGENCE**

The USPTO's robust IT systems have not only provided a stable and resilient environment for its examiners and stakeholders, but they have also supplied necessary resources for the application of AI technologies to improve patent quality and efficiency. The interdependence of IT and AI has amplified the need for closer coordination between the two groups; therefore, the PPAC combined the IT and AI subcommittees into a single subcommittee in FY 2021, with intra-agency personnel working together to share information and identify further opportunities to collaborate. As a result of this close partnership, the Office was able to make significant progress with respect to its IT and AI goals, while remaining closely connected to other government agencies focused on AI.

#### **A. INFORMATION TECHNOLOGY**

A scalable, secure, and resilient IT infrastructure is a critical component of the U.S. patent system. Not only is it needed to store and protect the valuable and confidential information of millions of our nation's innovators, it is also essential to the provision of a robust platform for examiners and applicants to process millions of patent applications. The importance of the USPTO's IT systems has never been clearer than during the COVID-19 pandemic, with over 13,000 teleworking employees unable to work from the office. While many companies and organizations have lost productivity during the pandemic, the USPTO has instead realized increased productivity, in large part due to the work of the Office of the Chief Information Officer (OCIO), which supports the stable and seamless operation of the USPTO's IT systems. The OCIO has partnered with the Office of Patent Information Management (OPIM) on several high priority initiatives, including the transition to filing patent applications in .docx format and the use of AI in the Patent organization's search and classification. The OCIO also partnered with the PTAB to build the data infrastructure to track information from PTAB decisions and share prior art between the PTAB and patent examiners. This effort will further enhance the quality of patent examination and the reviews and proceedings before the PTAB.

The OCIO, OPIM, and PTAB, as an IT group, have continued to make progress on its FY 2021 priorities, including cybersecurity, resilience, movement to the cloud, and .docx.

##### **1. Cybersecurity**

Cybersecurity plays a key role in ensuring that the USPTO's IT systems are protecting the confidentiality, integrity, and availability of information processed, stored, and transmitted by those systems, and also protecting the privacy of individuals. The USPTO has made IT vulnerability, identification, and remediation a top priority in the face of significant ongoing and emerging threats and attacks. The Office is actively working to fund and implement numerous protective measures, including a zero-trust security architecture, an identity and access management system, and an insider threat protection program.

The USPTO works every day to prevent a cybersecurity breach and minimize the impact of any potential breach. To that end, the OCIO, in partnership with the USPTO product lines (e.g., Patents, Trademarks, Enterprise Business, and Enterprise Infrastructure tools), must:

- *Defend 24x7* – Defend against threats to its systems and data 24 hours per day, seven days per week, and 365 days per year. Each product team has a significant responsibility to ensure that its products are secure, compliant, and built on an infrastructure with up-to-date cybersecurity patches. The scale of this defense against a growing number of threats is impressive. For example, in a one-week period during June of this year, the USPTO defended against 1.1 million denial of service attempts, over 300,000 scans and access probes, and over 500 attempts to deploy malicious software to its infrastructure and systems.
- *Execute Plans of Action and Milestones (POAMs)* – Address outstanding POAMs to remediate cybersecurity vulnerabilities to ensure that products stay operational and deliver mission-critical services. In FY 2020 alone, the USPTO eliminated nearly 1,000 critical vulnerabilities, a 45% reduction. Efforts to further reduce vulnerabilities in FY 2021 have accelerated to keep pace with the ongoing and emerging threats from cybercriminals and nation-state actors. During FY 2021, the USPTO reduced its open POAMs by 60% across all products.
- *Treat Security as Code* – Implement cybersecurity designs and components throughout the product lifecycle, starting at the early stages.
- *Secure the Cloud* – Integrate cloud security capabilities to ensure secure access, monitoring, and configuration of cloud systems.

## 2. Resilience

With very few exceptions, IT products now in production (referred to as “hot”) rely on failover capabilities (referred to as “cold”), which means that for many applications, it would take multiple days or even weeks to recover from a disaster scenario. The USPTO must move from “hot-cold” to “hot-warm” and “hot-hot” operations, translating into products that are designed to be resilient and allow for minimal downtime. Product and support teams are engaged to validate and improve the resilient migration strategy. Accordingly, the OCIO has prioritized the following:

- *Optimize for Redundancy* – Eliminate legacy hardware and software used for older applications prior to relocation.
- *Reduce our Data Center Footprint* – Consolidate the current multiple test environments and move from the Alexandria “lab” data center to the Cloud, as appropriate.
- *Scale to Meet Demand* – Increase network throughput and continue the migration from physical to virtual servers for all applications.
- *Adhere to a “Cloud First” Strategy* – Develop new production applications in the commercial Cloud and migrate existing applications to the Cloud, as practical.

Efforts to improve the resilience of the USPTO’s IT systems have made significant progress in FY 2021:

- In partnership with the Department of Commerce and the National Oceanic and Atmospheric Administration, the USPTO transitioned from a commercial internet

service provider to a national fiber optic network, which is expected to save the Office approximately \$2.8 million per year. In addition, this service will improve the Office's network bandwidth and establish private connectivity to Cloud providers and to any current and future USPTO data centers.

- The USPTO took possession of the new Manassas Co-Location Data Center from Iron Mountain to the USPTO in May 2021 and connected to NOAA's nation-wide enterprise network (N-WAVE) and the leading Cloud providers. The USPTO completed the decommissioning of the Boyers, Pennsylvania, data center and transitioned all operations to the Manassas facility in August 2021. This move will provide the space, power, and resilience in the USPTO's network infrastructure to ensure that all of its systems and databases are redundant and moving closer to the "hot-hot" status.

In FY 2021, efforts have been underway to stabilize and remediate security vulnerabilities with the present systems, followed by efforts to make improvements. Hardware upgrades are part and parcel of numerous software and operational improvements. The USPTO has made great strides in stabilizing and modernizing IT systems to improve system performance. The IT group realized the USPTO had system vulnerability from having mainframe technology that was 20 years old, and it has successfully migrated away from this technology. The PPAC commends the USPTO's IT group for sustaining its strong performance despite the pandemic, and positioning the USPTO well for future expansion and client service.

### **3. Moving to the Cloud**

The OCIO strives to make Cloud computing a resilient and cost-effective hosting option for all four IT product lines and to assist its stakeholders in adopting Cloud computing. This means that the OCIO must:

- *Improve Performance* – Enhance flexibility to increase/decrease USPTO hardware resources as its needs change over time. Promote innovations by utilizing Cloud computing offerings such as AI, desktop as a service, continuous integration and continuous delivery (CICD), observations across platforms, and infrastructure automation; improving system uptime through Cloud design for more resilience and scalability; enabling disaster recovery for high-value asset systems; and adopting software as a service (SaaS) when appropriate. During FY 2021, several initiatives have been completed in support of improved performance, including:
  - Deployed Patent Search AI on the Google Cloud Platform. Its AI features enable more effective patent examination search.
  - Deployed Inventor AI on the Amazon Web Services (AWS) Cloud. This allows external stakeholders to search inventor information.
  - Deployed Trademark Image Search AI on the AWS Cloud. This allows Trademark Public Advisory Committee members to comment on and improve the USPTO's AI capabilities.
  - Deployed the MyUSPTO.gov disaster recovery module on the AWS Cloud. This allows automatic failover to the Cloud in the event of an onsite application outage.

- *Reduce Costs* – Adopt Cloud services with a “Cloud-smart” approach to both new and existing products and product components when cost-feasible, and reduce the footprint of the Alexandria, Virginia, and Manassas, Virginia data centers. During FY 2021, several initiatives have been completed to reduce costs, including:
  - Deployed the USPTO’s modern fee payment system, Fee Processing Next Generation (FPNG), external website (www.uspto.gov), and MyUSPTO.gov disaster recovery module to AWS to eliminate the need to physically move IT assets from Boyers to Manassas and to remove additional servers from the Alexandria data center. FPNG is a Payment Card Industry Data Security Standard-compliant fee processing system with additional security and performance requirements.
  - On-boarded 12 new product teams in AWS, using a new Cloud intake process, for future development. This prevents additional servers, databases, and other IT components from being hosted in USPTO data centers, further reducing the USPTO’s data center footprint, support, and power utilization.
  - Leveraged “Cloud smart” automation and compliance to continue driving down Cloud operational costs. In the first half of FY 2021, the USPTO maintained its Cloud hosting costs despite a doubling of Cloud teams, assets, and users.
- *Deliver Applications Faster to Internal and External Customers* – Mature processes according to Agile Development principles (see the [AGILE manifesto](#)) and respond to business demands in order to reduce the time to market for new products; react more quickly to scalability requirements; and train and transform the USPTO’s IT workforce to be future-ready with Cloud skillsets. During FY 2021, several initiatives have been completed to support faster delivery, including:
  - Cloud and product teams were able to move the USPTO’s external website (www.uspto.gov) to AWS in less than a month in August 2021. This is the fastest delivery of a large-size IT system in USPTO and federal government space.
  - The USPTO’s financial system FPNG was modernized and re-hosted in AWS in 2021 after only nine months. The team made incremental progress each month, adding features while turning on Cloud modules.
  - The Patent Examination Data System (PEDS) was improved in AWS in 2021 after a full year of modernization, and the team quickly added features, including access to image file wrapper capability in PEDS.

#### 4. DOCX

The effort to encourage transition to uniform .docx filing format by applicants and practitioners has continued during FY 2021. Adoption of .docx format will improve quality and efficiency in the examination and publication processes. To encourage the filing of more applications in .docx format, the USPTO implemented a new fee for non-provisional utility applications submitted in a format other than .docx format, which will become effective on January 1, 2022.

Filing in the .docx format provides many benefits in the application process, including:

1. Increased efficiencies – eliminates the need to convert structured text into a PDF for filing.
2. Higher data quality – reduces conversion errors that can occur when converting to a PDF file.
3. Smarter interface – detects common errors, such as formatting errors, and provides instant feedback to prevent unnecessary delays in processing an application.
4. Privacy measures – provides automatic metadata detection (e.g., track changes and comments) and removal features to support the submission of only substantive information in the .docx file.
5. Improved application quality – provides content-based validations pre-submission, identifying issues up front and allowing for them to be addressed before examination begins.
6. Ease of use – provides automated document indexing.
7. Compatibility – eliminates the non-embedded font error (the most common obstacle in uploading a PDF file) by uploading the file with supported fonts.

While the USPTO already accepts .docx filings in EFS-Web and Patent Center, there has been substantial resistance by the user community to this change in formats for Office submissions. The USPTO recognized this and delayed implementation of a fee surcharge for filings not in the .docx format until January 1, 2022. To improve .docx adoption, the USPTO is continuing to regularly offer free training to the public. Through the end of September 2021, almost 13,000 participants had attended sessions that provided explanations of the benefits and ease of filing patent applications in the .docx format, live demonstrations of .docx format filing, and opportunities to ask questions. Based on feedback from the user community, the USPTO adopted the submitted .docx files as the authoritative document, otherwise referred to as the source or evidentiary copy. A [Federal Register Notice](#) announcing this change was issued on June 2, 2021. This simplifies the filing process, allowing the user to only review the .docx files before submission rather than reviewing the USPTO-generated PDF version. The USPTO continues to focus on engagement with the user community on the .docx transition to better serve America's innovation community.

## **B. ARTIFICIAL INTELLIGENCE**

AI is a transformative technology that holds promise for tremendous societal and economic benefit. AI research and implementation can advance national priorities in intellectual property (IP) by contributing to strong, predictable, and consistent IP rights. The USPTO is developing and implementing IT systems and cutting-edge AI to improve operations supporting patent classification and patent search pursuant to the objectives set forth in the USPTO's 2018-2022 Strategic Plan.

### **1. Auto-classification**

The Cooperative Patent Classification (CPC) system is administered jointly by the USPTO and the European Patent Office to classify the content of patent applications. Patent classifications via the CPC system are used by the USPTO to support a variety of business processes, including

patent search and the assignment of applications to examiners. The USPTO commits significant resources to the acquisition and use of CPC data for patent documents, as obtaining complete, correct, and consistent classification data is essential for efficiency. The USPTO has been maturing an auto-classification tool with the objective of generating relevant CPC data necessary for the classification of documents to meet agency needs. The auto-classification tool has two primary capabilities: full classification (hereinafter “full-CPC”) and claim indicators (hereinafter “C-stars”). The full-CPC capability automatically suggests CPC allocations that should be assigned to a patent application, generating a classification picture. The C-star capability identifies which allocations within the classification picture are associated with claim scope.

Building on the successes achieved during FY 2020, the USPTO implemented the C-star capability on a portion of newly filed patent applications in December 2020 to capture reductions in procurement expenditures for acquiring this CPC data. Since implementation, the USPTO has continued to monitor the quality of the C-stars generated by the auto-classification tool to determine readiness for potentially expanding usage to a higher volume of patent applications. For the full-CPC capability, the USPTO has been taking steps to refine the symbols suggested by the auto-classification tool for a variety of use cases that rely on patent classifications in advance of larger-scale piloting that will assess the readiness of the full-CPC capability for implementation.

## **2. AI for Patent Search**

Performing a comprehensive prior art search is a critical component of the patent examination process to ensure that the USPTO issues quality patents that can stand up to scrutiny when challenged. In conjunction with the examination tools used for patent search, the USPTO is developing and deploying AI, with the objective of assisting the examiners’ task of retrieving all potentially relevant prior art references for review at the earliest stage of prosecution. The Patents AI prototype for Patents End-To-End (PE2E) Search was developed to assess various AI-based search functionalities, including retrieving documents, recommending CPC search fields, and sorting search results. To support the rapid development and assessment of AI-based search functionalities, the prototype was created as a lightweight extension that directly interacts with the main PE2E Search platform and accesses AI models via a Cloud solution.

Approximately 600 examiners were provided access to the prototype, and based on the promising results from examiner feedback collected during FY 2020, the USPTO took steps in FY 2021 to expand the release of AI-based search functionalities to the full examination corps. The first AI-based search functionality identified for this full release is a “More Like This Document” feature that uses AI to retrieve similar documents based on examiner selection. This feature works with both U.S. and foreign patent documents to enhance the examiners’ ability to access the prior art. Additionally, the USPTO continued refining the prototype, based on examiner feedback, and collecting data to determine additional AI-based search functionalities that demonstrate value for future release to the full examining corps.

### C. DEVELOPING AI POLICIES AT THE USPTO

In March 2021, the National Security Commission on Artificial Intelligence (NSCAI)<sup>8</sup> submitted its [Final Report](#) of recommendations to Congress. Chapter 12 of the Final Report specifically addressed IP and its relationship to AI, calling for the development and implementation of a national IP policy “to incentivize, expand and protect AI and emerging technologies.”<sup>9</sup> The [“Blueprint for Action”](#) associated with this chapter includes several recommendations for the Secretary of Commerce and Director of the USPTO, including the following:

- Proposing executive and legislative actions for reforming and establishing new IP policies.
- Establishing, as necessary, a committee of multidisciplinary experts, from within and outside the U.S. government, to provide technical and IP-related expertise and advice.
- Convening public deliberations, to include, at a minimum, academia and industry.
- Assessing the metrics and data necessary to inform IP policy.

The NSCAI report also requests that the Director of the USPTO (in coordination with the Secretary of Commerce) assess and examine 10 IP considerations to develop and propose reforms and new IP policies, including those related to:

1. Patent eligibility
2. Countering China’s narrative on winning the innovation competition based on filings
3. The impact of China’s patent application filings on the USPTO and U.S. inventors
4. Impediments to AI public-private partnerships and international collaboration
5. IP protection for data
6. Combatting IP theft
7. Inventorship by AI
8. Global IP alignment
9. Democratizing innovation and IP ecosystems
10. The standard essential patents process

While the NSCAI report focused on these 10 IP considerations, the USPTO has been investigating the policy implications of AI, including many of the IP considerations and recommendations identified by the NSCAI report, for several years. Specifically, the USPTO has been actively engaging with its stakeholders in promoting the understanding of IP rights in relation to rapidly advancing AI technology.

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<sup>8</sup> Established by the John S. McCain National Defense Authorization Act for FY 2019 (Pub. L. 115-232), the NSCAI is an independent commission tasked with making recommendations to the President and Congress to advance the development of AI and associated technologies to comprehensively address the national security and defense needs of the United States.

<sup>9</sup> NSCAI Final Report, p. 207 (Mar. 2021).

As noted in the PPAC 2020 Annual Report, the USPTO held an [AI IP policy conference](#) in January 2019, issued two [Requests for Comments](#) on patent and other IP policy considerations in August and October 2019, and published a report titled [“Public Views on Artificial Intelligence and Intellectual Property Policy”](#) in October 2020. In 2021, the USPTO continued engaging with the academic and policy communities, co-organizing the inaugural [AI & Patents Workshop](#) at the 18<sup>th</sup> International Conference on Artificial Intelligence and Law.

Additionally, the USPTO published a report titled [“Inventing AI: Tracing the diffusion of artificial intelligence with U.S. patents”](#) in October 2020. This report found that AI is increasingly important for invention, diffusing broadly across technologies, inventor-patentees, organizations, and geography. The report also found that the number of AI patent applications received annually by the USPTO more than doubled from 2002 to 2018. In July 2021, the USPTO’s Office of the Chief Economist (OCE) published the [AI patent dataset](#) used to generate the report, thereby enabling researchers, policymakers, and the public to explore the impacts of AI on invention. This effort is another strong example of intra-agency collaboration between the OCE, OCIO, and Policy groups to deliver valuable results. The first data file identifies U.S. patents issued between 1976 and 2020 and pre-grant publications published through 2020 that contain one or more of several AI technologies. The OCE generated this data file using a machine learning (ML) approach that analyzed patent text and citations to identify AI in U.S. patent documents. The second data file contains the patent documents used to train the ML models, providing researchers with full transparency on how the models were built.

In addition to these major contributions, the USPTO has also been engaged in several international fora on AI and IP issues. Specifically, the USPTO is participating in the New Emerging Technologies and AI (NET/AI) task force of the IP5 (the world’s five largest patent offices). The interdisciplinary IP5 NET/AI task force, which comprises representatives from the IP5 Offices and the World Intellectual Property Organization (WIPO), is exploring the legal, technical, and policy aspects of new emerging technologies and AI, as well as their impact on the patent system and on operations at the five offices. In June 2021, the heads of the five offices endorsed an [IP5 NET/AI roadmap](#). This roadmap is intended to serve as a template for the IP5 Offices’ joint endeavors to harness NET/AI capabilities in support of their patent grant processes, provide transparency in their patent practices, and increase the predictability of patent prosecution for their users.

Domestically, the USPTO is coordinating with other federal agencies on efforts related to the U.S. government’s approach to AI. For example, the USPTO is participating on the National Science and Technology Council (NSTC), Machine Learning and AI Subcommittee (MLAI), as well as in the Networking and Information Technology Research and Development (NITRD) Program, AI Research and Development Interagency Working Group. Additionally, the USPTO and the U.S. Copyright Office are hosting a conference on copyright law and machine learning for AI on October 26, 2021, to explore machine learning in practice and how existing copyright laws apply to the training of AI.

Many of these engagements support and align with the National AI Initiative Act of 2020, which became law on January 1, 2021. The purpose of the initiative is to ensure continued United States leadership in AI research and development, lead the world in the development and use of trustworthy AI systems in the public and private sectors, prepare the present and future U.S.

workforce for the integration of AI systems across all sectors of the economy and society, and coordinate ongoing AI research, development, and demonstrations among the civilian agencies, the Department of Defense and the Intelligence Community to ensure that each informs the work of the others.<sup>10</sup> Moving forward, the USPTO will continue to ensure that appropriate, reliable IP incentives are in place to encourage further innovation in AI.

## **RECOMMENDATIONS**

The PPAC commends the IT and AI groups for sustaining their high level of productivity during the COVID-19 pandemic. The USPTO's ability to make significant progress on its deployment of AI tools for auto-classification and patent search, all while stabilizing and securing the entire system, is a testament to its thoughtful strategy and planning. The USPTO's rapid pace of execution has been well served by the OCIO's implementation of Agile Development in its process for setting, tracking, and completing its goals. As the Office continues to face an increasing number of cyberattacks, the OCIO should maintain its focus on the robust security and resilience of the USPTO's IT systems. This will not only protect the valuable data of millions of patent applicants, but it will also support an efficient and comprehensive examination process by leveraging AI to auto-classify patents and find relevant prior art, both of which will improve overall patent quality. The OCE, OCIO, and Policy teams should continue to partner closely together to share information and best practices so the USPTO can continue to deliver the highest-quality patents.

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<sup>10</sup> Citation to SEC 5101 of the National AI Initiative Act of 2020. See [CRPT-116hrpt617.pdf \(congress.gov\)](#).

## **IV. INNOVATION EXPANSION**

America's long-standing economic prosperity and global leadership in innovation depend on leveling the playing field for all Americans, inclusive of every demographic to innovate, seek patent protection for their inventions, and reap the rewards from innovation through entrepreneurship and commercialization. This includes women, minorities, and veterans, as well as other underrepresented groups. In FY 2020, the USPTO took a momentous step toward bridging this gap when it established what is now known as the Council for Inclusive Innovation (CI<sup>2</sup>). Chaired by Secretary of Commerce Gina Raimondo, the CI<sup>2</sup> brings together a cross-section of the U.S. innovation ecosystem, including leaders and high-level officials from industry, private and public corporations, small business, academia, nonprofit organizations, venture capitalists, and the U.S. government, as well as independent inventors, to develop a national strategy on innovation and intellectual property.

The objectives for the CI<sup>2</sup> include developing (i) a national strategy to foster innovation, competitiveness, and economic growth by promoting and increasing the participation of underrepresented groups as inventor-patentees, entrepreneurs, and innovation thought-leaders, and (ii) a long-term comprehensive plan of action for continuing to build the U.S. innovation ecosystem in areas that are key to the next technological revolution. The USPTO, with assistance from the CI<sup>2</sup> members and other stakeholders from the innovation community is developing a national strategy for expanding American innovation.

Throughout FY 2021, The USPTO continued to promote this initiative through its expansive public outreach programming, with greater attendance enabled by remote-access tools. The Office of the Chief Communications Officer (OCCO) is responsible for a significant portion of the agency's outreach efforts through its Office of Innovation Outreach, Office of Education, and National Outreach Partnerships division. Described below are just a few examples of USPTO's new and enhanced programming and storytelling initiatives dedicated to expanding the innovation ecosystem to include more individuals from underrepresented groups.

In addition, inclusiveness in innovation and innovation expansion initiatives found additional support this year with two Executive Orders issued by President Joseph R. Biden Jr. directed at racial and gender equity.

While there is still much work to be done to close the gap, as highlighted below, the USPTO made great strides in FY 2021 toward this goal.

### **A. COUNCIL FOR INCLUSIVE INNOVATION (CI<sup>2</sup>)**

To maintain the United States' global economic competitiveness, individuals from all backgrounds and areas of the country must be encouraged and supported to participate in the innovation ecosystem, particularly in obtaining intellectual property rights. The number of patents with at least one-woman inventor increased from 20.7% in 2016 to 21.9% by the end of 2019. For other underrepresented groups the percent is unclear since the USPTO does not collect demographic data on who applies for patents. Studies show that increased minority participation in the patent-development process would increase U.S. GDP by 2.7% per capita, and by roughly \$1 trillion annually. However, research reveals patterns of disparity in

innovation participation rates for women, people of color, veterans, economically disadvantaged people, and geographically underrepresented people. This gap negatively affects the development of local communities as well as the social and economic well-being of the country at large. To increase participation in innovation by individuals from traditionally underrepresented groups, all inventors and prospective inventors, regardless of their demographic, geographic, or economic backgrounds, must have access to information, resources, supportive communities, and opportunities.

The CI<sup>2</sup> consists of a diversity of leaders from the innovation ecosystem, coming from industry, academia, government, and nonprofit organizations. CI<sup>2</sup> representatives assisted the USPTO develop a national strategy to expand innovation demographically, geographically, and economically.

The National Strategy for Expanding American Innovation (the “National Strategy”) is organized by a broad conceptual framework that considers the entire pathway along which interest and expertise in innovation is cultivated in an individual. One element of this framework is focused on “Creating Innovators,” which addresses expanding access to foundational exposure and educational opportunities for students and individuals of all ages and backgrounds. Another element focuses on “Practicing Innovation,” which addresses the empowerment of all innovative individuals by providing adequate resources and supportive work environments to turn their ideas into protectable inventions. A third element focuses on “Realizing Innovation,” which addresses the assurance that all innovators can successfully commercialize their products and services. A fourth element focuses on “Measuring and Monitoring,” which empowers organizations to measure their own progress in fostering equal access to innovation along each stage of the pipeline. Paramount in these efforts are introspective identification of objectives and benchmarks, analysis of gaps, effective data collection, and establishing methods for incorporating feedback and change. The strategy will also present a self-assessment rubric for evaluating success in fostering diversity in innovation at the organizational level.

On December 23, 2020, the USPTO issued a request for comments from the public for consideration by the USPTO in drafting the National Strategy. The questions were grouped according to the categories within the broad conceptual framework outlined above for the national strategy. The request for comments included general questions about how inventor and entrepreneurs can be better supported in their communities, as well as specific questions related to creating innovators, practicing innovation, and realizing value from innovation. In all, the USPTO received 126 comments to the 17 questions from different organizations and individuals.

## **B. KEY EXECUTIVE ORDERS AND PENDING LEGISLATION**

During FY 2021, the goals of the CI<sup>2</sup> and other innovation expansion initiatives were further supported through executive orders and pending legislation, including the following:

- On January 20, 2021, President Biden issued [Executive Order 13985](#), Advancing Racial Equity and Support for Underserved Communities through the Federal Government. The EO directs: “The Federal Government should pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality”. The two primary requirements for agencies: (1) conduct equity assessments of their

programs and services and (2) develop a plan for addressing barriers to full participation of underserved communities. In March of 2021, the White House provided guidance to agencies on equity assessments. The White House guidance also directed the establishment of Agency Equity Teams to facilitate, inform, and advance agency progress on equity assessments, action planning, and other agency actions directed by Executive Order 13985. In April 2021, the USPTO established Business Unit Equity Assessment Teams to begin assessments across the USPTO business units.

- On March 8, 2021, President Biden issued [Executive Order 14020](#), Establishment of the White House Gender Policy Council. Under this Executive Order, the White House Gender Policy Council is charged with coordinating Federal Government efforts to advance gender equity and equality, including policies and programs to, among other things, support gender equity and combat gender stereotypes in education, including promoting participation in science, technology, engineering, and math fields.
- As described below in Section VI (Legislative), pending legislation [S. 632/H.R. 1723](#), The Inventor Diversity for Economic Advancement (IDEA) Act of 2021, is intended to amend Title 35 to require the voluntary collection of demographic information from patent applicants by the USPTO and require a report on said demographic information. The collection of this information would allow the USPTO to develop a broader understanding of the gap in participation in the patent application process at the USPTO between underrepresented groups and others.
- In addition, as also described in Section VI (Legislative), pending legislation [S. 1260](#), United States Innovation and Competition Act of 2021 is intended to establish several federal programs in manufacturing, telecommunications and research aimed at increasing competitiveness with China. Such programs include establishing a Directorate for Technology and Innovation within the National Science Foundation, establishing regional technology hubs, expanding support for STEM initiatives in higher education, and funding semiconductor research and development.

### **C. RESOURCES AVAILABLE ON THE EXPANDING INNOVATION HUB**

The USPTO continues to recognize the importance of public engagement in expanding the innovation ecosystem. The Expanding Innovation Hub (Hub) launched by the USPTO in March of 2020 is an online platform available on the USPTO website that provides resources for inventors and practitioners to encourage greater participation in the patent system. The Hub is intended to broaden the innovation ecosphere, to inspire novel inventions, to accelerate growth, and to drive America's global competitive edge. For example, the Hub provides information ranging from educational programs and mentorship groups to the USPTO's Pro Bono Program, Law School Clinic Program, and Pro Se Assistance Program. The USPTO's demystifying the Patent System Toolkit, designed to help innovators understand the process of obtaining a patent is available on the Hub. Additional resources on the Hub include the Mentoring Toolkit, intended to assist organizations in establishing an infrastructure to connect experienced innovators with the next generation in their organization; and Community Group Resources, designed to help organizations establish an infrastructure to connect groups of employees with shared characteristics, interests, and goals. The Hub is especially intended to inspire more women, minorities, veterans, and geographically and socioeconomically diverse applicants to join the innovation economy.

#### **D. EXPANDED OUTREACH TO UNDERREPRESENTED INNOVATORS WITH NEW PROGRAMMING**

In FY 2021, the USPTO continued its commitment to connect with underserved and underrepresented innovators by adapting virtual event strategies and creating and delivering four new annual programs: 1) [Hispanic Innovation and Entrepreneurship Program](#), 2) [Veterans Innovation and Entrepreneurship Program](#), 3) [Proud Innovation for LGBTQ+ innovators](#), and 4) a [program celebrating Asian American, Native Hawaiian, and Pacific Islander \(AANHPI\) innovators](#). The programs engage, inspire, and empower communities of underrepresented innovators by highlighting inventor and small business success stories within their communities. The programs also provide a venue for subject matter experts to share information about (and instruction on how to access) relevant and useful resources available from the USPTO, other federal agencies, and external organizations. Over 2,000 people attended the four programs, and every program received favorable survey responses indicating the attendees would recommend the program to someone else and that the program content was either good or excellent. The USPTO also successfully pivoted from an in-person program to virtual programming for its annual Black Innovation and Entrepreneurship event. This shift resulted in an exceptional increase in attendance (202 in FY 2020, 1,080 in FY 2021) and the demonstrated ability to engage new, broader audiences well outside of our usual geographic reach. In addition to exceeding attendance goals for the live virtual events, having the recorded programs posted to USPTO's [YouTube channel](#) allows those that could not participate in the live event to view the program at their convenience.

Building upon the best practices learned from changing the program model of the Black Innovation and Entrepreneurship program, the USPTO developed a framework to shift its FY 2021 Women's Entrepreneurship Symposium (WES) ([www.uspto.gov/WES](http://www.uspto.gov/WES)) from a hybrid (in-person and virtual) full-day program to a series of five installments of online programming occurring every Wednesday during the month of March. The five-part series provided rich discussions focused on important topics such as the importance of intellectual property (IP) protection, expanding opportunities for women in innovation, increasing educational opportunities for girls and women in invention and STEM, and the vital role women entrepreneurs play in innovation and economic growth. The series reached over 7,000 attendees, far exceeding attendance goals and reaching over 6,500 more attendees than the FY 2020 WES. Attendee survey responses averaged for the event series, gave the programming a 74% excellent rating and 24% as good rating. Eighty-five percent of respondents indicated they would recommend the programming to someone else.

#### **E. ENHANCED SUPPORT FOR NATIONAL INVENTORS HALL OF FAME VIRTUAL PROGRAMMING & SCHOLARSHIPS**

In partnership with the USPTO, the [National Inventors Hall of Fame](#) (NIHF) provides STEM and IP education programs to preK- 12 grade students nationwide. NIHF's largest program is [Camp Invention](#), a week-long hands-on summer camp for elementary school students held in all 50 states, Washington DC, and Puerto Rico. Camp Invention curriculum focuses on problem-solving, creativity, teamwork, and entrepreneurship intertwined with the stories of the world-changing NIHF Inductees. As the COVID-19 pandemic shut down schools around the country in spring 2020, NIHF had mere weeks to pivot their in-person summer program to a virtual one.

By the summer, they had successfully launched [Camp Invention Connect](#) and [Innovation Exploration Kits](#), virtual programs that can be done on- or off-line where materials are provided directly to each student. With support from the USPTO, NIHF programs reached over 100,000 students in 1,700 schools in 2020, with 21,000 children receiving scholarship support for underserved students. Building on the success of these programs for 2021, through a combination of in-person, virtual, and hybrid programs, NIHF has already reached more than 200,000 students this year, almost back to pre-pandemic levels, with a record 141,000 underserved students receiving scholarships to attend. With USPTO backing, NIHF will be examining how these virtual programs can be expanded even further to reach additional underserved and underrepresented students nationwide into the future.



*2021 Camp Invention photo courtesy of the National Inventors Hall of Fame*

## F. JOURNEYS OF INNOVATION SERIES

Through engaging interviews, in-depth research, and stunning visuals, the United States Patent and Trademark Office's (USPTO) monthly online Journeys of Innovation series tells the stories of inventors and entrepreneurs who have made a positive difference in the world. The pieces promote innovation, increase awareness of intellectual property (IP), and encourage IP protection. They also reveal the diversity that exists in the world of innovation in terms of age, gender, race, ethnicity, and areas of expertise. Recent pieces, for example, focused on [Johnny Pacheco](#), the founder of Fania Records, and [Audrey Sherman](#), a leading inventor of adhesives at 3M. The stories support the USPTO's goals of educating the public about IP and expanding the community of inventors and entrepreneurs. They hold a vital place in the agency's external communications initiatives and are front-and-center on the [USPTO home page](#). USPTO's Office of the Chief Communications Officer continued to publish these important stories throughout the pandemic, setting an example of powerful, inspiring storytelling and outreach for other government agencies and IP organizations.



## Driving innovation

Audrey Sherman was initially drawn to science by the appeal of "cooking polymers all day and driving a sports car," but it was her personal drive and persistent inquisitiveness that paved her way to becoming 3M's top female patent holder. Perhaps best known for inventing the adhesives on smartphone screen protectors and Command hooks designed for humid or soapy environments, Sherman is quick to credit the invaluable role collaboration has played in her success.

AN INTERVIEW WITH

**Audrey Sherman**



Each month, our [Journeys of Innovation](#) series tells the stories of inventors or entrepreneurs who have made a positive difference in the world. Hear it in their own words or read the transcript below.

**AUDREY SHERMAN:** And I was like, "You guys, this is incredible. You have put my polymer now, that I cooked, on a sports car, on a Lamborghini in this mirror finish." And it just, I mean, that thing looked fabulous.

**MARIE LADINO:** Inventor Audrey Sherman used to dream of being a scientist who created polymers and drove a sports car. Her "full circle patent," as she calls it, is for the adhesive that gave a Lamborghini a mirror-like finish without causing corrosion. The patent is one of 150 Sherman now holds for inventions including the adhesives on smartphone screen protectors and on Command hooks designed for warm, wet environments. It's also an example of the crucial role teamwork has played in her success.

I'm Marie Ladino from the United States Patent and Trademark Office. I recently spoke to Sherman about her achievements at 3M, her advice for other innovators, and the benefits of collaboration and diversity to innovation. Here's a bit of our conversation.

**Be brave, because you don't have to know the answer.  
You're going to find the answer.**

AUDREY SHERMAN

*Example of a Journeys of Innovation story on 3M's Audrey Sherman on the USPTO website*

## G. ADDITIONAL PUBLIC OUTREACH AND PROGRAMS

In FY 2021, the USPTO also supported dozens of STEM-related programs that provide education about IP to young women and men. In addition to those described in Subsection E above, these programs included such as the Collegiate Inventors Competition, which takes place each year at the USPTO; the National Summer Teacher Institute, which brings invention and IP into the nation's classrooms; and the Girl Scout IP patch, which is available to Girl Scout troops across the nation.

Throughout FY 2021, the USPTO hosted or participated in many other events related to its innovation expansion initiative, nearly all of which are held virtually. For example:

- In January 2021, the USPTO held events titled Innovators and Entrepreneurs: Learn about IP Basics and Helpful Resources, Intellectual Property 101, Intellectual Property Workshop for K12 Educators, and Avoiding Common IP Pitfalls for Small Business Owners, each of which was periodically repeated throughout the Fiscal Year.
- In February 2021, the USPTO held two virtual celebrations of Black History Month. One of the celebrations highlighted three contemporary Black women inventors.
- In March 2021, USPTO held a virtual event on Differing Abilities in STEM directed at how to make STEM education more accessible for all learners, as well as a Women Veterans Small Business Summit.
- In April 2021, the USPTO held a CI<sup>2</sup> Innovation Chat on creating innovators.
- In May 2021, the USPTO held an event titled Meet Top Asian American and Native Hawaiian/Pacific Islander Inventors celebrating AANHPI innovators.
- In June 2021, as noted above, the USPTO held an event titled Proud Innovation, Learn from LGBTQ+ Innovators that included a discussion on creating change, building legacies, securing funding, and networking.
- In July 2021, the USPTO held Spanish language events in Intellectual Property 101 and Basic Fundamentals of Patents.
- In August 2021, the USPTO held its annual Invention-Con conference for independent inventors, entrepreneurs, and small business owners whose success depends on guarding their creative work.

Finally, as mentioned below in Section V (Outreach), the USPTO Regional Offices located in Dallas, Denver, Detroit, and San Jose, also play an important role in these and other outreach efforts, allowing innovators outside the Washington, D.C. metropolitan area, particularly individual inventors and small businesses, significantly greater access to USPTO resources.

## V. OUTREACH

### A. REGIONAL OFFICES

The USPTO Regional Offices (“ROs”) find their statutory authority in the Leahy-Smith American Invents Act (“AIA”), with a two-fold mission: (1) recruit, hire, and retain top talent for the USPTO, and (2) serve IP stakeholders across the nation. The USPTO ROs—located in Detroit, MI; Dallas, TX; Denver, CO; and San José, CA—bring world-class IP services and quality training to innovators and entrepreneurs of all sizes across their respective regions. Following the success for the ROs, in 2019, the Eastern Regional Outreach Office (“EROO”) was created to serve stakeholders along the East Coast.

A significant amount of the overall IP education and training conducted by the USPTO is now provided by the ROs and the EROO. Figure 1 represents the overall distribution of ROs and EROO IP education and training events shown on the USPTO Training and Outreach Distribution Dashboard (“TODD”) as of September 30, 2021. The TODD is the primary tool used by the USPTO to track and report on the distribution of training and outreach. The over 500 trainings conducted by the ROs and EROO have resulted in the agency reaching over 40,000 stakeholders spread geographically across the United States. Figure 2 is a geographic heat map showing the reach of ROs and EROO trainings in FY 2021.

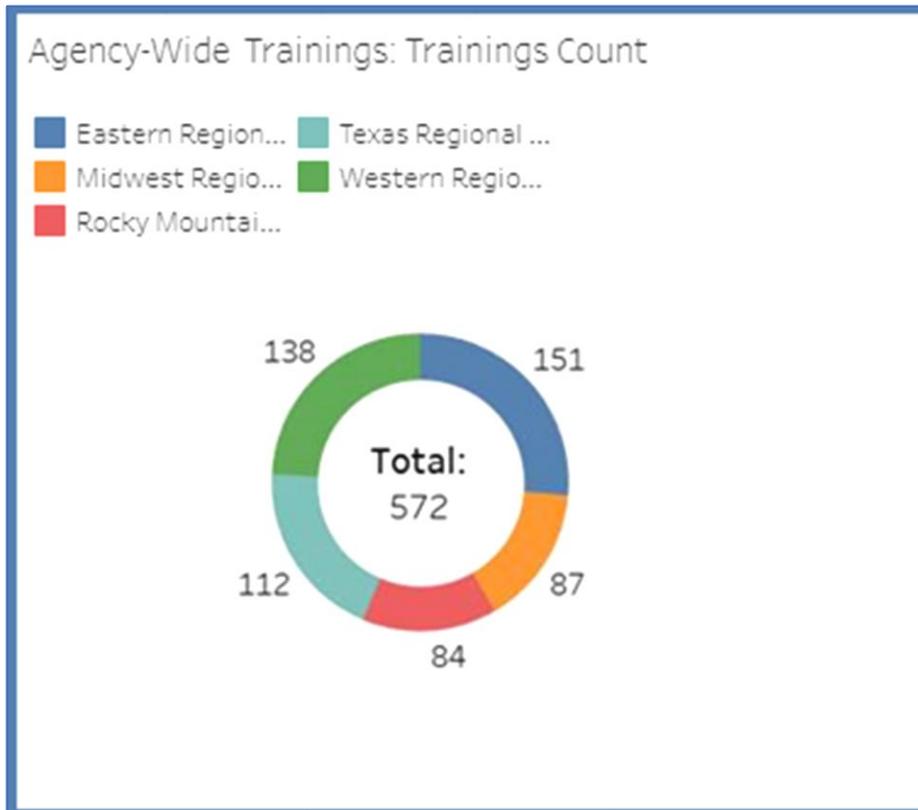


Fig. 1: Distribution of ROs and EROO IP Trainings in FY 2021



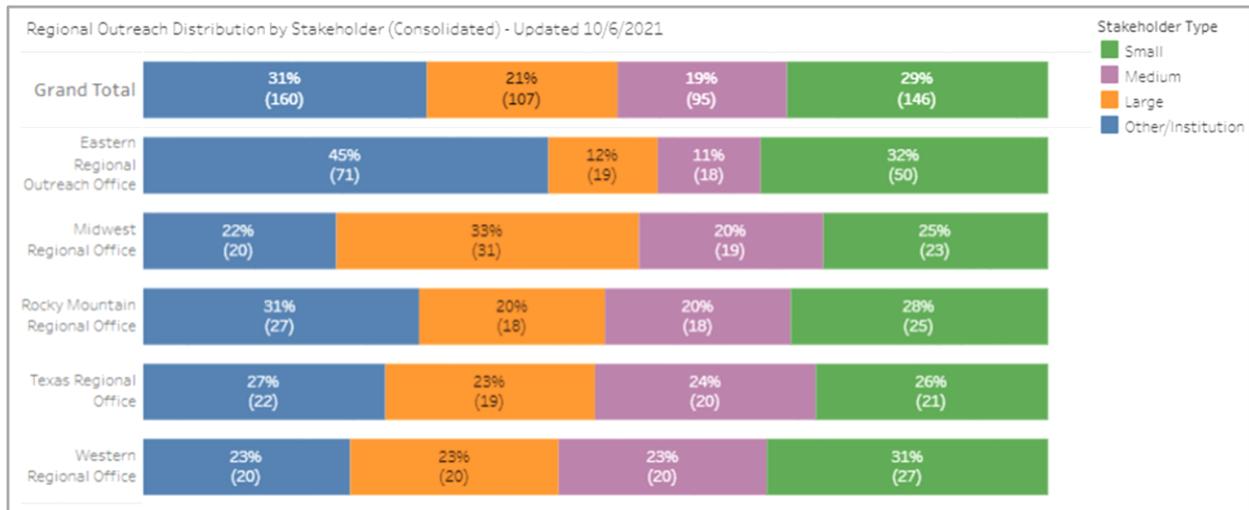


Fig. 3: Distribution of ROs and EROO stakeholder meetings by company size in FY 2021

The PPAC commends the ROs and the EROO for the progress they have made towards their congressional mandated mission and expect that the breadth of their outreach will continue to expand in the coming years.

## B. INTERNATIONAL

Goal III of the USPTO Strategic Plan is to “Provide Domestic and Global Leadership to Improve Intellectual Property Policy.” According to the DOC Strategic Plan, “[u]nder this strategic goal, the USPTO advocates U.S. government IP policy domestically and internationally and partners with international counterparts in pursuit of strong IP policies, enforcement, and protection worldwide.” The Strategic Plan recognizes that “[t]o keep competitive in an increasingly globalized economy, large and small American businesses need as much certainty as possible in the creation, enforcement, and protection of their IP, both domestically and abroad.” Over the past year, the PPAC has worked collaboratively with the USPTO to support its efforts to improve the global intellectual property system.

As was recommended by the PPAC in the 2020 Annual Report and discussed below, the USPTO continued its collaborative work with other intellectual property (IP) offices to achieve improvements for both applicants and participating offices through various work-sharing programs. The PPAC further notes the importance of USPTO’s role in shaping international intellectual property in collaboration with the Department of State, the United States Trade Representative, and the Intellectual Property Enforcement Coordinator. Similarly, the PPAC acknowledges the USPTO’s multilateral engagement in international organizations, such as the World Intellectual Property Organization (WIPO) and Asia-Pacific Economic Cooperation (APEC), and USPTO’s continued international intellectual property (IP) expertise in shaping the global international intellectual property system.

### 1. IP and Trade

Intellectual property is an important component of the global trade system and developments in intellectual property related trade issues, particularly patent and patent-related developments,

have a direct impact on U.S. business, innovators, and inventors. The PPAC remains interested in patent related developments in trade that may affect patent protection and enforcement.

a. Analysis of Trends from the Special 301 Report

The “Special 301” Report, prepared annually by the Office of the United States Trade Representative (USTR), reflects the outcome of a congressionally mandated annual review of the global state of IP rights protection and enforcement. The [2021 Special Report](#) was released on April 30, 2021. The USPTO’s summary of key trends across the globe and in key trading partner jurisdictions continues to be informative for US industries as they pursue patent protection for their innovations across the globe.

b. TRIPS Waiver

In October 2020, at the World Trade Organization’s (WTO) Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS) Council, India and South Africa proposed that the WTO temporarily waive the application of certain IP rights provisions of the TRIPS Agreement for the duration of the COVID-19 pandemic for the purposes of facilitating wider access to vaccines and medicines (the “Waiver”). In the months following, there have been numerous discussions taking place at the WTO, as well as in other private and public forum in relation to the proposal and its potential impact on patents and patent protection.

At the meeting of the WTO’s General Council in July 2021, it was noted that disagreement persists on the question of whether the Waiver is the most appropriate and effective way to address availability of vaccines and other COVID related products. The PPAC continues to appreciate receiving the USPTO’s updates in relation to this important topic.

## 2. IP5 and ID5

One mechanism through which the USPTO engages with counterpart offices is via the IP5 and the Industrial Design forum (ID5). While each voluntary multilateral framework has its own characteristics and direction, both provide an important vehicle to engage with the four other largest IP offices in the context of patents and industrial designs (design patents).

a. IP5

On June 23, 2021, the heads of the world's five largest intellectual property offices, the European Patent Office (EPO), Japan Patent Office (JPO), Korean Intellectual Property Office (KIPO), the China National Intellectual Property Administration (CNIPA), and the United States Patent and Trademark Office (USPTO) (the “IP5”), met virtually for their 14th annual meeting.

At the meeting, the heads agreed on a roadmap for cooperating in the fields of new emerging technologies (NET) and artificial intelligence (AI), and launched new projects aimed at harmonizing patent prosecution procedures and practices. In addition, they exchanged views on various areas of future IP5 cooperation, with an eye on the post COVID-19 era and the role of IP rights in solving social issues.

The NET and AI roadmap outlines potential collaborative opportunities for the IP5 to enhance operational efficiency and services, taking into consideration new challenges concerning the acquisition of rights to these technologies. Additionally, two new IP5 projects were launched to further improve the alignment of patent practices and procedures among the offices with the aim of making patent prosecution more user-friendly: (1) a global assignment to harmonize streamlined procedures for the transfer of rights; and (2) the harmonization of drawings to standardize requirements regarding size, color/monochrome, and other features. With a global assignment, the IP5 aims to reduce user's burden in recording assignments at individual IP offices that have different formats and requirements. Likewise, harmonizing the permitted features in submitted drawings should reduce the burdens on users that arise from variations in formal requirements for drawings among different IP offices.

A separate meeting took place between the heads of office and industry associations from the IP5 regions, namely: the American Intellectual Property Law Association (AIPLA), Business Europe (BE), the Intellectual Property Owners Association (IPO), the Japan Intellectual Property Association (JIPA), the Korea Intellectual Property Association (KINPA), and the Patent Protection Association of China (here referred to as "China PPAC"). In this meeting, participants discussed cooperation between the IP5 offices and users in the post-COVID-19 era, concerns about inconsistent signature requirements among IP5 offices, and IP5 endeavors concerning NET/AI and the harmonization of patent practices and procedures.

The next IP5 Heads of Office meeting will be hosted by the EPO in June 2022.

#### b. ID5

Recognizing the important economic benefit of strong industrial design protection, the ID5 was initiated in 2015 bringing together the five largest industrial design Offices in the world (CNIPA, European Union Intellectual Property Office (EUIPO), JPO, KIPO and USPTO) (the "Partners"), which represent approximately 90% of the world's annual industrial design application filings. Along with WIPO participating as an observer, ID5 serves as an incubator for industrial design policy development and identification of best practices and procedures.

As the ID5 continues to mature, it also continues to dive more deeply into policy and examination practices with a goal of creating more consistent and compatible protection mechanisms for industrial designs. The Partners continue to explore and expand on best practices, policies and practices related to emerging technologies, access and reliability of prior art, and communication amongst the Partners and stakeholders. One example of this type of initiative was the launch of a USPTO-led study at the 2020 Annual Meeting on the term of protection for industrial designs and their associated fees. This study is intended to identify where and how legal frameworks and office practices meet user needs to protect industrial design and to identify where legal frameworks and office practices could potentially be enhanced.

Additionally, in 2020 the Partners came together and pledged, via a joint statement addressing the pandemic, that both individual and collaborative efforts would be undertaken to support the needs of design owners, including efforts such as extending deadlines, broadening e-communications, reinforcing teleworking environments to ensure business continuity, conducting training events virtually, and prioritizing the examination of applications for products and services relevant to addressing the pandemic. Finally, the Partners agreed to enhance communications with users through use of the website and participation in virtual ID5 meetings when in person meetings are unavailable.

### **3. WIPO Update**

WIPO is a self-funding agency of the United Nations with 193 member states with the objectives of among other things, promoting the protection of intellectual property throughout the world through cooperation among States and, where appropriate, in collaboration with any other international organization. WIPO is a consensus-based organization and conducts business at the direction of the Member States. The USPTO in coordination with the U.S. Department of State provides leadership at WIPO on patent and patent-related matters.

Over the last year, because of the COVID-19 pandemic, WIPO took specific actions to mitigate effects on applicants and rights holders by relaxing certain time requirements and providing more flexibilities where possible. Additionally, work progressed in relation to the continued modernization and enhancement of international systems administered by WIPO, including the Hague System for the International Registration of Industrial Designs and the Patent Cooperation Treaty (PCT). Substantive discussions regarding a variety of patent-related topics continued at WIPO, including at the Standing Committee on the Law of Patents (SCP) and the Standing Committee on the Law of Trademarks, Industrial Designs and Geographical Indications (SCT).

### **4. Work-sharing**

The USPTO is exploring new models of patent work-sharing that build on the global success of the Patent Prosecution Highway (PPH). Two forward-looking models are Patent Validation and the Parallel Patent Grant (PPG). These new models allow partner offices to greater leverage USPTO work product, while at the same time increasing the value and profile of U.S. patents.

#### **a. New Approaches – Mexico/Cambodia**

On October 21, 2020, the USPTO and Cambodia’s Ministry of Industry, Science, Technology, and Innovation (MISTI) signed a work-sharing arrangement to accelerate the grant of a Cambodian patent based on the issuance of a corresponding U.S. patent. The Accelerated Grant of Patent Applications arrangement will allow U.S. patent holders who have filed an application for a corresponding patent at MISTI to request that MISTI’s Department of Industrial Property (DIP) grant the applied-for patent without conducting a substantive examination, instead relying on the examination carried out by the USPTO. The program is scheduled to remain in effect until October 21, 2025.

On December 7, 2020, the USPTO and the Mexican Institute of Industrial Property (IMPI) announced the launch of the first PPG arrangement. PPG is a novel patent work-sharing model, which expedites the grant of a Mexican patent application based on an issued U.S. counterpart patent. Under the current pilot phase of the program, IMPI directly notifies qualifying Mexican patent applicants about the possibility of taking advantage of PPG. USPTO and IMPI staff monitor the progress of the arrangement and intend to undertake strategic training to acquaint IMPI patent examiners with USPTP work product and IT resources. The offices hope to improve on the current pilot phase in the near future.

The USPTO is actively evaluating which foreign patent offices could be future candidates to participate in various forms of work-sharing, primarily the PPH and the PPG/Validation

models. The USPTO and the Regional Attachés are reaching out to potential partner offices to evaluate their level of interest in these work-sharing models.

#### b. PPH Update

The USPTO continues to expand PPH, which has proven to increase efficiencies and decrease costs for applicants filing in multiple offices. The USPTO currently has PPH agreements with 36 other worldwide IP Offices. As of September 2021, the total number of applications with PPH petitions reached approximately 68,000.

PPH has been in effect for more than a decade and has been a proven successful work-sharing program. The benefits for stakeholders includes a higher first action and overall allowance rate for PPH applications compared with standard applications. In addition, the number of examiner actions per disposal have been consistently lower for PPH applications.

As a global leader in work-sharing, the USPTO is committed to ensuring stakeholders are aware of the value and benefits in work-sharing, as well as the various programs that utilize work-sharing. During FY 2021, the USPTO implemented a new work-sharing vision – *one search, one allowance, multiple patents* – and has adopted a more strategic, deliberate, and proactive strategy for leveraging the full power of work sharing with support from IP offices and users globally.

### 5. International Engagement

#### a. Developments Relating to China

In January 2021, the USPTO published a report, [“Trademarks and Patents in China: the impact of non-market factors on filing trends and IP systems.”](#) The report looks at factors that have influenced the high rate of Chinese patent and trademark filings, which are the highest in the world. In 2019, relevant authorities in China received 7.8 million trademark applications and 1.5 million utility patent applications, accounting for nearly half of global totals. Beyond the usual market factors that drive such applications, the report finds that a number of non-market factors influence Chinese filings, such as subsidies and government mandates.

The report examines the role of these non-market factors and shows how they have contributed significantly to application trends, affected the USPTO, stretched the capacity of China’s patent examination systems and cluttered China’s registries, which complicates clearance searches and narrows the scope of available protection.

In 2021, China’s National Intellectual Property Administration (CNIPA) instituted a number of measures for improving patent quality and eliminating patent subsidies. On March 12, 2021, CNIPA released “Measures Regarding the Regulation of Patent Applications” in an effort to transition from quantity to quality in patent applications. According to these measures, CNIPA is to reject “abnormal” or “irregular” patent applications as defined in the measures. In January 2021, CNIPA announced in the “Notice of the CNIPA on Further Strictly Regulating Patent Application Behavior” that it will end all patent subsidies by 2025.

China remains a market of interest and PPAC appreciates USPTO's updates and engagement in relation to patent developments in China.

#### b. CPC Revision Work with EPO

The Cooperative Patent Classification (CPC) is a joint endeavor of the EPO and the USPTO to harmonize their classification systems (European Classification (ECLA) and United States Patent Classification (USPC), respectively) into a single system. The CPC has a similar structure to the International Patent Classification (IPC), a specialized agency of the United Nations, and which is the only patent classification system used by all patent offices. The jointly developed classification system is more detailed than the IPC, and therefore should serve to improve patent searching.

#### c. USPTO Response to Certified Copy and Legalization Delays Caused by COVID

Because of the COVID-19 pandemic, the USPTO experienced some longer than normal processing times for providing certain certified documents required for pursuing patent protection in foreign patent offices. The USPTO has focused resources to address these delays and processing times are returning to normal.

Additionally, in some jurisdictions, pursuing patent protection requires providing a legalized version of a document from the United States Department of State. The processing of these documents has also undergone delays because of the pandemic. Despite the State department working diligently to address these delays, they still persist.

At the urging of the PPAC, the USPTO has been working to identify ways to mitigate the effects of these delays. For example, the OPIA, along with its Attachés in country, are in contact with officials where these issues have been identified and have attempted to facilitate processing. The PPAC appreciates USPTO's efforts to assist applicants and rights holders in mitigating effects of the COVID-19 pandemic specifically including reduction in delay times for certified copies and legalized documents.

#### d. The Elevation of Three Attaché Positions to Diplomatic Status

In December of 2020, IP Attaché positions at the U.S. Embassies in New Delhi, Mexico City, and Beijing, and the U.S. Mission to the European Union in Brussels were elevated to the diplomatic rank of "Counselor". The elevation provided these officers with greater access to senior government officials and to the Ambassadors at their respective embassies, enabling them to accomplish U.S. objectives more effectively. Additionally, as counselors, these officers will gain access to more senior officials of foreign governments, which is vital to their efforts on behalf of U.S. rights holders.

As an example of how their elevated diplomatic rank has helped, the IP counselor in India worked to expedite regulatory approval of COVID-19 vaccines in India for restricted use, when these vaccines were already approved by the U.S. FDA and a select few other countries. As

another example, the elevation in rank has empowered the IP Counselor in Mexico City to place IP issues on the agenda for meetings between COFEPRIS, the Mexican equivalent of the FDA, and the Embassy. This in turn has led to enhanced cooperation between the USPTO and COFEPRIS, beginning with cooperation on a counterfeit medicines program. The IP Attachés elevation in rank to “Counselor” has also signaled to governments in Central America that the United States places a high priority on intellectual property issues. This elevation is something that the PPAC has encouraged for several years and is pleased to see that it is already benefiting the work of the USPTO.

e. Transition to Large Virtual Meetings in the International Space

The COVID-19 pandemic has continued to force the international patent community to rethink the format of its meetings, which previously had predominantly been in-person. The international patent community continued to improve on the transition to virtual meetings this past year. Given varying time differences between participants globally, live virtual meetings are typically broken into smaller segments as compared to traditional in-person meetings, and can span several days. To ensure the live virtual meetings are most effective, significant work is done via written procedure and shared through e-mail or electronic databases. It is expected that meetings will continue to either be entirely virtual or have a virtual component for the foreseeable future.

While there are some advantages to virtual meetings, such as offices are often able to have broader access to experts and there is cost savings associated with avoiding travel, there are some components that have not been able to be replicated successfully. In particular, the relationship building for furthering and strengthening cooperation, and the discussions or negotiations that often occur on the margins of meetings.

The PPAC commends the USPTO for continuing to explore with its international partners, the best ways to host virtual meetings and to identify ways to leverage virtual meetings more effectively in the future.

## **VI. LEGISLATIVE**

Congress continues to be active on patent issues during the first session of the 117th Congress. Recent congressional action includes efforts to increase transparency of patent ownership and promote diversity in the patent system. Congress has also been actively focused on patent quality issues, post-issuance patent review proceedings, drug pricing issues as well as seeking to maintain U.S. competitiveness in the global market.

### **A. CONGRESSIONAL HEARINGS**

In April 2021, the Senate Judiciary Subcommittee on Intellectual Property held a hearing that focused on identifying and removing barriers that women and underrepresented minorities face in being able to patent and successfully commercialize inventions. The hearing witnesses testified that the USPTO has a number of existing programs and resources – including its regional offices – which are effective in bridging these gaps and barriers, but that these programs could be expanded or better marketed to reach their intended audiences. The witnesses also discussed how the USPTO could increase the delivery of its educational outreach services at the grassroots level by partnering with existing, trusted community organizations.

In June 2021, the Senate Judiciary Subcommittee on Intellectual Property held a hearing on improving patent quality. Hearing witnesses discussed the problems that low quality patents can create for small businesses and entrepreneurs, particularly from patent assertion entities. The work that USPTO has done and continues to do to improve patent quality was acknowledged by the Senators during the hearing. There was also universal agreement that the USPTO should have access to all of its fees and that doing so would help in improving patent quality.

In May and July 2021, the House Oversight and Reform Committee and the Senate Judiciary Subcommittee on Policy, Antitrust and Consumer Protection held hearings on drug pricing, respectively. While the testimony at both hearings focused on different ways in which Congress could address the problem of high drug prices, the discussion of patents and the USPTO in particular was raised in both hearings. The hearing testimony addressed proposed changes to the USPTO's fee structure, raising the bar on what is patent eligible, increased examination time, and increasing access to PTAB.

### **B. PENDING LEGISLATION**

The following is a non-exclusive summary of the patent law-related legislation introduced during the 117th Congress:

S. 632/H.R. 1723. The Inventor Diversity for Economic Advancement (IDEA) Act of 2021. These bills would amend Title 35 to require the voluntary collection of demographic information from patent applicants by the USPTO and require a report on said demographic information.

H.R. 3664. The Save Money on Auto Repair Transportation (SMART) Act. The bill would amend Title 35 to exclude auto parts from design patent infringement if those auto parts are used to repair the appearance of an automobile to its original manufactured appearance.

S. 1435/H.R. 2873. Affordable Prescriptions for Patients Act of 2021/ Affordable Prescriptions

for Patients Through Improvements to Patent Litigation Act. These bills would amend the Federal Trade Commission (FTC) Act to create a prima facie case of unfair competition in violation of the Act upon a showing by the FTC that the drug manufacturer engaged in either a hard or soft switch from a listed or reference product to a follow-on product. The bill codifies the definitions of product hopping and patent thicketing and allows the FTC to challenge hard switches, where a new product introduction is followed by the discontinuation of an older version, as well as soft switches, where the old version of the product remains on the market.

S. 1428/H.R. 2891. Preserve Access to Affordable Generics and Biosimilars Act. These bills cover pay-for-delay deals affecting biosimilar and interchangeable biologics in addition to generic drugs. The bill would amend the FTC Act to create a presumption that a patent settlement has “anticompetitive effects and shall violate” the FTC Act if the alleged infringer receives “anything of value, including an exclusive license,” in exchange for limiting or foregoing R&D, manufacturing, marketing or sales of the infringing product for any period of time.

S. 1260. United States Innovation and Competition Act of 2021. The bill authorizes and establishes several federal programs in manufacturing, telecommunications and research aimed at increasing competitiveness with China. Such programs include establishing a Directorate for Technology and Innovation within the National Science Foundation, establishing regional technology hubs, expanding support for STEM initiatives in higher education, and funding semiconductor research and development.

S. 2773. Unleashing American Innovators Act of 2021. The bill directs the USPTO to establish additional USPTO satellite office and community outreach centers; to study and expand the patent pro bono program; to establish a pre-prosecution patentability assessment program; and to lower fees for small and micro entities.

S. 2774. Pride in Patent Ownership Act. The bill requires patent applicants and patent owners to disclose any government funding of a patent application fee or maintenance fee and requires patent owners to record the assignment of certain interests in patents with the USPTO.

S. 2891. Restoring the America Invents Act. The bill makes a number of changes to the Patent Trial and Appeal Board (PTAB), including, among other changes, providing for Director reconsideration of PTAB decisions; adding additional grounds for IPR; limiting the Director’s discretion in instituting PTAB proceedings; providing for additional factors for district court stays; and prohibiting ex parte communication between management and PTAB panel members.

The PPAC actively reviews and advises the USPTO on proposed legislative and administrative changes, including those aimed at patent quality issues, as well as other adjustments to the patent laws. The PPAC will continue to monitor and consult with the USPTO on any such changes.

### **C. OTHER ISSUES**

At the request of certain Congressional offices, the USPTO initiated the following activities.

## **1. State Sovereign Immunity Report**

In April 2020, USPTO received a request from Senators Tillis and Leahy requesting that the agency study “the extent to which patent or trademark owners are experiencing infringements by state entities without adequate remedies under state law” and to “consider the extent to which such infringements appear to be based on intentional or reckless conduct.” As part of the study, the agency has collected information from the public through a Federal Register Notice and targeted outreach to relevant groups and stakeholders. The study was sent to Congress on August 31, 2021.

## **2. Patent Bar Eligibility Changes**

In December 2020, Senators Hirono, Tillis, and Coons requested responses to a number of questions about the diversity of registered patent practitioners and individuals who are eligible to take the USPTO’s patent bar exam. In addition, the letter encouraged the USPTO to reevaluate its eligibility criteria for sitting for the patent bar exam as a way to increase diversity in the field of registered patent practitioners. In March 2021, the USPTO published a Request for Comments to receive public feedback on proposed updates to the scientific and technical qualifications of applicants for registration to practice in patent matters before the USPTO. The comment period closed May 2021 and the updated eligibility criteria were issued on September 22, 2021. The USPTO will continue to seek opportunities to provide greater access to the patent practitioner field for underrepresented groups.

## **3. Patent Subject Matter Eligibility Study**

In March 2021, Senators Tillis, Hirono, Cotton, and Coons requested the USPTO to undertake a study on the current state of patent eligibility jurisprudence in the United States, and how the current jurisprudence has impacted investment and innovation, particularly in critical technologies like quantum computing, artificial intelligence, precision medicine, diagnostic methods, and pharmaceutical treatments. On July 8, 2021, the USPTO published a notice in the Federal Register seeking comments from the public regarding the impact of patent eligibility jurisprudence since the Supreme Court’s decisions in *Mayo* and *Alice* and subsequent Federal Circuit decisions applying the Supreme Court’s legal framework. The comment period was extended and the new deadline for comments is October 15, 2021.

## **4. Sequenced Examination Pilot Program**

In March 2021, Senators Tillis and Cotton sent a letter regarding the establishment of a pilot program on sequenced patent examination and eligibility determinations made pursuant to 35 U.S.C. Section 101. In response to this request, USPTO has started to review the feasibility of conducting a pilot program on sequenced examination.

## **5. Patent Small Claims Tribunal**

In July 2021, Senators Leahy, Tillis, Cotton, Hirono, Coons and Cornyn sent a letter requesting the USPTO to engage and fund a study on the feasibility of establishing a small claims court for patent cases. The USPTO is reviewing the request set forth in the letter. The Senators requested

that the review be completed and reported to the Senate Judiciary Committee by December 31, 2022.

## **6. PPAC/TPAC Letter to Congress on Fiscal Year 2022 Budget Request**

In July 2021, PPAC and TPAC members sent a joint [letter](#) to the leaders of the House and Senate Commerce, Justice, Science Appropriations Subcommittee to express their concern regarding the USPTO's Fiscal Year 2022 Budget Request, and sought Congress to appropriate to the USPTO the agency's estimated fee collection level of \$4.058 billion rather than the \$3.994 billion level requested in the President's Budget. As mentioned above, On October 18, 2021, the Senate Appropriation Committee released the FY 2022 appropriations bill setting the appropriations level at \$4.058 billion.

### **RECOMMENDATIONS**

The PPAC recommends that the USPTO continue to engage decision makers and other stakeholders to help ensure that any proposed legislative or administrative changes are appropriately crafted and narrowly targeted without adversely affecting the overall U.S. patent system. To that end, the USPTO should continue to have fulsome discussions with the PPAC and stakeholders and then consider the effect of such changes in terms of balance and fairness to all stakeholders, the efficient operation of the examination process, the quality of patents issued, and the overall costs and burdens to patent owners and other participants in the patent system. The PPAC also recommends that the USPTO stay abreast of potential suggested legislative changes regarding Title 35, the conduct of PTAB post-grant review proceedings, and legislation related to addressing drug pricing to the extent it affects the patent system. The PPAC recommends that the USPTO continue to monitor – if not directly participate or contribute to -- Congressional discussions and hearings around patent quality and share USPTO's artificial intelligence initiatives on prior art when engaging with Congress on this issue.

## **VII. FINANCE**

User fees are the sole source of funding for the USPTO. That is, none of the money spent by the USPTO on its operations comes from taxes or government borrowing; the USPTO is funded solely by fees paid by users rather than by the taxpayer. By statute, the fees collected by the USPTO cannot be spent on other purposes. However, the USPTO can only spend its collected funds in accordance with an appropriation from Congress. History has proven that the appropriation process may be interrupted or otherwise not take place in a timely or predictable manner, placing the orderly operations of the USPTO at risk. Because patent rights are time based, any risk that USPTO operations may be interrupted or delayed is particularly poignant.

If the USPTO collects more money than it is authorized to spend, the surplus is deposited in the Patent and Trademark Fee Reserve Fund (PTFRF). Appropriation bills typically provide for a reprogramming process that allows the USPTO to access the PTFRF after submitting a reprogramming notification to the House and Senate Appropriations committees. The PPAC recommends that the USPTO be removed from the appropriation process so that it can be insulated from any future interruption in the appropriation process. Doing so will reduce the risk to USPTO operations by allowing the USPTO unfettered access to its user fees that by statute cannot be used for any other purpose.

The USPTO reserves a portion of its collections to fund an operating reserve. The operating reserve allows the USPTO to continue operation if there is a lapse in congressional appropriation authority. The operating reserve also helps insulate the USPTO from variability in user fee collections that can result from economic downturns like the present one.

### **A. BUDGET STATUS**

In FY 2021, the USPTO's appropriation authority was determined by Continuing Resolutions of October 1, 2020, December 11, 2020, December 18, 2020, December 20, 2020, and December 22, 2020 until the enactment of the FY 2021 Omnibus and COVID Relief and Response Act on December 27, 2020. The bill provided \$3.695 billion for the USPTO, of which \$3.251 billion was allocated to patents. Besides the FY 2021 appropriation, Congress also approved a reprogramming notification to give the USPTO access to previously deposited fee collections in the PTFRF account. In FY 2020, \$231.9 million of patent and trademark fees had been deposited in the PTFRF, of which, \$215.5 million was comprised of patent fee collections. The USPTO worked closely with Congress and submitted a reprogramming notification. Pursuant to congressional approval, \$215.5 million of previously collected patent fees was approved to be transferred from the PTFRF to the Salaries and Expenses Fund on March 1, 2021. FY 2021 did not see any lapse in congressional appropriation. The USPTO spent \$3.32 billion allocated to the patent business line. As of the fiscal year end, the USPTO collected \$3.13 billion in patent fees and earned \$32.7 million in other income allocated to patents. Overall, the agency collected \$95.0 million below its appropriated level, and as such, did not make a deposit in the PTFRF at the end of FY 2021.

The FY 2022 President's Budget, released on May 28, 2021, included proposed funding levels for the USPTO. In a departure from past practice, the appropriation request was based on spending requirements instead of net fee collections. The President's Budget proposed spending

of \$3.555 billion on patents and assumed patent fee collections and other income totaling of \$3.654 billion. The Commerce, Justice, and Science (“CJS”) Subcommittees of the House and Senate Appropriations Committees held appropriation hearings on May 6, 2021 and May 26, 2021, respectively but these hearings largely focused on other agencies. The House CJS Subcommittee marked up the FY 2022 budget on July 12, 2021. On July 27, 2021 the PPAC together with the TPAC respectfully requested by [letter](#) that, consistent with past practice, Congress appropriate to the USPTO the agency’s estimated fee collection level of \$4.058 billion rather than the \$3.994 billion level requested in the President’s Budget.

The Senate CJS Subcommittee did not mark up the FY 2022 budget in FY 2021. A Continuing Resolution (CR) was passed on September 30, 2021, and lasts through December 3, 2021.

On October 18, 2021 the Senate Appropriation Committee released the FY 2022 appropriations bill setting the appropriations level at \$4.058 billion, along with a report stating:

*Since fiscal year 2005, the Committee has refused to divert patent and trademark fees to other purposes and has always appropriated USPTO an amount equal to the agency’s estimate of patent and trademark fees, while also allowing USPTO to retain all unexpected revenue in excess of appropriated levels. As such, the Committee strongly disapproves of the new appropriation methodology proposed by the administration in fiscal year 2022 that would only provide USPTO with an appropriation equal to the agency’s spending requirements and divert all additional expected revenue to the Patent and Trademark Fee Reserve [PTFRF]. In future fiscal years, the Committee expects the administration and the Department to revert to the longstanding practice of providing USPTO with complete and unfettered access to the amount equal to the agency’s estimate of patent and trademark fees.*

The FY 2022 President’s Budget appropriately emphasizes accurate and consistent search and examination results while continuing progress on pendency. It anticipates the hiring of 500 examiners in FY 2022 for a net increase of 113. A key focus is the continued development and deployment of new IT systems to support the USPTO’s mission while retiring antiquated and unreliable legacy systems.

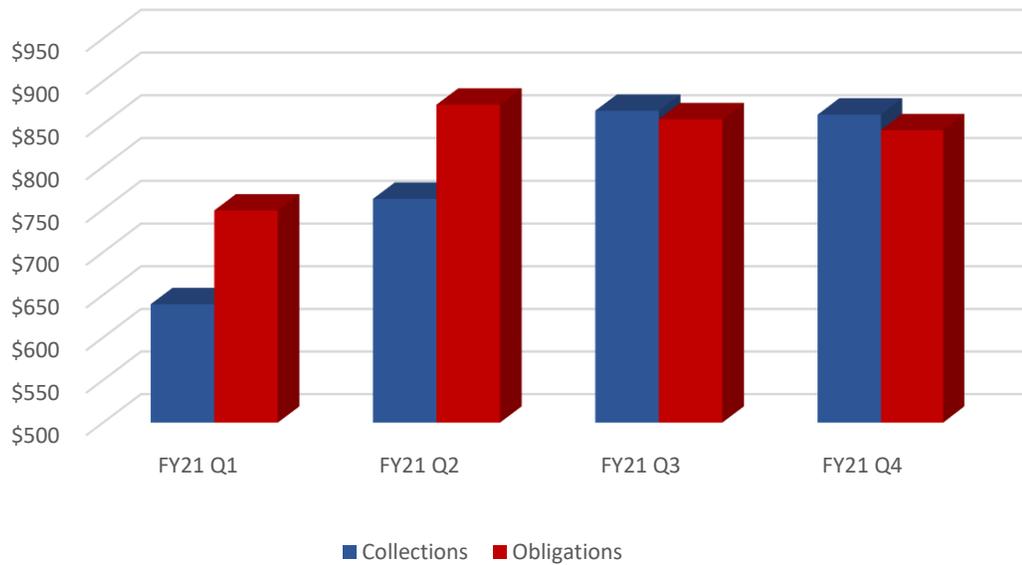
The FY 2023 President’s Budget is under development. The USPTO shared its recommendations with the PPAC in late August. It is anticipated that the FY 2023 President’s Budget will be made public in February 2022.

## **B. FY 2021 IN REVIEW AND HISTORICAL TRENDS**

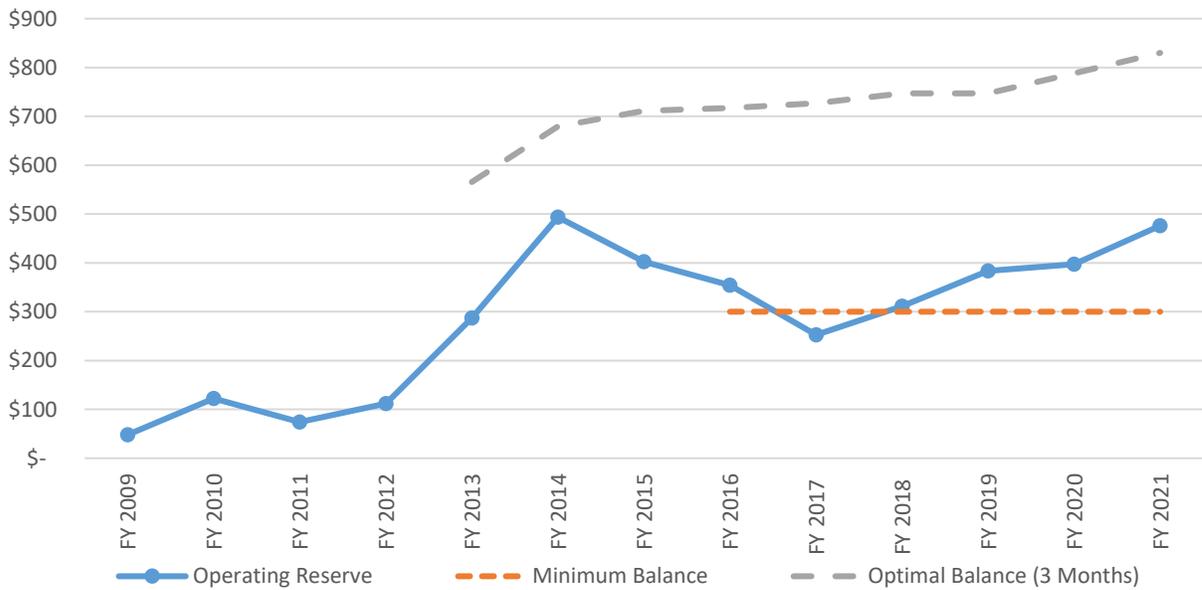
FY 2021 collections were reasonably consistent with the projected levels included in the FY 2022 President’s Budget. The USPTO collected \$3.128 billion from patent fees compared to \$3.098 billion anticipated by the FY 2022 President’s Budget. Spending was lower than projected by about 2.8%. The USPTO’s Patent spending was \$3.320 billion compared to the \$3.416 billion planned in the FY 2022 President’s Budget.

### Quarterly Patent Collections and Obligations

(\$ in millions)



### Patent Operating Reserve Trend



Patent fee collections decreased modestly (6.4%) from FY 2020, largely due to the September 2020 surge in fee collections in advance of the Patent fee adjustment that went into effect on October 2, 2020. Patent spending increased by 5.3% compared to FY 2020. The operating reserve grew by 20.5% to \$476 million. This balance is above the desired minimum balance of \$300 million, sufficient to fund approximately 1 month of operations, but still far below the optimal balance of \$830 million, sufficient to fund approximately 3 months of operations. The PPAC recommends that the operating reserve be increased over time to its optimal level.

### **C. FEE ADJUSTMENTS**

The USPTO conducts biennial reviews of its fees as required by statute. The review that commenced in FY 2017 has culminated in a fee adjustment that went into effect on October 2, 2020 as provided by a final rulemaking published by the USPTO on July 31, 2020. The new fee adjustments include targeted increases in issue and maintenance fees, PTAB trial practice fees, the expedited examination fee for design patent applications, and the surcharge for late maintenance fee payments made within six months of the due date. The new fee structure also includes a 5% increase in non-targeted fees across the board. The USPTO responded to concerns from stakeholders by omitting in this rule a previously proposed annual fee for patent practitioners and delayed another fee to discourage non-provisional patent filings in document formats other than DOCX until January 1, 2022.

Subsequent biennial fee reviews were conducted in FY 2019 and FY 2021, but there has, yet, been no proposal for a further fee adjustment. The PPAC recommends that the magnitude and timing of any future fee increase balances the needs of the USPTO to fulfill its mission of high quality, reliable patents against the financial impact of the user community.

### **D. PREVIOUSLY COLLECTED FEES NOT AVAILABLE**

From FY 1990 through FY 2011, all the fees and surcharges that were collected from customers were not always appropriated to the USPTO. Previously collected and currently unavailable fee collections on deposit in the USPTO accounts at the Department of Treasury (Treasury) are \$1,024 million (\$814 million from previously collected fees for patent services provided to customers). The USPTO has confirmed with the Treasury that the funds are on deposit in the USPTO Treasury account, but the USPTO requires Congressional approval to access the funds. Access to these funds would result in the USPTO reaching optimal reserve levels, for Patents defined as three months of operating requirements, for both the patent and trademark business lines, thus mitigating the risk of current and future economic uncertainty. Access to these funds would also, among other things, increase the USPTO's ability to improve its infrastructure and services. Additional details on the unavailable amounts can be found in the Financial Section of the 2020 Performance and Accountability Report. The PPAC recommends that Congress make these previously collected user fees available to the USPTO forthwith.

## GLOSSARY OF ABBREVIATED TERMS

ABBREVIATION	DEFINITION
<b>AANHPI</b>	Asian American and Native Hawaiian/Pacific Islander
<b>AI</b>	Artificial Intelligence
<b>AIA</b>	Leahy-Smith America Invents Act
<b>AIPA</b>	American Inventors Protection Act
<b>AIPLA</b>	American Intellectual Property Law Association
<b>APEC</b>	Asia-Pacific Economic Cooperation
<b>APJ</b>	Administrative Patent Judges
<b>BE</b>	Business Europe
<b>CI<sup>2</sup></b>	Council for Inclusive Innovation
<b>CJS</b>	Commerce, Justice, and Science Subcommittee
<b>CNIPA</b>	China National Intellectual Property Administration
<b>CPC</b>	Cooperative Patent Classification
<b>CR</b>	Continuing Resolution
<b>DOC</b>	Department of Commerce
<b>ECLA</b>	European Classification
<b>EPO</b>	European Patent Office
<b>EQS</b>	External Quality Survey
<b>EROO</b>	Eastern Regional Outreach Office
<b>EUIPO</b>	European Union Intellectual Property Office
<b>Hub</b>	Expanding Innovation Hub
<b>ID5</b>	Industrial Design Forum
<b>IDEA</b>	Inventor Diversity for Economic Advancement
<b>IP5</b>	The name given to a forum of the five largest intellectual property offices in the world (CNIPA, EPO, JPO, KIPO and USTPO)
<b>IPC</b>	International Patent Classification
<b>IPO</b>	Property Owners Association
<b>IPR</b>	<i>Inter Partes</i> Review
<b>IT</b>	Information Technology
<b>JIPA</b>	Japan Intellectual Property Association
<b>JPO</b>	Japan Patent Office
<b>KINPA</b>	Korea Intellectual Property Association
<b>KIPO</b>	Korean Intellectual Property Office
<b>LEAP</b>	Legal Experience and Advancement Program
<b>ML</b>	Machine Learning
<b>MLAI</b>	Machine Learning and AI

<b>MPEP</b>	Manual of Patent Examination Procedure
<b>MTA</b>	Motion to Amend
<b>NCEAI</b>	National Council for Expanding American Innovation
<b>NET/AI</b>	New Emerging Technologies and AI
<b>NIHF</b>	National Inventors Hall of Fame
<b>NITRD</b>	Networking and Information Technology Research and Development
<b>NSCAI</b>	National Security Commission on Artificial Intelligence
<b>NSTC</b>	National Science and Technology Council
<b>OCE</b>	USPTO's Office of the Chief Economist
<b>OCFO</b>	Office of the Chief Financial Officer
<b>OCIO</b>	Office of the Chief Information Officer
<b>OIPC</b>	Office of International Patent Cooperation
<b>OPIA</b>	Office of Policy and International Affairs
<b>OPQA</b>	Office of Patent Quality Assurance
<b>PAR</b>	Performance and Accountability Report
<b>PE2E</b>	Patents End-to-End
<b>PEDS</b>	Patent Examination Data System
<b>PGR</b>	Post-Grant Review
<b>PPAC</b>	Patent Public Advisory Committee
<b>PPG</b>	Parallel Patent Grant
<b>PPH</b>	Patent Prosecution Highway
<b>PTA</b>	Patent Term Adjustment
<b>PTAB</b>	Patent Trial and Appeal Board
<b>P-TACTS</b>	Patent Trial and Appeal Case Tracking System, formerly PTAB Center
<b>PTFRF</b>	Patent and Trademark Fee Reserve Fund
<b>ROs</b>	USPTO Regional Offices
<b>SBA</b>	Small Business Administration
<b>SCP</b>	Standing Committee on the Law of Patents
<b>SCT</b>	Standing Committee on the Law of Trademarks, Industrial Designs and Geographical Indications
<b>SMART</b>	Save Money on Auto Repair Transportation
<b>STEM</b>	Science, Technology, Engineering, and Math
<b>STEPP</b>	Stakeholder Training on Examination Practice and Procedure
<b>TODD</b>	Training and Outreach Distribution Dashboard
<b>TRIPS</b>	Trade-related Aspects of Intellectual Property Rights
<b>TRP</b>	Time, Routing, and Performance Appraisal Plan
<b>UPR</b>	Utility, Plant, And Reissue
<b>USPC</b>	United States Patent Classification

<b>USPTO</b>	United States Patent and Trademark Office
<b>USTR</b>	United States Trade Representative
<b>vILT</b>	Virtual Instructor Led Training
<b>WES</b>	Women’s Entrepreneurship Symposium
<b>WIPO</b>	World Intellectual Property Organization
<b>WTO</b>	World Trade Organization



**JULIE MAR-SPINOLA, CHAIR**

Ms. Mar-Spinola is the Chief IP Officer and VP of Legal Operations for Finjan Holdings LLC. She oversees the Company’s revenue-based and legal operations, including the Company’s IP and cyber technology innovations, enforcement programs, best practices, public policy initiatives, and mentorships. She has dedicated nearly her entire career to intellectual property law, emphasizing patents, technology, policy, and mentorship in these areas for the next generations of IP professionals. Before Finjan, Ms. Mar-Spinola successfully served as outside counsel, GC, or VP of Legal to several Silicon Valley companies. She was mentored by some of the most prolific tech visionaries and entrepreneurs in the Valley. She is a founder of the renowned women’s organization, ChIPs, a global 501(c)(3) non-profit corporation dedicated to advancing women at the confluence of law, technology, and regulatory policy, and Chairwoman from 2005 to 2015. Ms. Mar-Spinola serves as a court-appointed mediator for the US District Court for the Northern District of California, specializing in complex patent disputes. She also serves on Santa Clara University School of Law’s High Tech Advisory Board. In 2015 Ms. Mar-Spinola was appointed by then US Secretary of Commerce Penny Pritzker to serve on the Patent Public Advisory Committee (PPAC), which reviews and advises the Director of the USPTO on the policies, goals, performance, budget, and user fees of the Agency’s operations. In 2019 the US Under Secretary of Commerce and USPTO Director Andrei Iancu appointed her to serve as the Chair of PPAC for the 2020 - 2021 term. Ms. Mar-Spinola received a Bachelor’s degree in Chemistry from San Jose State University and a JD from Santa Clara University, School of Law. She is a member of the California State Bar, the Federal Circuit Bar, the US Supreme Court Bar, and a licensed Patent Attorney. Ms. Mar-Spinola is currently serving her second term as a PPAC member.



**STEVEN CALTRIDER, VICE CHAIR AND PTAB SUBCOMMITTEE CHAIR**

Mr. Caltrider is Vice President and General Patent Counsel for Eli Lilly and Company and holds over 30 years of experience in an industry driven by research and innovation. He has extensive litigation experience in the leading intellectual property (IP) forums (more than 30 countries), including U.S. Federal District Court, the U.S. Courts of Appeals for the Federal Circuit; courts in Canada, the United Kingdom, Germany, Japan and the Netherlands; as well as the USPTO, EPO, and JPO. Mr. Caltrider is also experienced in managing global teams of attorneys and staff on a wide range of IP matters, from patent procurement to technology acquisitions and data security. His current responsibilities include patent (global litigation and procurement), trade secret, copyright, and trademarks. Mr. Caltrider received a bachelor's degree in chemical engineering from Purdue University and a law degree, summa cum laude, from Indiana University Robert H. McKinney School of Law. Mr. Caltrider is serving his first term as a PPAC member.



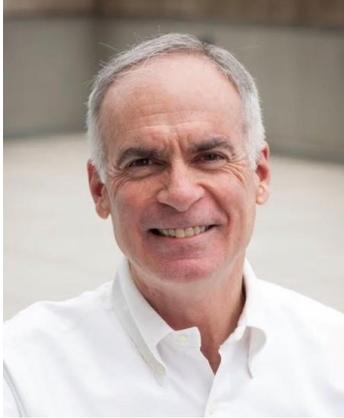
**JENNIFER CAMACHO, INNOVATION EXPANSION  
SUBCOMMITTEE CHAIR**

Ms. Camacho is a founder and Principal Member of Taitle LLC, representing stakeholders in the life sciences industry, including venture-backed and publicly-traded companies. Previously, Ms. Camacho was the Chief Legal Officer for Torque Therapeutics, Inc., a cancer immunotherapeutics company, until its merger with Repertoire Immune Medicines, Inc. in 2019. At Torque, she was responsible for all aspects of the company’s legal affairs and intellectual property. Before joining Torque, she was the Chief Legal Officer for Gen9, Inc. from 2014 until its acquisition by Ginkgo Bioworks, Inc. in 2017. Ms. Camacho was formerly a partner in the international law firms of Proskauer Rose, LLP and Greenberg Traurig, LLP where she represented clients in the life sciences industry, including biotechnology and synthetic biology companies, pharmaceutical and medtech companies, investment banks, venture capital firms, and other industry stakeholders. Ms. Camacho has been recognized for her work in the fields of intellectual property and life sciences law and has multiple awards and honors, including the Tech Luminary and Innovation All-Star Award from Boston Business Journal and Mass High Tech. She received her bachelor’s degree in Cell and Structural Biology from the University of Illinois, and her law degree from Boston College Law School. Ms. Camacho is currently serving her second term as a PPAC member.



**JEFF SEARS, QUALITY AND PENDENCY  
SUBCOMMITTEE CHAIR**

Mr. Sears serves as Associate General Counsel and Chief Patent Counsel for Columbia University. His practice encompasses all aspects of patent law, including prosecution, strategic counseling, licensing and post-licensing compliance, litigation, and legislative, regulatory, and policy matters. He manages the university’s global patent portfolio and works closely with faculty inventors, technology transfer officers, and executive leadership on commercialization activities. Also, Mr. Sears is an Adjunct Professor at Columbia’s School of Engineering and Applied Science, where he co-teaches Intellectual Property for Entrepreneurs and Managers. He has been recognized for his work in intellectual property law and management and has multiple awards and honors, including having been named to the IAM Strategy 300 by IAM Media and Corporate IP Stars by Managing Intellectual Property Magazine. Mr. Sears holds an S.B. in physics from MIT, an M.A. and Ph.D. in physics from SUNY Stony Brook, and a J.D. from NYU. He is admitted to practice law in New York and before the U.S. Patent and Trademark Office. Mr. Sears is serving his second term as a PPAC member.



## **BERNARD CASSIDY, FINANCE SUBCOMMITTEE CHAIR**

Mr. Cassidy retired from the active practice of law after serving as General Counsel at Juno Therapeutics Inc., a startup cancer immunotherapy company, which he advised through the IPO process until its acquisition in 2018. Since then he has been a Visiting Researcher at Harvard Law School (Spring 2020) and taught Biomedical Law and Policy as an Adjunct Professor at the Seattle University School of Law (Spring 2019). He is a nationally recognized expert on patent licensing and patent policy, having testified twice on these topics before Congress. Prior to his work at Juno Therapeutics, Mr. Cassidy served as Executive Vice President, General Counsel, and Secretary of Tessera Technologies Inc. and President of Tessera Intellectual Property Corporation. Mr.

Cassidy was also Senior Vice President, General Counsel, and Secretary of Tumbleweed Communications Corp. He practiced law at Skadden, Arps, Slate, Meagher & Flom and at Wilson, Sonsini, Goodrich & Rosati after serving as a Law Clerk to the Honorable John T. Noonan, Jr., of the U.S. Court of Appeals for the Ninth Circuit. He received his J.D. from Harvard Law School, where he was an editor of the Harvard Law Review and a Research Assistant to Professor Arthur R. Miller. Mr. Cassidy is serving his first term as a PPAC member.



## **JEREMIAH CHAN, AI AND IT SUBCOMMITTEE CHAIR**

Mr. Chan is Associate General Counsel and Head of Patents, Licensing and Open Source at Facebook. He and his team are responsible for the development of Facebook's worldwide patent portfolio, intellectual property transactions, open source, dispute resolution, and other risk mitigation initiatives. They also focus on industry-wide efforts to promote greater diversity, equity, and inclusion in innovation and the intellectual property profession. Prior to joining Facebook, Mr. Chan led an international team at Google that was responsible for portfolio strategy, operations and data science; and he previously served as Head of Intellectual Property for JDSU, where he managed a department that was responsible for portfolio strategy, litigation, licensing and technology

transactions. Mr. Chan started his career in private practice with the law firm of Fish & Neave, where he specialized in litigation, opinion work, and client counseling. He graduated from UC Berkeley with highest honors and received his JD from Cornell Law School. Mr. Chan serves as an advisory board member for the High Tech Law Institute at Santa Clara University School of Law and as chairman of the board for the Bay Area Anti-Trafficking Coalition, a nonprofit organization that combats human trafficking in the San Francisco bay area and beyond. Mr. Chan is serving his first term as PPAC member.



**TRACY-GENE DURKIN, OUTREACH SUBCOMMITTEE CHAIR**

Ms. Durkin is the practice leader of the Mechanical & Design Practice Group and a member of the Trademark & Brand Protection Practice at the law firm of Sterne, Kessler, Goldstein & Fox P.L.L.C. in Washington, D.C. She has extensive experience in design patent law and the enforcement of intellectual property rights. In 2018, Financial Times named her as one of the "Top Ten Legal Innovators in North America," noting her as "a leading authority on design patents. Ms. Durkin began her career as a patent examiner at the USPTO. Now, with more than thirty years of experience in private practice obtaining and enforcing intellectual property rights, she is sought out by leading consumer product companies and by colleagues around the world for her deep understanding of utility and design patents, trademarks, and copyrights. Ms. Durkin has represented companies before Federal District Courts, the United States Court of Appeals for the Federal Circuit, the International Trade Commission, the USPTO Patent Trial and Appeal Board, and Trademark Trial and Appeal Board. She has served as an expert witness in patent disputes in District Court litigation, and before the International Trade Commission. A leader in the legal community, Ms. Durkin is a past president of the Women's Bar Association of the District of Columbia and of The Women's Bar Association Foundation, two organizations in which she continues active participation. Ms. Durkin is serving her first term as a PPAC member.



**JUDGE SUSAN G. BRADEN (RET.), LEGISLATIVE SUBCOMMITTEE CO-CHAIR**

Judge Braden began her career as a Senior Trial Attorney in the Department of Justice's Antitrust Division. She later became Counsel to two Federal Trade Commission Chairmen and was a Federal Trial and Appellate Litigator in private practice. In 2003, she became a Judge on the U.S. Court of Federal Claims; in 2017, she was designated Chief. After retiring in April 2019, Judge Braden was appointed to the U.S. Administrative Conference as a Public Member, the J. William Fulbright Board, and the Legal Advisory Board of the Washington Legal Foundation. In July 2020, she was appointed by the Office of the United States Trade Representative as one of 10 individuals who will represent the nation in disputes arising under the United States-Canada-Mexico Trade Agreement. She also serves on the boards of two companies that create and sell software and artificial intelligence and a major construction company. Judge Braden received a bachelor's degree and law degree from Case Western Reserve University. She also received a Business Administration Certificate from Georgetown University and attended Harvard Law School's Program on Negotiation. Judge Braden serves as an Arbitrator, Mediator, and Special Master for the American Arbitration Association and FedArb. She is serving her first term as a PPAC member.



**DANIEL BROWN, LEGISLATIVE SUBCOMMITTEE  
CO-CHAIR**

Dr. Brown is an award-winning designer, inventor, entrepreneur, and full-time professor at the Segal Design Institute of Northwestern University. He is a native of Chicago, where he attended St. Xavier University, earning a bachelor's degree in biology with a minor in chemistry. Additionally, Dr. Brown earned his master's degree from the McCormick School of Engineering at Northwestern University, and a Ph.D. in design from Coventry University in the United Kingdom. He has received over 100 U.S. and international utility patents for his novel product solutions in industry and has taken

many of his inventions to market himself as a founder of two startups. Dr. Brown has seen both sides of the American Dream, enjoying the market success of his bionic wrench invention, while at the same time fighting counterfeit versions that almost destroyed his business. Dr. Brown believes that the best social system for our nation provides good jobs, but job creation and the economic benefits of innovation fundamentally depend on the ability of inventor-entrepreneurs to protect their investments through their intellectual property. He continues to work in support of an equitable, protectable, and sustainable intellectual property system for all inventors. He is serving his first term as a PPAC member.

