



American Intellectual Property Law Association

February 23, 2021

Attn: Janine Scianna
Office of Governmental Affairs
The United States Patent and Trademark Office
600 Dulany Street
Alexandria, VA 22313-1450

Via Email: innovationcomment@uspto.gov

Re: Request for Comments on Proposed National Strategy for Expanding American Innovation [Docket No. PTO-P-2020-0057]

Dear Ms. Scianna:

The American Intellectual Property Law Association (“AIPLA”) is pleased to have the opportunity to present its views to the United States Patent and Trademark Office (“Office” or “USPTO”) in response to the Request for Comments on National Strategy for Expanding American Innovation published in 85 Fed. Reg. 247 (December 23, 2020).

Founded in 1897, the American Intellectual Property Law Association is a national bar association of approximately 8,500 members who are primarily engaged in private or corporate practice, in government service, and in the academic community. AIPLA members represent a wide and diverse spectrum of individuals, companies, and institutions involved directly or indirectly in the practice of patent, trademark, copyright, trade secret, and unfair competition law, as well as other fields of law affecting intellectual property. Our members represent both owners and users of intellectual property. Our mission includes helping establish and maintain fair and effective laws and policies that stimulate and reward invention while balancing the public’s interest in healthy competition, reasonable costs, and basic fairness. AIPLA values its long relationship of working in partnership with the Office to foster innovation. In this instance,

AIPLA is very proud to be a part of the National Council and is pleased to submit guidance in response to your request for feedback.

I. General

1. Inventors and entrepreneurs come from all walks of life and are not always employed by a large corporate or educational institution. How can people and organizations in the innovation ecosystem better support them?

One of the best ways for people and organizations to promote innovators who are not employed by large corporations or academic institutions is to publicize the need to support these groups. Engaging on a personal level innovators and entrepreneurs who are not associated with a large entity may enable better public understanding of the specific support they need. Engagement with colleagues, community members, and organizations may help these innovators feel supported and engender feelings of validation.

Additionally, more targeted means of supporting innovators and entrepreneurs who do not work for large corporations or academic institutions could come from founding, funding, or volunteering with organizations that provide support services or networking for these innovators. Example support services include:

- **Generate substantive information** on “how to write a business plan,” “how to secure funding for your invention,” “how to patent your invention,” “how to register your trademark,” “how to protect your copyright,” and “how intellectual property works” videos. Toolkits for entrepreneurs and innovators with frequently used documents, and answers to commonly asked questions, would be beneficial to many participants. Template documents and letters may also be useful and instructive.
- **Host and promote meetings, clubs, etc.**, to provide networking opportunities as well as a place to exchange ideas and experiences. Solicit participation and educational sessions by intellectual property (IP) professionals, who may attend in person or remotely according to geographic constraints.
- **Host community innovation or entrepreneurship workshops.** Hold weekend- or day-long workshops at a community center, library, other public space, or even remotely. These can connect community members who are innovating or want to do so. Solicit participation by IP professionals to provide hands-on learning opportunities.
- **Enable shared workspaces or hubs** to provide business and professional support services. These spaces also build a sense of community and help innovators realize that there are many others experiencing similar struggles and victories. Hubs need not be physical. While there are advantages to community building presented by physical proximity, a great deal of networking can occur through online platforms. Building virtual hubs could be a great way to connect isolated innovators across the United States.
- **Create shared spaces/labs** to provide solo innovators or small businesses workspace to create or make their works or prototypes. For example, creation spaces (e.g., Artspace in Raleigh, NC) provide studio and gallery space to local artists, creating a common space for creators to work and sell their works. Similarly, maker spaces (e.g., Techspace in Ballston, VA) provide access to specialized tools and design systems, which makers can use to create art or develop prototypes. At present, many of these spaces are membership-based. People and organizations could partner with these spaces to “sponsor” an innovator or fund a membership subsidization pool to support local innovators and creators.
- **Fund local innovator/entrepreneur support funds.** Some municipalities have established funds by which grants can be paid out to local entrepreneurs, creators, and innovators. Additionally, organizations could fund their own innovator funds to provide grants and/or scholarships to members of the communities in which they operate, thereby supporting local innovators.
- **Provide or fund pro bono or “low-bono” legal services.** Many entrepreneurs and innovators seek legal services to guide their actions. Enabling legal guidance at an attainable cost is essential to supporting these innovators and entrepreneurs. People and organizations can enable that support by donating to bar association pro bono

- programs or starting their own innovator legal fund. As with grants, this money could be apportioned in communities in which the founding organization operates.
- **Provide innovator and entrepreneur-in-residence internships** at large- and mid-sized corporations and academic institutions may provide opportunities for independent or small-business innovators to gain experience in different environments.

Because many programs exist for supporting innovators and entrepreneurs, cultivating awareness may avoid the provision of redundant programs and enable support organizations to guide participants to the resources best suited to their needs.

2. Women and some minorities have not participated proportionally in the patenting of inventions. What barriers to innovation inclusion are specific to underrepresented groups?

Barriers to participating in patenting innovations may be cultural, psychological, and/or economic. Cultural barriers may be explicit or implicit and may impact how underrepresented innovators engage with colleagues and professionals in the innovation ecosystem. Psychological barriers may relate to the way underrepresented entrepreneurs see themselves and the opportunities available to them. Economic barriers are those that limit innovation opportunities available to underrepresented innovators because of lack of funding.

Innovation ecosystem climate – Organizations that demonstrate the value of, and support for, underrepresented-innovator patenting are essential to improving diversity in patenting. It is important for organizations to create an internal culture in which women and minority innovators feel comfortable and are encouraged to self-advocate for high-profile development projects or being named as an inventor on a patent application. Incentive programs encouraging recognition of the contributions of diverse innovators to projects may help create a comfortable environment. Initiatives such as an “innovator of the month” emails or website that highlight the achievements of underrepresented innovators may be easy and cost-effective. Managers may identify and engage underrepresented innovators on development projects and facilitate mentorship relationships.

Identifying as an Inventor – Providing role models for underrepresented innovators is likely to improve the rate of underrepresented innovators in patenting. When people can self-identify with a role or opportunity, they are significantly more likely to pursue it. Modern history includes many examples of innovators from all backgrounds and geographic areas. Shining a spotlight on these individuals in regular outreach may help underrepresented innovators identify themselves as potential patentees. This may include providing the names of notable figures in the US film industry, music, fashion, technology, and science. Organizations may also showcase the achievements of their own underrepresented innovators in an “innovator of the month” style program. A combined focus on historical figures and organizational participants may demonstrate that the organization values its underrepresented innovators as members of a long line of successful innovators.

Increasing representation in leadership positions – Increasing diversity at all levels of the innovation ladder may cause underrepresented innovators to feel safe and encouraged in self-advocating for inventorship opportunities.

Pro Bono Patenting – As discussed with reference to question 1, Pro bono and “low-bono” legal services should be supported to support inventors from underrepresented groups.

AIPLA and other IP association members may be well-positioned to assist business in determining what will work for them in terms of increasing opportunities for underrepresented patenting.¹

a. What supporting role should government organizations play in helping underrepresented groups overcome these barriers?

Programs that promote and highlight underrepresented innovators may assist these participants in self-identifying as inventors and patentees. One example, the USPTO poster program highlighting underrepresented innovators in history, is effective. This program could be extended to encompass a modern “innovator of the month” to be featured on the USPTO website. This might involve identifying a diverse inventor on a recently issued patent, obtaining a short biography and photo from that inventor and promoting the recipient on the website. Organizations could partner with the USPTO to support this effort as it may result in opportunities to feature one of their inventors. Similar programs could be run at other agencies such as the SBA, NASA, DARPA, NSA, etc.

Further, the relevant government agencies could host a semi-regular diversity in innovation summit. This summit could be a cross-agency collaboration to bring underrepresented innovators together to network, share ideas, and educate the innovation ecosystem about their needs and challenges. The event could be hosted at agency branches nationwide, thereby promoting local participation for networking. Panels can be live in some locations and remote in others, with a mix of placement to ensure live participation on some level at all host locations. An event of this type may be beyond the scope of any one organization or even a single government agency. A combined effort by government agencies, however, would demonstrate a national commitment to fostering and supporting underrepresented innovators.

Subsidizing internships for underrepresented innovators may support a positive trend in underrepresented patenting statistics. Providing scientists and engineers from underrepresented backgrounds with internship opportunities may lead to an increased number of underrepresented inventors listed on patent applications.

The government may increase funding for tech businesses owned by members of underrepresented groups.² As discussed above, funding may be an issue for business owners from underrepresented groups, making R&D and business development grants essential for enabling innovators to pursue patenting.

3. Mentoring and networking have been shown to be effective tools in supporting and encouraging underrepresented inventors and entrepreneurs. How can organizations and intellectual property practitioners in the innovation ecosystem

¹ See, <https://www.frontiersin.org/articles/10.3389/fpsyg.2018.00030/full>.

² National Science Foundation seed funding.

https://seedfund.nsf.gov/apply/?utm_source=google&utm_medium=cpc&utm_campaign=psc&utm_term=keyword&utm_content=now_open. Unfortunately, this program only offers \$1.75 million in funds.

better connect underrepresented innovators to each other and to mentors, both internally and across organizations?

IP Practitioners – The broad range of connections enjoyed by IP practitioners amongst their varied client base may be leveraged to facilitate mentoring and networking relationships. IP practitioners should educate themselves about the impact of explicit and implicit bias on their clients R&D and business. Further, gaining awareness includes developing an appreciation for the barriers to entry that different demographics have faced over time.³ By cultivating an understanding of the type of resources and support that diverse innovators and entrepreneurs might find useful, IP practitioners can better facilitate meaningful mentoring and support relationships within their networks. AIPLA offers a number of mentoring programs including those for new lawyers, law students, women in IP, and diverse practitioners, facilitated by AIPLA’s various committees. These mentoring relationships further increase the networks of participants, enabling them to provide additional connections to clients and other practitioners in the future.

Organizations – Sizeable organizations may establish mentoring programs. Tracking representation in management and senior engineering positions may enable organizations to identify potential mentors and suggest new mentoring relationships as participants move throughout an organization. Organizations should also reach out to their IP counsel to indicate that they are open to outside counsel facilitating mentoring relationships.

Recruiting from academic institutions with significant populations of underrepresented students may enable organizations to leverage part of the existing network of these institutions. For example, historically black colleges and universities (HBCUs) and women’s colleges have networks of highly qualified graduates. These institutions outperform talent as compared to other institutions on a per capita basis. In the 1980’s, Bryn Mawr College was producing 2-3% of the female physicists in the U.S. annually. For example, Wellesley College has produced many notable graduates who could provide valuable mentoring connections.⁴ Similar lists of notable graduates from HBCUs make clear the important contributions of these schools to the population of diverse innovators.⁵ Recruiting from these institutions may provide other diverse innovators at an organization with access to the networks of these institutions.

As discussed with reference to question 1, internship opportunities may also benefit diversity in patenting.

4. Developing organizational metrics to document the effectiveness of diversity and inclusion initiatives is necessary to track outcomes of action plans and initiatives. What are best practices that organizations can internally employ to measure their own progress, particularly in the area of intellectual property protection?

³ For example, Dr. Lisa Cook, a member of President Joseph Biden’s transition team, has a National Public Radio (NPR) Planet Money piece on the impact of race riots and lynching on African American innovation from 1870-1940, which may be educational.

⁴ For example, Harriet Rademeyer Adams, Madeleine Albright, Katharine Lee Bates, Sophonisba Breckinridge, Annie Jump Cannon, Madame Chaing Kai-shek (Soong May-ling), Hillary Clinton, Molly Dewson, Marjory Stoneman Douglas, and more.

⁵ See, for example, <https://moguldom.com/153381/100-influential-hbcu-alumni/> or here - <https://www.experiencethelegacy.org/notable-hbcu-alumni>

AIPLA agrees that developing organizational metrics to document the effectiveness of diversity in innovation and inclusion initiatives is necessary. Each organization must develop its own business-specific plan for measuring effectiveness of its initiatives because the type and availability of useful data will vary across industries. At present, many organizations collect data pertaining to representation amongst innovators and inventors as a portion of the organizations' entire innovation pool. Such data may include diagnostic data and data tracking progress and return on investment.

Diagnostic data may be used to identify problem areas of an organization's diversity in innovation. This data may relate to recruitment, retention, engagement level with the organization, engagement level with projects, invention disclosures submitted, named inventors on patent filings, variety of projects in which individuals participate (e.g., do they assist in multiple invention groups across technologies, etc.) pay and benefits, employee survey responses, grievances, and the like. Many organizations use portions of this data already, but there is a lack of consistency across industries, leading to difficulty in comparison of organization-reported statistics.

Progress-and-return-on-investment data may be collected and analyzed to determine efficacy of programs. These metrics may vary widely across industries, academic vs private organizations, and across organizations of differing sizes. Progress measurement may include promotions, participation in member groups, mentorship engagement, participation in training programs, participation in outreach programs, and the like. Return-on-investment metrics may be unique to each organization but may include business payout, products to market, technology transfers, etc.

5. Measuring national progress in realizing greater inclusion and diversity in invention, entrepreneurship, and intellectual property may take years, and it will be critical to identify complementary short- and long-term metrics that are precursors to and indicators of expanding innovation. What are some specific, meaningful, and relevant measures that can be used to:

a. Support year-over-year performance of action plans and initiatives in the short-term?

Regular tracking of patents filed by state, city, and region may provide insights into whether innovation is diversifying into rural areas or "secondary" and "tertiary" cities. This metric may enable early indications that innovation is spreading out across the Country as well as into areas populated by underrepresented innovators or entrepreneurs.

Tracking participation of underrepresented innovators based on patent filings could provide information on diverse innovator participation. This could be enabled using a wholly optional self-identification form or check box during the filing process. While this would not provide a comprehensive view of diversity in patent filing, the data would likely indicate trends.

Comparison of the number of STEM graduates to the diversity hiring statistics within the innovation ecosystem may also provide short term trend information. Not all STEM graduates will transition to innovation and entrepreneurship after graduation. Nonetheless, the number of participants who do transition may indicate short-term progress.

Sharing metrics across organizations by type of industry may support year-over-year performance of action plans and initiatives in the short-term. The timeline of innovation varies widely depending upon industry and company size. For example, an employee of a large software company may be required to submit multiple invention disclosures annually, allowing the employee to become comfortable with the invention process. While this approach may work well for the software industry, it is less effective in industries where the timeline of innovation is longer.

b. Demonstrate the long-term creation of diversity and inclusion in the innovation ecosystem while complementing short-term performance metrics?

There are multiple measures that could be used to demonstrate the long-term creation of diversity in the innovation ecosystem while complementing short-term performance metrics. For example, length of retention of adults in STEM careers, STEM degree conferral on underrepresented groups, and private and government investment in entrepreneurs of minority backgrounds. Participation in affinity groups may be an indicator of long-term engagement by underrepresented innovators and entrepreneurs. AIPLA and other industry associations may track diversity amongst its membership and across parts of the innovation ecosystem.

6. Invention, entrepreneurship, and intellectual property protection have been shown to be concentrated in certain areas of the country and among individuals from higher socioeconomic groups. What new or existing channels could be created or utilized to more effectively deliver information and resources to prospective innovators from all demographic, geographic, and economic backgrounds?

AIPLA believes there are many existing channels that could be used to deliver more effectively resources to prospective innovators. Some of these channels include innovation hubs, shared workspaces, remote learning, and video-streaming learning. These opportunities could be offered remotely, partially remotely, or at local public spaces to allow people who do not have the means to live in, for example, the Washington D.C. area to be able to access those opportunities. Another means for reaching innovators and entrepreneurs outside of innovation centers are the USPTO regional offices, and similar satellite offices for other relevant government agencies.

Traveling workshops could bring innovator and entrepreneur education to towns and cities across the country. Using USPTO satellite offices or other agency branches as a base of operations, pre-designed workshop curriculum can be presented in towns at a reasonable travel distance from the base. Remote workshops may also be an effective means of reaching these participants.

II. Creating Innovators—Helping To Prepare People to Obtain the Skills and Develop the Interests Necessary to Become Innovators, Problem Solvers, and Entrepreneurs

7. Research has shown that “invention education”—the infusion of transdisciplinary education in problem identification and problem solving—is critical to developing innovation skills in learners. How can educational institutions at all levels (pre-kindergarten through post-graduate) successfully

infuse concepts of invention, entrepreneurship, and intellectual property education into curricula?

Revising Public Education – The current structure of the public education system places a strong focus on lecture-based learning models in which students listen to an educator speak and memorize information in anticipation of taking a test. But academic research in the area of educational psychology suggests that such learning models are not conducive to supporting innovation education or the cultivation of interest in STEM fields.⁶ These studies indicate that the psychology of lecture-based, memorization-focus learning models may be counter-productive to the creative thinking, problem-solving, and exploration skills that are so useful in innovation and STEM education. Alternative learning models could be implemented throughout the American public education system to improve participation in STEM and the development of innovation skills. The Department of Commerce and other relevant government agencies are encouraged to consider the substantial body of research in this area and solicit input on potential modifications to the learning models that might better support innovation education.

Immediate Actions to Improve the Current System – Universities across the country already provide significant innovation and entrepreneur resources to students, faculty, and communities. Several universities have developed innovation and entrepreneurship centers that serve as incubators for community startup projects along with education opportunities for the university's students.⁷ Some include programs particularly focused on improving diversity in the innovation and entrepreneurship community.⁸ Many academic institutions offer coursework leading to a degree in innovation or entrepreneurship.⁹ Several of these universities employ dedicated faculty to their entrepreneurship programs, who are often referred to as “Entrepreneurs in Residence.”¹⁰

Increasing the level of innovation education in K-12 curricula is likely to lead to higher levels of engagement with university level resources. In our current system, students entering college have generally not been exposed to the world of entrepreneurship and innovation. The

⁶ See, e.g., Henri C. Santos, Alex C. Huynh, Igor Grossman, *Wisdom in a Complex World: A Situated Account of Wise Reasoning and its Development*, Social and Personality Psychology Compass (2017), available at <https://onlinelibrary.wiley.com/doi/abs/10.1111/spc3.12341>; Harold Stevenson & James Stigler, *The Learning Gap: Why Our Schools are Failing and What We can Learn from Japanese and Chinese Education*, Simon & Schuster Paperbacks (1992), available at https://books.google.ca/books?hl=en&lr=&id=HIfBn5W6LMcC&oi=fnd&pg=PA5&ots=JB3tNyE_Wy&sig=PBK-ti3WV79XmUfwurTRUSHMl5k#v=onepage&q&f=false; Alan Baddeley, *Working Memory, Thought, and Action*, Oxford University Press (2007), available at https://www.google.com/books/edition/Working_Memory_Thought_and_Action/DRIcAAAAQBAJ?hl=en&gbpv=1&dq=inauthor:%22Alan+Baddeley%22&printsec=frontcover; Robert Bjork and Elizabeth Bjork, *How We Learn Versus How We Think We Learn*, Available at <https://bjorklab.psych.ucla.edu/research/#item11>; Mary Budd Rowe, *Wait Time: Slowing Down May be a Way of Speeding Up*, Science Education, University of Florida, Vol. 3 Issue 1, pp. 43-50 (1986) available at <https://journals.sagepub.com/doi/10.1177/002248718603700110>.

⁷ See, e.g., Rock Center for Entrepreneurship at Harvard Business School (<https://entrepreneurship.hbs.edu/Pages/default.aspx>); The Center for Entrepreneurial Studies at Stanford Graduate School of Business (<https://www.gsb.stanford.edu/faculty-research/centers-initiatives/ces>); Farley Center for Entrepreneurship and Innovation at Northwestern's McCormick School of Engineering (<https://www.farley.northwestern.edu/>); Martin Trust Center for MIT Entrepreneurship (<https://entrepreneurship.mit.edu/>)

⁸ See, e.g., University of Florida Empowering Women in Technology Startup Program (<http://ewits.org/>)

⁹ See, <https://www.bestcolleges.com/features/entrepreneurship-degree-programs/>

¹⁰ See, e.g., Stanford University (<https://gse-it.stanford.edu/entrepreneur-residence>); University of Pittsburgh (<https://www.innovation.pitt.edu/our-programs/entrepreneurs-in-residence/>); Brown University (<https://entrepreneurship.brown.edu/entrepreneur-residence-program/>)

expertise of university-level educators in the innovation education space, however, could be leveraged in partnerships with K-12 curriculum developers to incorporate innovation and entrepreneurship skills into lessons. The Department of Education and relevant government agencies could host a conference connecting university level educators with K-12 educators to develop sample lesson plans for insertion into the common curriculum. Adoption of innovation education into K-12 curriculum into the current curriculum must happen in a relatively non-disruptive manner to obtain full teacher buy-in and thus must include these teachers in the development discussions.

Innovation and entrepreneurship skills are cross-disciplinary in nature, making it important for these skills to be included across subjects. Learning by doing succeeds. Role-playing and problem-solving activities may be included across all subjects. Exemplary activities include:

- **Pre-K-2nd grade:** Using blocks to design a “snow-proof” house; drawing a magical creature and then make gloves for the creature (what type of material are they, what will the gloves do, how will the creature put them on); tell the class about why your favorite dessert is the best in a pitch;
- **3rd-5th grade:** Design a logo for an ice cream shop; come up with a new flavor for the ice cream shop; tell the class about your new flavor; design a bridge so elephants can cross a river; write a title for an advertising jingle about your school;
- **6th-8th grade:** Write a short paragraph identifying the target demographic for a book read in language class and explain why that demographic would love this book; ma short advertising song/commercial script/etc. for the book; brainstorm ways that a bad event in history might have been avoided or improved; break into groups and develop an event marketing pitch for a positive event in history (how would your group sell tickets to see the Berlin wall coming down); design a logo for your sports team; make a budget for a sandwich shop in math class;
- **9th-12th grade:** Design a product that would help your sports team (better gloves, new rackets, visors, etc.) and pitch it to other members of the team; put together a business plan; design a product that solves a problem you’re studying in science classes; make a summary of why a book or poem should be read, then exchange summaries and make classmates pitch one another’s ideas; build small drone from kits.

In addition to the school curriculum, encouraging participation in extracurricular activities that incorporate innovation education would likely benefit students. Programs such as Camp Invention hosted by the National Inventors Hall of Fame, Girl Scout invention and entrepreneurship badge programs, design camps, JETS – Junior Engineer Technical Society, and others, provide engagement with design and business skills.

8. To supplement formal education, how can community institutions, particularly in rural and economically disadvantaged areas, build awareness of, and skills and interests in, invention, entrepreneurship, and intellectual property among students of all ages?

Community centers play a substantial role in enabling innovators in rural and economically depressed urban areas. Local centers may be used to host innovation workshops for students, serve as a base for mentoring meetups, host innovation or entrepreneur clubs, etc. Local

organizations and community centers may partner with the private sector, which can offer significant support in developing and/or financing programs to supplement formal education. Leading technology companies have a demonstrated interest in improving STEM and innovation diversity, and many have already committed significant financial resources to the cause.¹¹ Companies with strong ties to rural communities, such as those in the agricultural and manufacturing sectors, should have a strong incentive to partner in development. Similarly, government offices such as the USPTO regional offices may coordinate with regional organizations to develop and offer educational opportunities using combined resources.

Organizations that provide nationwide support services, such as the donation of computer equipment to remote and underrepresented urban innovators, may also play a pivotal role in building these innovators. Several organizations provide technical support in the form of equipment, Internet access, and business services to innovators in need across the United States. Without computer and Internet access or the presence of a local community innovation center, it may be infeasible for innovators to access the information regardless of how widely it is published. As such, funding of organizations providing these essential support needs should be provided by private organizations and government entities alike.

With adequate computing devices and Internet access, advances in remote learning techniques, necessitated of late by the COVID-19 pandemic, may continue to present new solutions for reaching students in otherwise difficult to reach rural areas. Students now have greater opportunities to engage with university professors or STEM professionals sitting thousands of miles away, and these remotely situated professionals can design and help administer programs for those students.

9. More can be done to help teachers, even those with a formal science, technology, engineering, or mathematics (STEM) background, incorporate concepts of innovation into their teaching methods. What new or existing professional development opportunities, resources, and programs could train teachers to incorporate invention education concepts into their instruction? How could these efforts be leveraged and scaled so that similar resources and opportunities are accessible to all teachers?

As discussed with reference to question 7, teachers may benefit from collaboration with, and guidance from, innovation and entrepreneurship scholars at the university level. Scholars, university educators, and innovation professionals may collaborate to generate lesson plans with the assistance and guidance from teachers. An example of lesson plan for teachers may be found with the National Inventors' Hall of Fame, which produces lesson plan for teachers as part of its innovation education programming.¹²

Additionally, innovator and entrepreneur role models and mentors may be another excellent resource for students and teachers. Pursuing participation in any field requires that students can see themselves as possible participants. Self-identification with a role or opportunity is difficult when students are not aware of current participants who share their

¹¹ See, e.g., Johnson & Johnson committing \$100 million over the next 5 years. (<https://www.jnj.com/johnson-johnson-to-address-racial-and-social-injustice-through-platform-that-aims-to-eliminate-health-inequities-for-people-of-color>); General Motors designating \$10 million (https://plants.gm.com/media/us/en/gm/news_detail.html/content/Pages/news/us/en/2020/jun/0605-support.html)

¹² See, <https://www.invent.org/educators> and <https://www.invent.org/educators/professional-development>

features or background. Bringing underrepresented role models and mentors into the classroom, whether physically or virtually may improve student self-identification with roles in engineering, entrepreneurship, scientific research, artistic creation, etc. Role models and mentors may also assist teachers because sharing stories and the endeavors of underrepresented entrepreneurs may encourage innovation education. These role models may fill gaps in teacher knowledge by providing real world examples of current innovation endeavor. Similarly, these individuals may be able to assist educators in the development of innovation lesson plans or activities that relate to the role model's work or field of endeavor. Thus, interactions with role models and mentors in various fields of innovation and entrepreneurship may support students and assist educators in developing innovation curricula.

Further, as discussed with reference to question 7, greater emphasis on psychology and mindfulness training that promotes a discovery and inquiry pedagogy has been shown to effectively foster an innovation atmosphere in classrooms.¹³ This approach to teaching is independent of the classroom subject. Put another way, teachers can be better trained to promote students' discovering problems and possible solutions while embracing failure as part of the journey to success.

III. Practicing Innovation—Harnessing Skills and Interests to the Act of Innovation

10. Recent progress in developing STEM graduates from underrepresented groups has been documented. How can similar rates of invention and entrepreneurship be attained? How can organizations best recruit and retain innovators from diverse backgrounds?

An essential element to recruiting and retaining diverse STEM graduates is to cultivate an organizational culture that promotes support of diverse innovators. Organizational culture plays an important role in empowering diverse innovators to: 1) invent; 2) have the support and confidence to submit their inventions for protection; 3) advocate for selection of their inventions for protection; and 4) advocate for their inclusion in named inventors on any resulting patent application. Building an empowering innovation ecosystem must start at the top and must pervade the organization. Leadership should identify mechanisms for adoption of initiatives by innovation staff. An organizational culture in which the peers of diverse innovators invite them to participate in development groups, respectfully listen to and consider their ideas, and promote their inclusion on invention disclosures, is essential to empowerment.

Engaging diverse innovators within the innovation ecosystem may require changes in policy. For example, innovation incentive programs could be changed to reward teams of innovators and particularly those that include diverse innovators. Policies that reward inclusion are likely to engender collaboration and improved group participation. Further, policies that incentivize team members to identify and report the contributions of their diverse teammates could promote positive connections with diverse teammates. Recognition of these innovators by their peers and management may build a sense of self confidence as well as improving the likelihood that recipients will be promoted into leadership positions.

Supporting the growth of diverse innovators will likely require investment by organizations. For example, tuition reimbursement, employee grants, and scholarships for

¹³ See, <https://www.forbes.com/sites/robynshulman/2018/11/19/10-ways-educators-can-make-classrooms-more-innovative/?sh=10933d5e7f87>

graduate degrees may encourage diverse innovators to pursue additional education that could benefit the organization and place the recipients in better condition for career advancement. Organizations could bring onsite learning opportunities and remote learning opportunities to their diverse innovators. Integrating services such as childcare or childcare reimbursement could additionally remove barriers and could support participants throughout their advanced degree program and demonstrate the organization's commitment to the participant's success. Career mentoring programs may provide guidance and an opportunity for connections within an organization.

11. Inventors thrive when cultural and institutional barriers within workplaces are minimized or removed. What are examples of these barriers, and how can organizations remove them to create an inclusive, innovative workplace culture?

Cultural barriers can arise when employees have explicit and implicit biases that prevent them from engaging or respecting their colleagues. Examples of such bias include accents, languages spoken, body language, religious beliefs, cultural or group norms, dress, or presentation, etc. Identifying cultural barriers may require organizations to consider the composition of their work force and the community of the technical field in which the organizations operate. Diversity and inclusion specialists may add substantial value to an organization's management. These individuals, whether internal or external, may be able to identify cultural barriers experienced by members of the organization's workforce and make technical field specific recommendations for addressing the barriers. For example, regular cultural barrier training and education of employees may help foster an environment in which participants develop comfort with potentially threatening topics and could assist in changing perspectives about cultural barriers. Ongoing programs that address key cultural barriers on a regular basis may enable broader understanding among employees.

12. Access to information and resources is pivotal for the development of individual inventors and small businesses. How can the nation better support individual inventors and small businesses with resources so they can successfully translate their skills and creativity into the acts of invention, intellectual property protection, and entrepreneurship?

Promoting optimum information availability to everyone in the United States, irrespective of geographical location or economic status, the U.S. government should continue to fund and support the development for technologies that may expand Internet accessibility or provide service assurance. Disseminating innovation resource information across the United States should include a multi-pronged approach incorporating the U.S. government, local governments, academic institutions, and charitable organizations.

The U.S. government may leverage the specialization of its agencies to provide information to entrepreneurs and innovators. Many agencies already offer information resources, scholarships, grants, etc., but individuals must search for relevant agencies and then scour their websites for information. Agencies with related mandates or intersectional expertise may collaborate to develop joint informational resources, which would be available on the websites of all participating agencies. For example, the Small Business Administration, Department of Commerce, and White House Office of Science and Technology Policy could collaborate to form a joint web resource for innovators and entrepreneurs. Information may be

separated by technology and/or area of interest. The shared resource may provide access to materials and seminars offered by respective agencies.¹⁴

Further, local governments can provide online information summarizing local resources such as grants, support funds, local charities, engagement opportunities, etc. Municipalities may pool resources to create a shared website presence or may decide to maintain individual information resources. Local governments may seek out, and engage with, businesses to provide mentorship programming and set up entrepreneur or innovator training programs. Local governments could host clinics, seminars, and information fairs at community centers, libraries or other public spaces. These events may provide innovators with an opportunity to connect with local business and legal professionals. Additionally, remote access events should be offered to enable participation by those in rural geographic areas, or those with limited mobility.

Finally, local charitable and professional organizations may use their own websites as well as those of local government to advertise for free legal clinics, entrepreneurship classes, coaching, mentoring, and other support services. Text message and email subscription services should be provided to permit interested persons to opt into information updates, reducing the need for innovators to check websites frequently to avoid missing out on events and trainings.

13. Another important objective is increasing diversity in the entire intellectual property field. What are ways of promoting diversity in the corps of intellectual property attorneys and agents who represent innovators?

To improve diversity in the intellectual property legal field, organizations need to make clear they value diverse IP professionals. This may require some approaches reactive to the needs of diverse practitioners and the IP community, and some proactive approaches, aiming to educate and enable.

Organizations may seek feedback from target demographics about the programs that the organizations offer. For example, does a program for practitioners with disabilities support the practice of those practitioners? A diversity and inclusion program that does not provide meaningful support, training, and professional development could negatively impact diverse practitioners by offering subpar support or denying the opportunity to access other services. Determining what diverse practitioners need and want, and then providing that support, will demonstrate value in the long-term success of those practitioners.

An emphasis should be placed on cultural competence education within organizations. Some states have begun incorporating cultural competency education into their continuing legal education (CLE) requirements. New York Courts made a new CLE requirement effective 2018. Examples of cultural competence training include implicit bias and microaggressions awareness. Cultural competence turns more to Rule 1.1 (competency) than Rule 8.4(g) promulgated by the ABA. Cultural competency training may provide practitioners with information needed to overcome cultural barriers with diverse practitioners and innovators alike. Cultural competence is an important component of professional competency.

¹⁴ For example, the USPTO has prepared materials for seminars to women and minority owned businesses. Gary Michelson and 20 Million Minds has free textbooks in STEM, and he has the Michelson Institute for Intellectual Property (<https://michelsonip.com/>). There is also the Lemelson Foundation along with MIT (<https://www.lemelson.org/>) and the Gates Foundation of Innovative Technology Solutions

Further, organizations can demonstrate continued commitment to recruiting diverse practitioners by contributing to organizations such as the Foundation for Advancement of Diversity in IP Law or similar programs, which provide scholarships, mentorships, and platforms for informing students of the opportunities often unknown to diverse students. Engaging diverse college students and spreading awareness about the IP profession as a career option is essential to obtaining student interest.

IV. Realizing Innovation—Reaping the Personal and Societal Benefits of Innovation

14. Financial support is a critical element in translating an innovation into commercial success. What organizations, programs, or other efforts help promote access to capital to an expanded group of inventors and entrepreneurs—demographically, geographically, and economically?

Diverse entrepreneurs, such as women and entrepreneurs of color, can tap into several private efforts designed to provide funding to underrepresented entrepreneurs. A notable endeavor includes Pivotal Ventures, a Melinda Gates Company. Pivotal Ventures has pledged \$50 million as both philanthropic and investment capital to fund transformational ideas, people and organizations that advance progress for women.¹⁵

Another noteworthy organization providing much needed capital is the New Voices Fund (NVF). The \$100 million Voices Fund was created to enable and empower women of color entrepreneurs to reach their full potential. The fund invests in women of color launching startups, small business, and community-focused enterprises.¹⁶

Another impactful social investor is Gaingels. Gaingels is the first investment vehicle for the LGBT community. Gaingels seeks top investment returns by co-investing with the best venture capital firms and seeks to influence social change through business by investing in the best companies with LGBT+ leadership.¹⁷

15. Successfully commercializing an inventive product or concept requires in-depth knowledge about production processes, market forces, and other pertinent information. What types of mentoring initiatives could be implemented or expanded to help experienced entrepreneurs impart this specialized knowledge to diverse and novice inventors?

Real-world knowledge is needed to successfully develop products and services. Even if an entrepreneur chooses to license the technology rather than manufacture it, understanding production, marketing, and supply chain can only tend to make the product development process more precise. A few initiatives that use an “entrepreneur in residence” have the benefit of teaching the entrepreneur more advanced skills and also allows the entrepreneur to mentor others as well.¹⁸ Many universities have also developed entrepreneur networking and information resources amongst their alumni.¹⁹ Additionally, the USPTO and SBA offer

¹⁵ <https://www.pivotalventures.org>

¹⁶ <https://baucemag.com/list-of-black-investors-and-vc-firms/>

¹⁷ <https://gaingels.com/>

¹⁸ See, for example, <https://lean.ohio.gov/eir.aspx>

¹⁹ See, <https://www.thisiscapitalism.com/how-howard-university-and-hbcus-foster-young-entrepreneurs/>

entrepreneur resource pages on their websites. These services could be expanded to include links for mentorship programs for diverse innovators and entrepreneurs.²⁰

16. Formalized partnerships like tech transfer offices/conferences, accelerators, and incubators can help streamline commercialization objectives such as product development, licensing, and distribution. What can be done to make these partnerships more accessible and effective at supporting all inventors and entrepreneurs?

Strategic partnerships are helpful for the purpose of educating and training entrepreneurs on commercialization activities, such as customer product development, customer discovery, product distribution, and licensing. As with other resources, making partnerships accessible to all innovators and entrepreneurs may require collaboration between community organizations, satellite government offices, local and corporate branches. Information about partnerships can be disseminated through these local offices, via local government websites, radio, local television, and Internet. There may be an opportunity for organizations to incorporate partnership opportunities into travelling workshops.

An example of a successful strategic partnership is the National Science Foundation (NSF) I-Corps program,²¹ which uses experiential education to help researchers gain valuable insight into entrepreneurship, starting a business or industry requirements and challenges. The I-Corps curriculum integrates scientific inquiry and industrial discovery in an inclusive, data-driven culture driven by rigor, relevance, and evidence. Through I-Corps training, researchers can reduce the time to translate a promising idea from the laboratory to the marketplace. NSF is developing and nurturing a national innovation network to guide scientific research toward the development of solutions to benefit society. Such an approach, widely adopted, could have a major impact on the rate of success for new product development.

V. Other

17. Please provide any other comments that you feel should be considered as part of, and that are directly related to, the development of a national strategy to expand the innovation ecosystem demographically, geographically, and economically.

While a focus is often placed on cultivating new innovators by incorporating STEM education and creative problem solving into the education system, a large pool of potential innovators exists within today's disenfranchised workers. The reduction in blue-collar labor and manufacturing jobs is likely to give rise to a possible increase in new entries to STEM fields by blue-collar workers. For example, robotics mechanics, entry-level software developers, drone repairpersons, and the like. These jobs do not require the same rigorous or traditional education as needed for scientists and engineers but will provide fresh new perspectives on the operations of STEM fields as well as support to these fields. These persons bring diverse life perspectives, many being from rural or socio-economically disadvantaged areas and lacking in formal STEM education. Such perspectives may provide a bounty of new insights and problem-solving approaches that could drive new avenues of innovation. As such, it is important that both

²⁰ For example, <https://www.uspto.gov/learning-and-resources/inventors-entrepreneurs-resources>;
<https://www.sba.gov/about-sba/sba-locations/headquarters-offices/office-entrepreneurial-development/office-entrepreneurial-development-resources>

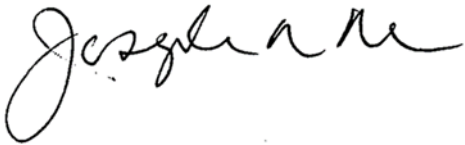
²¹ https://www.nsf.gov/news/special_reports/i-corps/

community organizations and the U.S. government, via the Department of Labor, invest in and support job retraining to transition these workers into developing STEM careers.

The government can support these careers by creating groups that work together across executive agencies such as the Departments of Labor, Commerce, and Education. Practical education programs for public schools can be created for students to learn practical skills such as basic business accounting, basic leadership and management skills, and common-sense STEM. Abstract applications of STEM programing are difficult to digest and can fail to address students. By making the education practical and by providing examples that are real life with people from all walks of life, students can self-identify and feel safe to pursue careers that before they would not have considered as possible. Such education may provide long-term support for diversifying innovators and entrepreneurs.

AIPLA appreciates the opportunity to provide feedback to the Office on the Request. AIPLA looks forward to further dialogue with the Office regarding the issues raised above.

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph Re". The signature is written in a cursive, flowing style.

Joseph Re
President
American Intellectual Property Law Association