U.S. Chamber of Commerce
Technology
Engagement Center

Commission on Artificial Intelligence Competitiveness, Inclusion, and Innovation

Report and Recommendations

This report is reflective of the Commission on Artificial Intelligence Competitiveness, Inclusion, and Innovation only.

Foreword

Artificial intelligence (AI) is increasingly used by all important actors in every aspect of our economy and society, both domestically and globally. Yet in many ways, in terms of technology, economic impact, and AI policy development, we are in the initial stages of a new age.

By the end of this decade, AI is projected to increase global economic growth by $13 trillion. AI is already having a positive impact by helping hospitals address nursing shortages through patient monitoring, helping emergency management officials map wildfire paths for quicker and better responses, and broadening financial inclusion by expanding job applicant pools and new avenues of credit.

As with any innovative technology, important concerns have been raised as well. Many have asked what AI means for humanity; governments struggle to match policies with technologies that are developing at an exponential pace; and workers are concerned about what AI means for them. America's competitors, such as China, realize the importance of establishing dominance by developing emerging technologies, and others in the international community, such as the European Union, are attempting to write the first regulations governing AI.

All of these issues must be debated and addressed in a deliberative and sober manner to create appropriate policies that will provide the pathway for the development and deployment of AI in a responsible and ethical manner. At the core of the debate is this simple premise—for Americans to reap the benefits of AI, people must trust it.

The private sector must be a serious partner in this process.

Recognizing the critical role of the business community in this AI debate, in 2022, the U.S. Chamber of Commerce launched the Commission on AI Competitiveness, Inclusion, and Innovation ("Commission"). This bipartisan and multistakeholder Commission is comprised of the private sector, academia, and civil society. The Chamber charged the Commission with a mission to consider the complex issues and real-world impacts that AI will have economically, individually, and globally.

Over the past 12 months, the Commission has heard from a diverse array of experts in Austin, Texas; Cleveland, Ohio; Palo Alto, California; London, England; and Washington, D.C. because the private sector has a major stake in ensuring economic prosperity and growth for Americans in a digital age, raising an educated and skilled 21st-century workforce, and promoting individual rights and fairness.

The Commission's work also builds on the past work of the Chamber's Technology Engagement Center, which put forth industry census–driven privacy and AI principles.

I would like to thank former Congressmen John Delaney (D-MD) and Mike Ferguson (R-NJ) in particular for their extraordinarily effective leadership. Thank you, too, to all of the Commissioners who have devoted their time, energy, and ideas to this report.

It is time for action. We hope the Commission's recommendations will spur additional dialogue and ideas. And we pledge to work to accelerate urgent efforts by business and government to enact AI policies that will help harness the benefits and address the important challenges.

David Hirschmann

President & CEO
Chamber Technology Engagement Center

A Message from the Commission's Co-Chairs

By almost any measure, innovation and advances in technology have improved the condition of humanity. From advances in medicine and extension of life to improved living and working conditions and environmental sustainability, innovation has driven broad-based social progress.

Although progress has been steady and meaningful, it is not always positive for everyone because change is highly disruptive, sometimes destructive, and often comes without proper societal planning and protections. AI similarly presents enormous opportunity for social advancement, which is our ultimate goal. It will also present, however, significant hurdles and challenges. From national security implications to privacy concerns to ensuring that harmful biases are not hardwired into the next generation of technological systems, AI presents unique challenges. We must address these issues clearly so that we can shape appropriate responses and achieve our goal, which is to allow the innovation machine to continue to work its magic and improve society, while protecting the basic rights of our citizens.

If we look at history, we see the benefits of good collaboration between the public sector and the private sector in addressing similar situations. In fact, the best societal outcomes are often achieved when the government and private sectors work well together. Through a transparent and open discussion—with all parties at the table—we can work to develop policies that allow for better outcomes for all. That has been the Commission's spirit and approach.

It has been an honor to cochair the Commission with former Congressman Mike Ferguson, and I am grateful to all of our Commissioners. I believe our recommendations will provide policymakers with an important framework for more specific policy making.

The Honorable John Delaney

Former Member of Congress (D-MD) and Co-Chair, U.S. Chamber of Commerce Commission on Artificial Intelligence Competitiveness, Inclusion, and Innovation

It has been an honor to cochair the U.S. Chamber's Commission on AI Competitiveness, Inclusion, and Innovation. The Commission has brought together some of the top minds in academia, industry, and civil society to find consensus on an important and timely issue of how to position the United States to best to lead in the development and deployment of AI.

We have traveled the world together the past year, talking with leading experts, civil society, unions, government officials, and other important stakeholders. The Commission saw no shortage of ideas and thoughts about regulating AI, training our future workforce, and positioning the United States to compete globally. As I learned during my time in Congress, these discussions and opportunities to hear many different viewpoints and perspectives are important in one's ability to strike the correct balance and to provide the best recommendations to solve a specific problem. I believe the Commission's work has struck this balance and will provide government officials, private industry, and advocacy groups with a set of key principles to start a further discussion. I appreciate my fellow cochair Rep. John Delaney for his expertise and constant willingness to work through these issues.

The Honorable Mike Ferguson

Former Member of Congress (R-NJ), and Co-Chair, U.S. Chamber of Commerce Commission on Artificial Intelligence Competitiveness, Inclusion, and Innovation

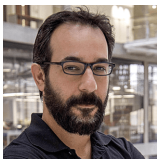
AI Commission Members

Co-chairs:

Congressman
John Delaney (D-MD)

Congressman
Mike Ferguson (R-NJ)

Commissioners:



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Executive Summary

The use of artificial intelligence (AI) is expanding rapidly. These technological breakthroughs present both opportunity and potential peril.

AI technology offers great hope for increasing economic opportunity, boosting incomes, speeding life science research at reduced costs, and simplifying the lives of consumers. With so much potential for innovation, organizations investing in AI-oriented practices are already ramping up initiatives[i] that boost productivity to remain competitive.

Like most disruptive technologies, these investments can both create and displace jobs. If appropriate and reasonable protections are not put in place, AI could adversely affect privacy and personal liberties or promote bias.

Policymakers must debate and resolve the questions emanating from these opportunities and concerns to ensure that AI is used responsibly and ethically.

This debate must answer several core questions: What is the government's role in promoting the kinds of innovation that allow for learning and adaptation while leveraging core strengths of the American economy in innovation and product development? How might policymakers balance competing interests associated with AI—those of economic, societal, and quality-of-life improvements—against privacy concerns, workforce disruption, and built-in-biases associated with algorithmic decision-making? And how can Washington establish a policy and regulatory environment that will help ensure continued U.S. global AI leadership while navigating its own course between increasing regulations from Europe and competition from China's broad-based adoption of AI?

The United States faces stiff competition from China in AI development. This competition is so fierce that it is unclear which nation will emerge as the global leader, raising significant security concerns for the United States and its allies. Another critical factor that will affect the path forward in the development of AI policy making is how nations historically consider important values, such as personal liberty, free speech, and privacy.

To maintain its competitive advantage, the United States, and like-minded jurisdictions, such as the European Union, need to reach agreement to resolve key legal challenges that currently impede industry growth. At this time, it is unclear if these important allies will collaborate on establishing a common set of rules to address these legal issues or if a more competitive—and potentially damaging—legal environment will emerge internationally.

AI has the capacity to transform our economy, how individuals live and work, and how nations interact with each other. Managing the potential negative impacts of this transition should be at the center of public policy. There is a growing sense that we have a short window of opportunity[ii] to address key risks while maximizing the enormous potential benefits of AI.

The time to address these issues is now.

In 2022, the U.S. Chamber of Commerce formed the Commission on AI Competitiveness, Inclusion, and Innovation ("Commission") to answer the questions central to this debate. The Commission, cochaired by former representatives John Delaney (D-MD) and Mike Ferguson (R-NJ), was tasked with the mission to provide independent, bipartisan recommendations to aid policymakers. Commissioners met over the course of a year with over 87 expert witnesses during five separate field hearings across the country and overseas, while also receiving written feedback from stakeholders answering three separate requests for information posed by the Commission.

The Commission observed six major themes from its fact finding.

i. J. McKendrick, *AI Adoption Skyrocketed Over the Last 18 Months*, Harvard Business Review: Innovation (Sept. 27, 2021), https://hbr.org/2021/09/ai-adoption-skyrocketed-over-the-last-18-months.

ii. Y. Atsmon, K. Baroudy, P. Jain, S. Kishore, T. Saleh, B. McCarthy, and S. Nair, *Tipping the Scales in AI: How Leaders Capture Exponential Returns*, McKinsey & Company, Whitepaper Report (Apr. 23, 2021), https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/tipping-the-scales-in-ai.

Key Takeaways

1. The development of AI and the introduction of AI-based systems are growing exponentially. Over the next 10 to 20 years, virtually every business and government agency will use AI. This will have a profound impact on society, the economy, and national security.

2. Policy leaders must undertake initiatives to develop thoughtful laws and rules for the development of responsible AI and its ethical deployment.

3. A failure to regulate AI will harm the economy, potentially diminish individual rights, and constrain the development and introduction of beneficial technologies.

4. The United States, through its technological advantages, well-developed system of individual rights, advanced legal system, and interlocking alliances with democracies, is uniquely situated to lead this effort.

5. The United States needs to act to ensure future economic growth, provide for a competitive workforce, maintain a competitive position in a global economy, and provide for our future national security needs.

6. Policies to promote responsible AI must be a top priority for this and future administrations and Congresses.

Understanding the importance of these findings, the Commission also determined that the following five pillars should be at the core of AI regulatory policy making:

Five Pillars for AI Regulation

Efficiency.

Policymakers must evaluate the applicability of existing laws and regulations. Appropriate enforcement of existing laws and regulations provides regulatory certainty and guidance to stakeholders and would help inform policymakers in developing future laws and regulations. Moreover, lawmakers should focus on filling gaps in existing regulations to accommodate new challenges created by AI usage.

Neutrality.

Laws should be technology neutral and focus on applications and outcomes of AI, not the technologies themselves. Laws regarding AI should be created only as necessary to fill gaps in existing law, protect citizens' rights, and foster public trust. Rather than trying to develop a one-size-fits-all regulatory framework, this approach to AI regulation allows for the development of flexible, industry-specific guidance and best practices.

Proportionality.

When policymakers determine that existing laws have gaps, they should attempt to adopt a risk-based approach to AI regulation. This model ensures a balanced and proportionate approach to creating an overall regulatory framework for AI.

Collegiality.

Federal interagency collaboration is vital to developing cohesive regulation of AI across the government. AI use is cross-cutting, complex, and rapidly changing and will require a strategic and coordinated approach among agencies. Therefore, the government will need to draw on expertise from the different agencies, thus allowing sector and agency experts the ability to narrow in on the most important emerging issues in their respective areas.

Flexibility.

Laws and regulations should encourage private sector approaches to risk assessment and innovation. Policymakers should encourage soft law and best practice approaches developed collaboratively by the private sector, technical experts, civil society, and the government. Such nonbinding, self-regulatory approaches provide the flexibility of keeping up with rapidly changing technology as opposed to laws that risk becoming outdated quickly.

Recommendations

Having understood the urgency to develop policies to promote responsible AI and to ensure economic and workforce growth, the Commission used these pillars to develop policy recommendations to put these priorities into action. The Commission recommends areas that policymakers must address, including preparing the workforce through education, bolstering global competitiveness in the areas of intellectual property while shoring up partnerships, and protecting national security.

Preparing the Workforce

- Use an Evidence-Based Approach: Policymakers must take action to understand the potential impact of AI on the American workforce by leveraging new data sources and advanced analytics to understand the evolving impact of AI and machine learning on the American public.
- Educate the Future Workforce: The United States must increase education around AI in both the K-12 and higher education systems by encouraging policymakers to reform the standard curriculum to better prepare students for developing AI and machine learning systems.
- Train and Reskill: The public and private sectors must invest in training and reskilling the future workforce. These investments should be targeted toward programs that help ease worker transitions and improve incentives for businesses to invest in retraining. Policymakers should also leverage community colleges and vocational schools to train workers to perform jobs alongside AI-enabled systems.
- Attract High-Skilled Talent: In areas where a worker shortage cannot be addressed through education, training, and reskilling, Congress must act to increase the AI talent pool through targeted refinements to the H-1B visa process to encourage high-skilled immigration to the United States.

Bolstering Global Competitiveness

- Shore Up Global Partnerships: U.S. officials must collaborate with key partners and allies to develop more sensible global governance frameworks that advance our common democratic goals and values.

- Advance Intellectual Property Protections: Building on the foundation of the current system, policymakers must clarify intellectual property law requirements to ensure adequate protection of AI-enabled intellectual property. Before any change, policymakers must involve relevant stakeholders to consider potential unintended effects.

- Provide Necessary Resources: Policymakers should provide additional resources to the U.S. Patent and Trademark Office to support the acquisition of technical expertise, training, and other resources to speed the review of AI- and machine learning–related public patent applications.

- Protect Ingenuity: Policymakers should also explore opportunities to grant provisional approvals for submissions under review where appropriate to mitigate the effects of lengthy delays.

Protecting National Security

- Human Rights: The United States must drive the development and implementation of laws and codes of conduct focused on promoting human rights and innovation.

- Establish International Rules of Conduct: As the United States leads in the development of AI-enabled weapons, it should follow and encourage other countries to align with existing international norms and laws.

- Systems Validation: The U.S. should invest heavily in new ways of testing, evaluating, verifying, and validating ("TEVV") military AI and machine learning systems to ensure that they are used safely.

- Streamline Procurement: To capitalize on American ingenuity, Congress and the Pentagon must look at streamlining acquisition processes and finding new ways of incorporating industry expertise and experience within the military enterprise.

- Work with Allies: The United States should look to open investment opportunities for AI-enabled systems to like-minded countries and allies and vice versa.

These findings and recommendations are not exhaustive, and we welcome the insights of others who may contribute to the AI policy debate. The Commission and individual Commissioners stand ready to collaborate with policymakers to address these issues that are of utmost importance to the United States and the economic well-being and safety of the global community.

Table of Contents

Introduction

Artificial intelligence (AI) surrounds us. It speaks with and listens to us directly—at home and at work through personal digital assistants like Alexa and Siri, technologies like ChatGPT, and our smart TVs. It chats with us online and answers our questions about cell service and sweater purchases, and it performs a myriad of services. AI also powers our future as it helps design new highways, detects cancers, personalizes financial services, and protects the environment. These developments are just the beginning of the AI revolution. As computer processing speed accelerates and volumes of data increase—in conjunction with declines in data storage prices—AI is on track to deliver novel technologies and applications almost unimaginable today, fundamentally reconfiguring our economic systems.

While U.S. usage of AI is rapidly expanding, the technology, like any technology, is imperfect. The wide-scale adoption of AI technology presents great hope for increasing economic opportunity, boosting incomes, and improving life generally while also raising various concerns. Organizations investing in AI-oriented practices are ramping up initiatives[1] that boost productivity to remain competitive. Like most disruptive technologies, these investments both create and displace jobs. Managing the impacts of this transition should be at the center of public policy. Americans are rightly concerned about AI, including the embedding of racial, gender, and other biases into the next generation of AI; protecting human and civil rights; unknowingly surrendering privacy, particularly for children; and potentially displacing people from jobs. Many believe we have a window of opportunity[2] to address key risks while AI is being implemented and scaled so we maximize the enormous potential of AI to improve the quality of human existence while minimizing negative impacts.

This debate leads to several core questions: What is the government's role in promoting the kinds of innovation that allow for learning and adaptation while leveraging core strengths of the American economy in innovation and product development? How might policymakers balance competing interests associated with AI—economic, societal, equity, and quality-of-life improvements—against privacy concerns, workforce disruption, and built-in biases associated with algorithmic decision-making? And how can Washington establish a policy and regulatory environment that will help ensure continued U.S. global AI leadership while navigating its own course between increasing regulations from Europe and competition from China's broad-based adoption of AI?

In January 2022, the U.S. Chamber of Commerce launched the bipartisan, independent Commission on Artificial Intelligence Competitiveness, Inclusion, and Innovation to consider these questions, research their underpinnings, and provide AI policy recommendations relating to regulation, international research, competitiveness, and employment.[3] Former representatives John Delaney (D-MD) and Mike Ferguson (R-NJ) co-chaired the Commission. Together they aimed to "harness the full potential" of AI while "addressing complex questions and challenges surrounding its use to provide the necessary guard rails to allow the technology to continue to fairly flourish."[4]

1. J. McKendrick, *AI Adoption Skyrocketed Over the Last 18 Months*, Harvard Business Review: Innovation (Sept. 27, 2021), https://hbr.org/2021/09/ai-adoption-skyrocketed-over-the-last-18-months.
2. Y. Atsmon, K. Baroudy, P. Jain, S. Kishore, T. Saleh, B. McCarthy, S. Nair, *Tipping the Scales in AI: How Leaders Capture Exponential Returns*, McKinsey & Company, Whitepaper Report (Apr. 23, 2021), https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/tipping-the-scales-in-ai.
3. U.S. Chamber of Commerce Technology Engagement Center, *Artificial Intelligence Commission*, https://americaninnovators.com/aicommission/.
4. John Delaney, https://www.uschamber.com/technology/u-s-chamber-launches-bipartisan-commission-on-artificial-intelligence-to-advance-u-s-leadership.

The AI Commission distinguished itself from previous commissions, as Reps. Delaney and Ferguson resolutely pursued a bipartisan vision and approach. Throughout 2022, the AI Commission traveled throughout the United States and Europe to gain a better understanding of technological change, the status of AI implementation, and gauge public opinion on AI. They heard from Americans on both sides of the aisle and stakeholders beyond our borders. Through these field hearings, the AI Commission received testimony from industry experts, government leaders, union officials, company executives, academics, and researchers. Many stakeholders argued for new laws to create regulatory certainty, facilitate investment in AI innovation, and protect human and civil rights. Others expressed concern about rules and regulations that could be overly prescriptive, stifling technological development and constraining U.S. competitiveness. Still others expressed concern that AI may impact demands for skills among American workers or leave workers behind in the wake of technological disruption.

The AI Commission heard measurable examples of AI successes from executives whose companies were leveraging AI in remarkable ways.

For example, in Ohio, the Commission learned that the Cleveland Clinic used AI to identify and triage the sickest COVID-19 patients, allowing its physicians and nurses to allocate resources effectively and provide more personalized care. In Austin, Texas, the AI Commission heard from a General Motors executive that AI transparency promotes innovation. In Palo Alto, California, a local union official said his concern was not that AI-fueled robotics would replace workers, but that AI's algorithms would effectively control workers. And in London, England, a NATO official testified that Western governments are relying on private-sector AI innovation to spur government military applications.

The AI Commission developed three Requests for Information (RFIs) for public comment to inform the Commission's work in developing strong bipartisan recommendations: (1) How do we define AI?;[5] (2) How do we balance fairness and innovation?;[6] and (3) How will AI impact the workforce?[7]

For more information about the AI Commission's members[8] and the five field hearings held in Austin, Texas; Cleveland, Ohio; Palo Alto, California; London, United Kingdom; and Washington, D.C., see Appendix 1.

5. U.S. Chamber of Commerce Technology Engagement Center, *Artificial Intelligence Commission,* https://americaninnovators.com/wp-content/uploads/2022/04/CTEC_RFI-AIcommission_2.pdf?utm_source=sfmc&utm_medium=email&utm_campaign=&utm_term=RFI+3+-+Workforce+-+20220518&utm_content=5/19/2022.
6. U.S. Chamber of Commerce Technology Engagement Center, *Artificial Intelligence Commission*, https://americaninnovators.com/wp-content/uploads/2022/04/CTEC_RFI-AIcommission_2.pdf?utm_source=sfmc&utm_medium=email&utm_campaign=&utm_term=RFI+3+-+Workforce+-+20220518&utm_content=5/19/2022. THIS URL ISN'T FOR U.S. CHAMBER. IT'S FOR RFI AI COMMISSION.
7. U.S. Chamber of Commerce Technology Engagement Center, *Artificial Intelligence Commission*, https://uschambermx.iad1.qualtrics.com/jfe/form/SV_cMw5ieLrlsFwUPs.
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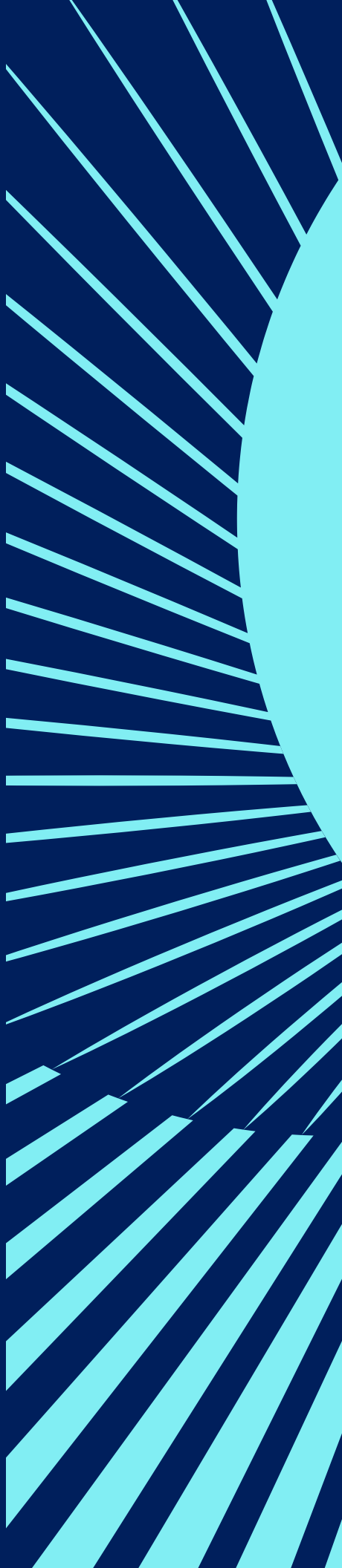
Defining Artificial Intelligence



"[T]here is no single universally accepted definition of AI, but rather differing definitions and taxonomies."[9] For years, AI has been an expansive term commonly applied to an array of technologies that exhibit aspects of human behavior and reasoning, including machine learning (ML), intelligent automation, predictive analytics, speech recognition, computer vision, and natural language process.[10] When the term was first coined, "artificial intelligence" referred to the way machines "use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves. . . . For the present purpose the artificial intelligence problem is taken to be that of making a machine behave in ways that would be called intelligent if a human were so behaving."[11] Since then, multiple entities worldwide have attempted to define AI.

The U.S. government, through the National Institute of Standards and Technology (NIST) operating as a U.S. agency under the Department of Commerce, has been attempting a consensus approach to defining AI. NIST acknowledges that defining AI is a challenge, and that any definition will likely evolve over time.[12] Regardless, in the near term, establishing a clear legal definition is an important first step in laying the foundation for a regulatory framework, especially one that will be interoperable with global standards and allow for a seamless, scalable development experience. To do so, policymakers must understand the considerations and challenges behind defining the term and should be aware of those standard-setting bodies that have addressed the definition of AI and become influential in industry circles.[13]

Congress established NIST to promote innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve quality of life.[14] In its efforts to develop a regulatory framework for AI and supply certainty for economic development and innovation in the field, NIST has defined AI as follows:

> AI technologies and systems are considered to comprise software and/or hardware that can learn to solve complex problems, make predictions or undertake tasks that require human-like sensing (such as vision, speech, and touch), perception, cognition, planning, learning, communication, or physical action. Examples are wide-ranging and expanding rapidly. They include, but are not limited to, AI assistants, computer vision systems, biomedical research, unmanned vehicle systems, advanced game-playing software, and facial recognition systems as well as the application of AI in both Information Technology (IT) and Operational Technology (OT).[15]

9. U.S. Government Accountability Office, *Artificial Intelligence Emerging Opportunities, Challenges, and Implications for Policy and Research* (2018), GAO-18-644T, https://www.gao.gov/assets/gao-18-644t.pdf; see also P. Wang, On Defining Artificial Intelligence, *Journal of Artificial General Intelligence* 10(2):1–37 (Aug. 23, 2019).
10. Deloitte's Responses to U.S. Chamber of Commerce's AI Commission Request for Information (hereinafter "RFI") (February 18, 2022).
11. M. Minsky, N. Rochester, C. Shannon, and J. McCarthy, *A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence* (August 31, 1955).
12. See National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
13. See A. Davidson, *Credo AI Comments on NIST's Artificial Intelligence Risk Management Framework* (Oct. 7, 2021), https://www.credo.ai/blog/credo-ai-comments-on-nists-artificial-intelligence-risk-management-framework ("We believe that NIST's proposed Framework could have an outsized impact in helping companies to understand "what good looks like" in governing AI, to translate between policy requirements and technical implementation, and to create mechanisms for monitoring and governing AI models and solutions").
14. National Institute of Standards and Technology, *About NIST* (January 11, 2022), https://www.nist.gov/about-nist.
15. National Institute of Standards and Technology, *U.S. Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools*, Executive Order 13859 Response (Aug. 9, 2019), https://www.nist.gov/system/files/documents/2019/08/10/ai_standards_fedengagement_plan_9aug2019.pdf.

NIST, in turn, references other standards' definitions of artificial intelligence, including ANSI/INCITS and ISO/IEC:

> ANSI/INCITS 172-2002 (R2007): A branch of computer science devoted to developing data processing systems that performs functions normally associated with human intelligence, such as reasoning, learning, and self-improvement. The capability of a device to perform functions that are normally associated with human intelligence such as reasoning, learning, and self-improvement.[16]
>
> ISO/IEC 3WD 22989: [The] capability of a system to acquire, process, and apply knowledge.[17]

The National Artificial Intelligence Initiative Act of 2020, which formally established the National AI Initiative Office to oversee and implement a national AI strategy, embraced a global view of the topic, adopting the Paris-headquartered Organization for Economic Cooperation and Development's (OECD) definition of AI as a "machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments."[18] The OECD further notes that "when applied, AI has seven different use cases, also known as patterns, that can coexist in parallel within the same AI system."[19]

Section 238(g) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 defined AI to include the following:

1. Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets.

2. An artificial system developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action.

3. An artificial system designed to think or act like a human, including cognitive architectures and neural networks.

4. A set of techniques, including machine learning, designed to approximate a cognitive task. An artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision-making, and acting.[20]

At the state level, and in one of the first U.S. demonstrations of a localized on-shore "Brussels Effect,"[21] New York City enacted Local Law 144 (NYC AEDT Law) to regulate city employers' use

16. ANSI/INCITS 172-2002 (R2007) Information Technology—American National Standard Dictionary of Information Technology ("ANSDIT") (Revision and Redesignation of ANSI X3.172-1996), https://webstore.ansi.org/Standards/INCITS/ansiincits1722002r2007.
17. ISO/IEC 3WD 22989 Information Technology—Artificial Intelligence—Artificial Intelligence Concepts and Terminology, https://www.iso.org/standard/74296.html.
18. National Artificial Intelligence Initiative Act of 2020, Section 5002(3); *see also* Organization for Economic Cooperation and Development, *Artificial Intelligence & Responsible Business Conduct* (2019), http://mneguidelines.oecd.org/RBC-and-artificial-intelligence.pdf. Note also that the EEOC pointed to this definition in its guidance. See U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.
19. Organization for Economic Cooperation and Development, *Artificial Intelligence & Responsible Business Conduct* (2019), http://mneguidelines.oecd.org/RBC-and-artificial-intelligence.pdf.
20. Pub. L. No. 115-232, 132 Stat. 1636, 1695 (Aug. 13, 2018) (codified at 10 U.S.C. § 2358).
21. A. Bradford, *The Brussels Effect: How the European Union Rules the World*, Faculty Books, 232 (Mar. 2020), https://scholarship.law.columbia.edu/books/232/ (Where the EU promulgates regulations that shape international business, such influence leads to a Europeanization of aspects of global commerce, shaping policy in various areas).

of automated employment decision tools (AEDT) in the hiring and promotion process.[22] Under the NYC AEDT Law, an AEDT is defined as follows:

> Any computational process, derived from *machine learning, statistical modeling, data analytics, or artificial intelligence,* that issues simplified output, including a score, classification, or recommendation, that is used to substantially assist or replace discretionary decision making for making employment decisions that impact natural persons. The term "automated employment decision tool" does not include a tool that does not automate, support, substantially assist or replace discretionary decision-making processes and that does not materially impact natural persons, including, but not limited to, a junk email filter, firewall, antivirus software, calculator, spreadsheet, database, data set, or other compilation of data.[23]

The New York City Department of Consumer and Worker Protection's proposed rules note that the phrase "to substantially assist or replace discretionary decision-making" means (1) to rely solely on a simplified output (e.g., score, tag, classification, ranking), with no other factors considered; (2) to use a simplified output as one of a set of criteria where the simplified output is weighted more than any other criterion in the set; or (3) to use a simplified output to overrule conclusions derived from other factors including human decision-making."[24]

The proposed rules further clarified the definitions of machine learning, statistical modeling, data analytics, or artificial intelligence as follows:

> A group of mathematical, computer-based techniques: (i) that generate a prediction, meaning an expected outcome for an observation, such as an assessment of a candidate's fit or likelihood of success, or that generate a classification, meaning an assignment of an observation to a group, such as categorizations based on skill sets or aptitude; and (ii) for which a computer at least in part identifies the inputs, the relative importance placed on those inputs, and other parameters for the models in order to improve the accuracy of the prediction or classification; and (iii) for which the inputs and parameters are refined through cross-validation or by using training and testing data.[25]

Overseas, the European Commission has promised to deliver a "future-proof definition of AI."[26] As proposed, the EU's Artificial Intelligence Act (EU AI Act) defines an artificial intelligence system as "software that is developed with one or more of the techniques and approaches listed in Annex I and can, for a given set of human-defined objectives, generate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with."[27] The EU Commission notes that the definition of AI should be as neutral as possible to cover techniques that are not yet known but also

22. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-870.
23. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-870.
24. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
25. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdfhttps://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
26. European Commission, *Europe Fit for the Digital Age: Commission Proposes New Rules and Actions for Excellence and Trust in Artificial Intelligence* (April 21, 2021), https://ec.europa.eu/commission/presscorner/detail/en/IP_21_1682.
27. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.

cover all AI currently known.[28] The EU AI Act references its Annex I for a more exhaustive list of AI techniques and approaches to provide for legal certainty, while noting that adaptations to the annex over time may be needed.[29]

Canada's proposed Artificial Intelligence and Data Act (AIDA), introduced with Bill C-27 in July 2022, defines an AI system as "a technological system that, autonomously or partly autonomously, processes data related to human activities through the use of a genetic algorithm, a neural network, machine learning or another technique in order to generate content or make decisions, recommendations or predictions."[30] Previously, Canada had defined AI in its Directive on Automated Decision-Making as "[i]nformation technology that performs tasks that would ordinarily require biological brainpower to accomplish, such as making sense of spoken language, learning behaviors, or solving problems."[31]

Responses to the Commission's RFI on the definition of AI[32] and testimony given at the various field hearings highlighted the clear challenges to determining the "right" definition of AI for the U.S., with many respondents expressing critiques of the aforementioned definitions. Several argued that many of the current definitions focus on the conceptual nature of AI rather than addressing it from a legal perspective.[33] While conceptual definitions may provide an overview of the operational workings of AI, some believe that in most cases conceptual definitions result in overly broad and imprecise definitions that are insufficient from a legal compliance perspective.[34] Others recommend that a sound legal definition of AI should instead be a framework to guide AI behavior and should be neither prescriptive nor preemptive.[35] For example, the National Electrical Manufacturers Association (NEMA) recommends that a conceptual definition should create appropriate governance guardrails around AI implementation that uphold individual and collective rights, freedoms, societal customs, market rules, and cultural norms that have been granted and established through legitimate processes of law and regulation; neither seek to slow or prevent operational capabilities of current AI technologies nor prevent continued innovation of them; and allow AI to adapt while "teaching" AI systems legal and ethical boundaries.[36]

Several stakeholders expressed concerns over too broad or overly complex conceptual definitions—specifically those similar to the OECD definition and the one proposed in the EU AI Act.[37] As written, those definitions have the potential to reach almost any modern software-based

28. European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.
29. European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.
30. Bill C-27, *An Act to Enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to Make Consequential and Related Amendments to Other Acts* (June 16, 2022), https://www.parl.ca/DocumentViewer/en/44-1/bill/C-27/first-reading.
31. Government of Canada, *Directive on Automated Decision-Making* (April 1, 2021), https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32592.
32. *Artificial Intelligence Commission*, U.S. Chamber of Commerce Technology Engagement Center, https://americaninnovators.com/wp-content/uploads/2022/03/CTEC_RFIAIcommission_3.30.22.pdf?utm_source=sfmc&utm_medium=email&utm_campaign=&utm_term=RFI+3+-+Workforce+-+20220518&utm_content=5/19/2022 404 ERROR.
33. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
34. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
35. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
36. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
37. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).

production because, at some level, all software is logic-based.[38] Arguably, the EU AI Act definition covers everything from a simple digital wristwatch to the most complex machine learning.[39]

Others, however, endorsed the EU AI Act's wording of "for a given set of human-defined objectives" as the EU AI Act definition seeks to emphasize that, at its core, AI is a software system that responds to a manifested design and reinforces the notion that human interaction is critical to the successful implementation of AI.[40] The EU itself has agreed to restrict the legal definition of AI to exclude traditional software merely used to automate human actions rather than substitute for human decision-making.[41] The Association of Test Publishers endorsed the view that software used for automation, such as automated test scoring, should not be classified as AI while noting it may still require attention under applicable privacy laws.[42]

Some respondents criticized the Canadian directive definition as too broad, as it would apply AI-specific regulation to a wide swath of technologies, many of which are very low-risk.[43] Others noted that the Canadian definition presented an outdated view of AI limited to voice recognition, learning, and problem solving, thereby overlooking other important functions.[44]

Others applauded the John McCain definition for having positive elements in attempting to specify important characteristics unique to AI while trying to exclude certain software from its scope.[45] Ultimately, however, McCain's definition also was criticized as overbroad.[46] Specifically, the U.S. Chamber of Commerce Technology Engagement Center (C_TEC) noted, in its response to the Commission's first RFI, that under the John McCain definition, almost any complex artificial system could "solve tasks requiring human-like perception, cognition, planning, learning, communication, or physical action."[47] C_TEC proposed a clarified definition to ensure that all five criteria be met or rely on only the first criterion, with slight modifications.[48] If only the first criterion was used, C_TEC offered that it should be edited to read "*any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, AND that*

38. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
39. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
40. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
41. A "compromise text" to the draft AI Regulation in the AIA released by the European Council (November 2021) clarifies that traditional software that merely automates a manual task is not considered AI, in contrast to a system that requires data learning, reasoning, or modeling to reach outcomes. Thus, some types of testing software used today (e.g., scoring, item generation, test monitoring) should not be considered or treated as AI.
42. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
43. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
44. Andrey Semichaevsky's Response to U.S. Chamber of Commerce's AI Commission RFI (February 14, 2022).
45. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
46. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
47. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022) (citing John McCain definition).
48. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).

learns from experience and improves performance when exposed to data sets."[49] C_TEC argued these changes would ensure the definition affects only software that "learns and adapts" over time, which is the core difference between AI and other software,[50] and provides a measure of distance between AI conceptually and simple algorithms.[51]

The Commission's RFI queried whether industry-specific definitions are preferable to one general definition. Viewpoints varied widely. Some industry respondents expressed that sector-specific definitions should stem from the comprehensive main legal definition of AI.[52] Other respondents, like Deloitte, argued that industry-specific definitions should not be used, as AI tools are used across sectors for different purposes.[53] Others countered that point, asserting that was precisely why tailored definitions are necessary because the user experience and consequences of AI vary among business sectors.[54] Some respondents emphasized that definitions and assessments of AI systems should be contextual because even within a sector, such as health care, higher- and lower-risk uses of AI systems exist.[55] One single AI system can be used in thousands of applications across various sectors and contexts.[56]

Current definitions have mostly focused on large technology companies, where the inherent risks are much different compared with the financial services or other industries.[57] Those who agreed that sector-specific definitions are necessary argued that when factoring in risk, a higher degree of nuanced application becomes appropriate and sector-specific definitions would serve to narrow the context required for regulatory oversight, including enabling a focused determination of risk factors specific to AI systems used in a particular industry.[58] However, some noted that creating sector-specific definitions would not be without challenge and would require a coordinated effort among various stakeholders.[59] Critics state that creating such definitions would require the development of a rigorous methodology to identify goals and attributes of different AI systems consistent with any legal definition and flexible enough to adapt to the rapid pace of AI innovations.[60]

Further, Congress has established agencies to regulate activities within certain economic industries to achieve various public policy objectives.[61] Industries within those sectors have already adopted, innovated, and tailored

49. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
50. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
51. C. Casey, A. Dindiyal, J. Sherer, *AI-Human Interaction—Soft Law Considerations,* 1 *JARWA* 4, 360–370, (Sep. 12, 2022), citing A. Sloman, *The Irrelevance of Turing Machines to Artificial Intelligence* (2002); M. Scheutz (ed.), *Computationalism: New Directions*, MIT Press, Cambridge, MA, p. 88, https://www.cs.bham.ac.uk/research/projects/cogaff/sloman.turing.irrelevant.pdf.
52. Andrey Semichaevsky's Response to U.S. Chamber of Commerce's AI Commission RFI (February 14, 2022).
53. Deloitte's Response to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
54. U.S. Bank National Association's Response to U.S. Chamber of Commerce's AI Commission RFI (February 22, 2022).
55. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
56. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
57. U.S. Bank National Association's Response to U.S. Chamber of Commerce's AI Commission RFI (February 22, 2022).
58. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
59. U.S. Bank National Association's Response to U.S. Chamber of Commerce's AI Commission RFI (February 22, 2022).
60. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
61. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).

automation and AI to operate within those regulated environments.[62] For example, NEMA represents manufacturers of medical imaging equipment who operate under rules established by the Food and Drug Administration, Department of Health and Human Services, Federal Trade Commission, and Congress under the Health Insurance Portability and Accountability Act (HIPAA).[63] These manufacturers claim they have successfully integrated AI tools within the regulatory frameworks.[64] Thus, NEMA asserts that any sector-specific definitions should not undermine the progress and achievements already realized by these specific sectors, precluding the disruption and weakening of public policy objectives of existing rules and laws.[65]

Rather than industry-specific definitions, some argue that industry-consensus *standards* and *frameworks* around AI implementation should be developed and adopted in conjunction with an overarching legal definition.[66] For example, the International Organization for Standardization (ISO) and the Institute of Electrical and Electronics Engineers (IEEE) are both engaged in drafting cross-sector and sector-specific voluntary consensus-driven standards that could be key sources for crafting legal definitions of AI.[67]

Others pointed to NIST's work in developing a "voluntary risk management framework for trustworthy AI systems,"[68] further supported by commentary discussing how the NIST AI Risk Management Framework (RMF) itself should aid the EU decision-makers' learning and education while the EU finalizes the AI Act.[69]

Additionally, to establish an AI regulatory framework, various commenters recommend that policymakers consider the need to define other related terms such as "machine learning"[70] or the various types of "data"[71] in addition to more abstract terms like "ethical AI," "transparency," "trustworthiness,"[72] "fairness," "bias," or "explainability."[73] Some articulated a desire for a common language and terminology that could be adapted and applied among partners globally.[74] Regardless, many noted that at a minimum, any definition of AI should align with that of our trading partners.[75]

To succeed in creating a regulatory framework for AI, the U.S. needs a clear legal definition of AI that provides precise legal certainty. The Commission provides the following recommendations for policymakers to consider when articulating a legal definition of AI for regulatory purposes:

62. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
63. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
64. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
65. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
66. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
67. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022); see also the IEEE P2863 Organizational Governance of Artificial Intelligence Working Group, https://sagroups.ieee.org/2863/meeting/ieee-p2863-full-working-group-meeting-6/.
68. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
69. C. I. Gutierrez, Lessons from the NIST AI RMF for the EU AI Act—Input for the US-EU TTC, Future of Life Institute, Apr. 2022, https://futureoflife.org/wp-content/uploads/2022/08/Lessons_from_NIST_AI_RMF-v2.pdf.
70. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
71. National Electrical Manufacturers Association's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 15, 2022).
72. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
73. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
74. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022)
75. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).

- The diversity of current AI applications paired with an unknown innovation trajectory may complicate efforts to build an "ideal" legal definition sufficiently broad enough to accommodate future changes.[76] Any legal definition should be technology neutral and sufficiently flexible to accommodate technical progress, while precise enough to provide the necessary legal certainty.[77]
- Overly prescriptive legal definitions may lead to unintended consequences that inhibit innovation by discouraging research and development outside specified applications.[78]
- Definitions should not be overly broad, and they should focus on systems that learn and adapt over time.[79]
- Definitions should focus on real AI, not non-AI enabled computer software that has been mistakenly assumed or perceived to be AI.[80]
- Any legal definitions should be accessible to individuals at different levels of understanding.[81]
- A legal definition should address AI's potential impacts on the public, such as AI discrimination or violations of consumer rights.

To succeed in creating a regulatory framework for AI, the U.S. needs a clear legal definition of AI that provides precise legal certainty.

76. Deloitte's Response to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
77. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
78. Deloitte's Response to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
79. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
80. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
81. Deloitte's Response to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).

Five Pillars of AI Regulation

The AI Commission highlights five key principles that policymakers should consider when building a framework for AI regulatory governance. These principles balance the need to protect individual rights, liberties, and privacy while promoting innovation and securing the role of the U.S. in global AI leadership.

1. Evaluate applicability of existing law and regulation.

The AI Commission recognizes that the existence of AI does not displace the applicability of existing law and regulation to people and organizations, both in the U.S. and abroad. Law and regulation regarding antidiscrimination, consumer protection, civil and human rights, copyrights, and data privacy specifically implicate the use of AI systems. Other laws and regulations touch on or implicate the use of automated approaches. AI cannot hide or shield human behavior, and the decisions of AI developers *and* users must continue to remain accountable under existing law.

> AI cannot hide or shield human behavior, and the decisions of AI developers and users must continue to remain accountable under existing law.

Appropriate enforcement of existing law and regulation would provide a degree of regulatory certainty and guidance to stakeholders and would help inform policymakers developing future law and regulations. Moreover, lawmakers should focus on filling gaps in *existing* regulation to accommodate for new challenges created by AI usage and answer further questions, such as where AI liability ultimately resides.

2. Fill gaps in existing law while avoiding statutory and regulatory overreach.

As technologies develop and practices mature, new laws regarding AI should be created as necessary to fill gaps in existing law, protect citizens' rights, and foster public trust. Rather than trying to develop a one-size-fits-all regulatory framework, this approach to AI regulation allows for the development of flexible, industry-specific guidance and best practices. Such an "as-necessary required" legal approach, however, does not preclude additional regulatory requirements.

While the government has an important role in regulating, supporting, and developing AI, the AI Commission recommends an "as-necessary" framing for the government role to allow for more flexibility as technology advances. The government, organizations, and citizens are ill-served when laws or regulations are passed only to become immediately outdated. The rise of the internet serves as a relevant comparison. With some exceptions, the internet and associated U.S.-led advances were best served with a light-touch approach that avoided intense regulation at the onset of the internet's use. Without this approach, the internet could have been stymied before its commercial viability was fully realized.

To identify potential gaps where new law is needed, policymakers should evaluate existing laws for use and application to AI. Several of those gaps have

already begun to emerge, including the need for information and disclosure requirements to allow for effective enforcement of current laws and cases where existing law does not appropriately cover AI's speed and scale. AI has also created entirely new situations that current legislation does not cover. Deepfakes, for example, are often used as revenge porn.[82] Currently, there are few laws surrounding deepfakes used in this way; however, almost every state has some form of legislation that prohibits sharing revenge porn.[83] Amending current revenge porn laws to include the prohibition of deepfakes exemplifies how legislators can fill this and similar gaps in legislation as AI continues to develop.

3. Assume a risk-based approach in AI regulation and enforcement.

The AI Commission recommends a risk-based approach to AI regulation, wherein "as-necessary required" regulations would apply to AI applications with negligible risk to privacy, health, safety, or fundamental rights. In contrast, as risks increase, stricter regulations would apply. For example, for lesser-risk AI applications, industry could establish nonbinding industry best practices or "soft law" impact assessments accompanied by codes of conduct. Applications with increased risk, new requirements, practices, or stricter compliance requirements—including areas where implicit bias could affect federal or other prohibitions against discrimination based on protected characteristics—might require additional law or regulation, taking into account the particular AI use case, the affected user, and the roles of various actors within the AI life cycle.

While challenges exist to a risk-based approach—namely, who defines and classifies risk and how to evaluate changing risk levels over time—the AI Commission believes this model ensures a balanced and proportionate approach to creating an overall regulatory AI framework. The Commission further notes that a risk-based approach would align the U.S. with other international approaches to AI regulations, including the European Union's (EU) proposed Artificial Intelligence Act and similar Canadian proposals, although those governments may ultimately formulate definitions of risks that do not align well with U.S. conceptions of risk.

4. Distribute but coordinate AI regulation.

Given the scope and span of AI and its various applications, regulatory oversight will need to draw on expertise across agencies, allowing sector and agency experts the ability to concentrate on the most important emerging issues in their respective areas. For example, AI used in health care, finance, or critical infrastructure will require specialized understanding and nuances. Such an approach would avoid overly broad, top-down rules that may not be appropriate for all AI applications or sectors. It allows for refined, thoughtful requirements tailored to sector-specific challenges and requirements.

> As risks increase, stricter regulations would apply.

82. H. Rechtsanwalte, *Deepfakes—New Legal Challenges due to Technological Progress* (2022), https://www.lexology.com/library/detail.aspx?g=ee8e20ad-a308-4e10-819a-6530d948e443. (The majority of deepfakes available on the internet today are of a pornographic nature).
83. R. Su et al., *Here's a Map Showing Which US States Have Passed Laws Against Revenge Porn—and Those Where It's Still Legal,* Insider (2019), https://www.businessinsider.com/map-states-where-revenge-porn-banned-2019-10.

Nevertheless, many of the most pressing and emerging issues involving AI—such as generative models that will underlie many new AI systems—are cross-cutting, complex, and rapidly changing; they will require a strategic and coordinated approach among agencies, as suggested in Section 6 of EO 13960.[84] Individual agencies lack capacity and expertise to adequately address AI regulatory issues. Without interagency collaboration, however, policymaking and its implementation are likely to be fragmented among agencies with overlapping jurisdictions and shared or related responsibilities. Lack of interagency collaboration risks a lack of clear and common direction, contradictory work, or ignorance of other agencies' activities in the same realm.

As we work toward cohesive regulation of AI across the government, interagency collaboration will provide several advantages, including these:

- Improved effectiveness in policy formulation and implementation by information sharing and bringing together a variety of capabilities and resources to bear on a problem area. This approach will be particularly valuable to agencies with less capacity in AI.

- Increased agency efficiency by sharing best practices and reducing or eliminating redundancy and duplication without reducing effectiveness.

- Enhanced awareness of agencies' perspectives and priorities when addressing common challenges. Increased awareness will expand agencies' understanding of intersecting policy areas, helping prioritize policy formulation and implementation.

Many models exist of interagency collaborative arrangements and activities on our country's most important issues.[85] One informative example on how to structure such a body is the Committee on Foreign Investment in the United States (CFIUS), which reviews the national security implications of foreign investments in U.S. companies.[86] Congress may consider establishing a similar body focused on AI standards and rules—chaired by a lead agency with expertise in many of the issues underpinning AI—to strategically coordinate on emerging, cross-cutting AI issues. Representatives of member agencies could be designated as the "responsible official" for coordinating AI implementation under EO 13960, Section 8(c), or a similar role consisting of an AI expert. To have an effective role, all participating members will need to have the appropriate authority and dedicated resources within their respective agencies.

Within a distributed approach to regulating AI, participating agencies should align consistently on key pillars, including definitions and standards. NIST has demonstrated a leadership position in establishing definitions and standards across fields, including important contributions to the AI policy conversation. NIST has also demonstrated its ability to partner across the public and private sectors as well as academia. In this capacity, NIST may be uniquely suited to drive consistency in these key pillars while still allowing the existing agencies to pursue regulation in their respective channels.

84. Executive Order No. 13960, 8 FR 78939 (2020).
85. F. Kaiser, *Interagency Collaborative Arrangements and Activities: Types, Rationales, Considerations*, Congressional Research Service (2011), https://sgp.fas.org/crs/misc/R41803.pdf.
86. U.S. Department of the Treasury, *CFIUS Overview,* https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius/cfius-overview.

5. Encourage private sector approaches to risk assessment and innovation.

A core strength of the U.S. is the unrivaled ingenuity and innovation of its private sector, especially for dual-use technologies like AI where researchers assert that "the civilian IT sector stands at the forefront of technological change,"[87] yet advances will benefit both U.S. commercial and military interests. Given AI's rapid pace of change, in practice, the U.S. will largely rely on self-policing and self-regulation.

The Commission asserts that policymakers should encourage soft-law and best-practice approaches developed collaboratively by the private sector, technical experts, civil society, and the government. Such nonbinding, self-regulatory approaches provide the flexibility of keeping up with rapidly changing technology while minimizing the risk of becoming quickly outdated. Notably, this approach does not preempt additional oversight required for military applications, nor does it suggest that new laws and regulations may not be needed to safeguard the interests of the American people. The private sector and professional associations have already begun to develop a set of best practices and ethical guidelines to address AI uses and concerns—informed by practitioners from academia and civil society—and are adapting these standards in an appropriate way for their respective industries.

Given AI's rapid pace of change, in practice, the U.S. will largely rely on self-policing and self-regulation.

87. I. Carrozza et al., *Dual-Use AI Technology in China, the US and the EU*, Peace Research Institute Oslo ("PRIO") Paper (2022), https://www.prio.org/publications/13150.

Workforce

Throughout the past two centuries, there have been many warnings that automation and new technologies would eliminate numerous jobs. However, those warnings have not turned out as dramatically as originally thought.

The future of work is here. Automation has already eliminated certain jobs and tasks within jobs while also creating new opportunities. AI is encouraging increased productivity, extending the capacity of existing workers, and has the potential to eliminate billions of dollars wasted on inefficiency or unnecessary tasks or job duties in the workforce.[88] Specifically, AI has promoted efficiency in government agencies by eliminating paperwork and digitizing services,[89] expanded the education system,[90] and connected people to jobs by assisting human resource departments with finding the right candidates.[91]

The media often invokes narratives that reflect widespread anxiety around AI and robots rendering the human workforce obsolete[92] with provocative headlines like "Will robots steal all our jobs?"[93] and "Robots: Is your job at risk?"[94] and "Robots will destroy our jobs."[95] While these concerns have largely become secondary to more social algorithmic concerns like safety, security, privacy, and bias, this fear of being replaced is not new. Throughout the past two centuries, there have been many warnings that automation and new technologies would eliminate numerous jobs.[96] However, those warnings have not turned out as dramatically as originally thought.[97]

88. Remarks of Carly Eckert, Cleveland, OH Hearing Tr. 14:22:15–14:23:07; William D. Eggers, David Schatsky, and Peter Viechnicki, *AI-Augmented Government: Using Cognitive Technologies to Redesign Public Sector Work* (Deloitte University Press, 2017).
89. Remarks of Katherine Mcaden, Austin, TX Field Hearing at 121:20–122:13.
90. Remarks of Austin Carson, Austin, TX Field Hearing at 136:22–137:6.
91. Remarks of Cheryl Oldham, Cleveland, OH Field Hearing Tr. at 14:47:40–14:49:49.
92. E. Dahlin, *Are Robots Stealing Our Jobs? American Sociological Association* (May 10, 2019), https://journals.sagepub.com/doi/10.1177/2378023119846249.
93. Robert J. Samuelson, "Will Robots Steal All Our Jobs?" *The Washington Post* (May 10, 2017), https://www.washingtonpost.com/opinions/will-robots-steal-all-our-jobs/2017/05/10/0a567a66-35a0-11e7-b412-62beef8121f7_story.html?utm_term=.c53c0141bee6.
94. M. McFarland, "Robots: Is Your Job at Risk?" CNN Business (Sept. 15, 2017), https://money.cnn.com/2017/09/15/technology/jobs-robots/index.html.
95. D. Shewan, "Robots Will Destroy Our Jobs—And We're Not Ready for It," The Guardian (Jan. 11, 2017), https://www.theguardian.com/technology/2017/jan/11/robots-jobs-employees-artificial-intelligence.
96. David H. Autor, "Why Are There Still So Many Jobs? The History and Future of Workplace Automation," *Journal of Economic Perspectives*, 29 (3): 3–30 (2015).
97. See David H. Autor "Why Are There Still So Many Jobs? The History and Future of Workplace Automation," *Journal of Economic Perspectives*, 29 (3): 3–30 (2015); R. Atkinson, "Nine Years on, Predicted AI Job Loss Hasn't Happened," Industry Week (Oct. 3, 2022), https://www.industryweek.com/talent/labor-employment-policy/article/21252036/nine-years-on-predicted-ai-job-loss-hasnt-happened.

In the past decade, several studies have been published attempting to predict just how many jobs would be lost to automation. In 2013, a pair of Oxford University researchers estimated that 47% of American jobs are "at risk" of computerization over the next 20 years.[98] In 2017, McKinsey & Company found that about half of work activities could be automated by 2055.[99] These percentages have not held up under empirical scrutiny. The profession that Frey and Osbourne said faced the highest risk of technological disruption—insurance underwriters—instead saw employment grow 16.4% since 2013, while the occupation they said would be the least likely to be automated—recreational therapist—saw a decline of 8.9%.[100] McKinsey itself changed course, publishing a report only 11 months later stating that in reality the proportion of work actually displaced is between zero and one-third of work activities given other technical, economic, and social factors.[101] Even data from big firms like Amazon investing in robotics demonstrate that the workforce is not only not being replaced but growing.[102] Despite wide speculation that Amazon was replacing people with robots, Amazon has both added more than 520,000 robotic drive units and over a million jobs worldwide.[103] Amazon emphasizes that its "vision was never tied to a binary decision of people or technology. Instead, it was about people *and* technology working safely and harmoniously together to deliver for our customers."[104]

Fundamentally, tasks that cannot be substituted by automation are generally complemented by it.[105] The same reality applies to AI, which is best positioned to augment the workforce, not replace it. Take health care, for example. In Ohio, the Cleveland Clinic is working with AI in remarkable ways—from diagnosis to treatment to prognosis.[106] The radiology department of the Cleveland Clinic has implemented AI software to save precious lifesaving minutes through stroke detection.[107] Stroke is an illness in which blood supply is suddenly cut off from a certain region of the brain.[108] The AI tool, upon detecting a blockage in a blood vessel, automatically alerts a team of doctors and brings them together in a virtual chat room to immediately review the case together and confirm the diagnosis.[109] AI algorithms are also helping researchers examine significant amounts of data on various drugs that are already

98. C. Frey and M. Osborne, *The Future of Employment: How Susceptible Are Jobs to Computerisation?* Oxford Marin Programme on Technology and Employment (Sept. 17, 2013), https://www.oxfordmartin.ox.ac.uk/downloads/academic/future-of-employment.pdf.
99. McKinsey & Company, *A Future That Works: Automation, Employment, and Productivity* (January 2017), https://www.mckinsey.com/~/media/mckinsey/featured%20insights/digital%20disruption/harnessing%20automation%20for%20a%20future%20that%20works/mgi-a-future-that-works_full-report.pdf.
100. R. Atkinson, "Nine Years on, Predicted AI Job Loss Hasn't Happened," Industry Week (Oct. 3, 2022), https://www.industryweek.com/talent/labor-employment-policy/article/21252036/nine-years-on-predicted-ai-job-loss-hasnt-happened.
101. McKinsey & Company, *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation* (December 2017), https://www.mckinsey.com/~/media/BAB489A30B724BECB5DEDC41E9BB9FAC.ashx.
102. Amazon, "10 Years of Amazon Robotics: How Robots Help Sort Packages, Move Product, and Improve Safety" (June 21, 2022), https://www.aboutamazon.com/news/operations/10-years-of-amazon-robotics-how-robots-help-sort-packages-move-product-and-improve-safety.
103. Amazon, "10 Years of Amazon Robotics: How Robots Help Sort Packages, Move Product, and Improve Safety" (June 21, 2022), https://www.aboutamazon.com/news/operations/10-years-of-amazon-robotics-how-robots-help-sort-packages-move-product-and-improve-safety.
104. Amazon, "10 Years of Amazon Robotics: How Robots Help Sort Packages, Move Product, and Improve Safety" (June 21, 2022), https://www.aboutamazon.com/news/operations/10-years-of-amazon-robotics-how-robots-help-sort-packages-move-product-and-improve-safety.
105. David H. Autor, "Why Are There Still So Many Jobs? The History and Future of Workplace Automation." *Journal of Economic Perspectives*, 29 (3): 3–30 (2015).
106. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:31:15.
107. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:31:29–12:33:06.
108. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:31:29–12:33:06.
109. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:31:29–12:33:06.

on the market to perform simulations to determine whether those drugs may help treat other diseases.[110]

During the COVID-19 pandemic, the Cleveland Clinic implemented AI algorithms to predict which patients were at the highest risk of becoming the sickest.[111] As Dr. Laura Jehi pointed out, nurses during the pandemic did not "fall from the sky."[112] They already had full-time jobs monitoring patients with preexisting medical problems.[113] During the pandemic, they had to focus on the COVID-19 emergency. The AI algorithms allowed them to prioritize and get to the sickest patients quickly.[114]

All these examples have one critical commonality: AI tools are informing, *not* replacing, the human element.[115] AI, if developed and deployed ethically, has the ability to augment human capabilities and empower people to do much more. "AI… has often been maligned as a job taker…[but] how do we look at it not just as a job creator, but also a job focuser? Humans doing what humans are best at."[116] AI does not have to be a disrupter, and it does not have to have a negative connotation. Rather, it can be an additive technology that will help and benefit, not replace the American workforce.[117] "[W]e must ask ourselves if, as a society, we want AI automation to…[be] a way to replace people's job to drive profit margins, or if we want AI automation to be framed as a way to improve working conditions and quality of life for people."[118]

To change the mindset that AI tools are not replacing the human element, Cheryl Oldham, vice president of education policy at the U.S. Chamber of Commerce, emphasizes that we need to take two actions: minimize any negative disruption and put AI to work for the American workforce.[119] If we're going to minimize any labor market disruptions and build new and effective pathways that lead to AI-related jobs, "we need to proactively lean into workforce development."[120]

To remain competitive, the U.S., from the private sector to government to academia, must prepare and educate the current and, more important, future workforce to be adaptive, diverse, and resilient. Because the U.S. economy is stronger in service than in products, to compete with China, it needs workers who can both develop complex algorithms (data scientists, math category) and workers who can refine algorithms by providing better data.

In the face of uncertainty regarding how to integrate AI into the workforce, it is important to keep in mind that opportunity exists to combine technology with human labor to extend the ability to do certain activities and make the workforce more productive. Similarly, it is also important to keep flexibility in mind. As the workforce develops alongside AI, workers need to both obtain a core set of technological skills and adapt to technology as it advances. Resource workers, specifically those employees staying in their

110. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:33:06–12:34:08.
111. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:34-27–12:35:00.
112. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:36:06.
113. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:36:10–12:36:42.
114. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:36:10–12:36:42.
115. Remarks of Dr. Laura Jehi, Cleveland, OH Field Hearing Tr. at 12:36:48.
116. Remarks of Ben Ko, Cleveland, OH Field Hearing Tr at 13:54:26–13:54:33.
117. Remarks of Elizabeth Hyman, Cleveland, OH Field Hearing Tr. at 15:22:16.
118. Remarks of Almutwakel Hassan, Cleveland, OH Field Hearing Tr. at 15:57:22–15:57:36.
119. Remarks of Cheryl Oldham, Cleveland, OH Field Hearing Tr. 14:41:59–14:45:03.
120. Remarks of Cheryl Oldham, Cleveland Hearing Tr. 14:44:50.

jobs, must acquire new skills to remain relevant during changes in technological demand.

Thus, the private sector must transform its culture and processes, as well as reskill employees, to benefit from the full value of AI. Business leaders, governments, and others must also focus on building adaptability into retraining and reskilling for both technical and soft skills. In October 2022, President Biden signed the Artificial Intelligence Training for the Acquisition Workforce Act into law.[121] The bipartisan law will help bolster the federal workforce's understanding of artificial intelligence by creating a training program for federal employees responsible for purchasing and managing AI technologies to better understand the capabilities and risks they pose.[122]

Greater attention to innovative and collaborative workforce capabilities is necessary to better respond to change and seamlessly adopt new technologies. To make AI more inclusive, increased education in AI, more training for government officials, broader stakeholder involvement in the private sector, and more research ties among government and private businesses and academia are necessary.[123] Many aspects to education aside from technological skills are required for using AI, including mathematical foundations of algorithms and data science.

The Commission provides the following recommendations to develop the American workforce for an AI-driven digital economy in four key areas: (1) understanding the impact of AI on the American workforce, (2) increasing education around AI, (3) training and reskilling, and (4) expanding the AI talent pool.

> AI is best positioned to augment the workforce, not replace it.

121. AI Training Act, Pub. L. No. 117-207, 136 STAT. 2238-2239 (2022).
122. U.S. Senate Committee on Homeland Security and Governmental Affairs, "Portman, Peters Bill to Help Improve Federal Workforce's Understanding of Artificial Intelligence Signed into Law" (Oct. 18, 2022), https://www.hsgac.senate.gov/media/minority-media/portman-peters-bill-to-help-improve-federal-workforces-understanding-of-artificial-intelligence-signed-into-law-.
123. Remarks of Elizabeth Adams, Austin, TX Field Hearing Tr. at 87:4–88:8.

Understanding the Impact of AI on the Workforce

Leverage new data sources and advanced analytics to better understand the evolving impact of AI and machine learning on the workforce.

As automation advances across industries, common tasks, workstreams, and entire occupations will be transformed.[124] Aspects of physical labor and jobs that include repetitive tasks may be effectively automated, and AI may even conduct managerial and more complex analytic tasks.

AI and machine learning are growing and evolving fields, and key questions emerge about how they will affect the economy, demand for labor, and the workforce. Needs for AI/ML-related skills are likely to vary across the economy, with potential differences appearing throughout companies, industries, and geographical areas. Flexible labor market tools and analysis could help forecast which sectors are experiencing, or are likely to experience, these impacts in the near and medium term. A better understanding of these evolving impacts can help inform decision-making by policymakers, employers, and workers.

> Government, business, labor, and academia should be working together to systematically gather the necessary data that could help guide the demand requirements.

Policymakers should consider means of improving the quality and accessibility of data on anticipated needs for AI/ML-related skills. Workers have limited information on aligning medium- to long-term investments in acquiring new skills. Employers may have medium-term visibility on expecting hiring needs that could help workers in their industries and regions make informed choices. Opportunities may exist to incentivize these employers to safely share this information to bolster the existing workforce and labor market data. Better visibility into the workforce and labor demand impacts can help guide decision-making, supporting the development of more advanced analytics that furthers the understanding of AI/ML's impact.

Government, business, labor, and academia should be working together to systematically gather the necessary data that could help guide the demand requirements and build advanced analytics and AI/ML-enabled solutions that address these issues. These collaborations could better anticipate the evolving impacts of AI/ML's proliferation throughout the economy. Tools for understanding

124. M. Muro, J. Whiton, and R. Maxim, *What Jobs Are Affected by AI? Better-Paid, Better-Educated Workers Face the Most Exposure*, Brookings Institution (Nov. 2019), https://www.brookings.edu/research/what-jobs-are-affectedby-ai-better-paid-better-educated-workers-face-the-most-exposure/.

labor market demand could be tailored for use by state and regional economic development and education agencies. Such analysis would be of significant value in both establishing education and training priorities for new workers and easing the transition of existing workers who experience AI/ML-related job loss. To further encourage adoption of these programs on the candidates' side, policymakers and organizations could explore ways to share the costs of employees' investments in skills that are aligned with critical AI/ML industries.

Policymakers and various organizations using AI-enabled systems could benefit from a pipeline of talent with critical AI/ML-related skills. Apprising workers of the needs could help them align investments in acquiring new skills with employers' needs. Over time, this could accelerate the matching process of capable workers to employer needs. A better matching of skills and needs could ease friction for employees within the workforce and lower the risk for employers as both adapt to an AI/ML economy. And as pointed out by one Commission member, some academic research considers whether AI/ML tools will be treated as employees—that is, whether the use of AI/ML assets would be part of organized labor discussions if those assets are taking the place of humans staffed in existing roles, learning and developing in ways similar to humans, and potentially endangering humans in novel ways such that the existing responsibility for workplace incidents itself must mature in response.[125]

Demystify AI by decomposing it into its components for labor assignment.

In many cases, AI discussions are framed in an abstract way, making it difficult to understand the level of expertise from the labor market that is needed for the United States to remain globally competitive. To understand what skill sets are needed for what steps within the AI pipeline, policymakers may want to start describing the steps within the AI pipeline:

Data collection and labeling:
AI advancements are heavily dependent on access to large-scale, diverse data sets. Given a ubiquitous sensing modality (e.g., a mobile phone), the "everyday" individual could be transformed into an "AI data curator." The U.S. may be well positioned to create a "gig economy" based on data acquisition, labeling, and so on. For example, one challenge involves making AI algorithms scale to diverse contexts in the absence of ground truth data. From a labor perspective, having "pay for labeling" economic opportunities may transform the labor force in ways that enable flexible work schedules and temporary work-for-hire opportunities, allowing more of the population to be considered part of the AI pipeline. The general public may consequently become more connected to the nation's AI mission from a global competitive perspective.

AI model training and programming:
Another layer of education and work could be the establishment of AI practitioners who do not necessarily focus on the theoretical aspects of AI development but understand the basics to running AI algorithms to a level where they could apply them to solve real-world problems. A practitioner model motivates more investments in data science and short certificate programs that encourage individuals to learn specific skills pertaining to applied AI and coding. Rather than invest heavily in a large majority of the workforce learning the theory of AI, significant resources could be allocated to provide novel sources of income for individuals who become AI practitioners capable of solving specific problems. Industry

125. U.S. Chamber Institute for Legal Reform, Torts of the Future II (April 2018), https://instituteforlegalreform.com/wp-content/uploads/2020/10/tortsofthefuturepaperweb.pdf.

Policymakers should support the development of AI-enabled systems to allow doctors to spend a greater portion of their time on patient-facing activities and less on administrative tasks.

could assist the government in developing training and certification programs based on different types of coding expertise attained.

AI theory and algorithm development: The fundamental development of novel AI algorithms serves as the engine for many of the AI innovations experienced today. However, attaining the level of expertise required to make significant AI theoretical contributions requires a solid foundation in mathematics and sciences. The government may want to consider setting up specific Science, Technology, Engineering and Mathematics (STEM)[126] K-12 programs, where students spend more time developing a deep understanding of mathematics, that translate into the foundations needed for AI algorithm innovations. However, such a strategy may require long-term planning, which may not address the current challenges of maintaining AI innovation dominance. As a result, a parallel strategy could promote immigration policies that focus on mathematical skills as a rewarding dimension for visas.

Evaluation of AI models for biases and ethical considerations: While many components of the AI pipeline are technical in nature, opportunities exist to involve more educational disciplines in the overall assessment of AI and its impact on society and people. Toward that end, sociotechnical disciplines should be factored in to the evaluation of AI impact, including bias and fairness. Sociotechnical experts could serve as evaluators of end-user effects of AI, providing more qualitative feedback to AI engineers to drive new AI innovations.

Boost workforce productivity in education by leveraging AI/ML-enabled solutions to match high-quality teachers and content with students.

Productivity can be increased by driving the development of AI/ML solutions for delivering specific, personalized educational content to students according to interests and learning styles. Policymakers should also encourage leveraging AI/ML technologies to assess students' progress and should support school systems looking to adopt these solutions with appropriate funding and other resources. They should also emphasize the use of well-qualified metrics such as a student-to-teacher ratio to measure impact of the solutions.

Boost workforce productivity in health care by leveraging AI/ML solutions that allow doctors to spend more time on patient-facing activities.

Policymakers should support the development of AI-enabled systems to allow doctors to spend a greater

126. Deloitte, Promote STEM for Girls, https://www2.deloitte.com/us/en/pages/about-deloitte/articles/stem-for-girls.html.

portion of their time on patient-facing activities and less on administrative tasks. Currently, doctors spend an estimated 40% of their time writing.[127] AI could reduce time spent writing to 20%.[128]

Policymakers could encourage the use of AI/ML to support the communication of complex information such as postcare instructions, medications, and key risks to monitor. They could also support the development of data capture and processing capabilities that can deliver critical information to caregivers quickly and accurately. These functions could boost the reach of the health care workforce by helping caregivers focus more on patients, delivering quality care in a timely manner.

AI can be used in more routine and manual tasks to free up doctors' time with patients. For instance, to provide quality care to the patient, AI is used to determine whether a patient needs follow-up care about a different condition and associated treatments.[129] This use of AI helps with costs, giving patients options and access.[130]

Identify opportunities for public–private sector partnerships to drive investment and development of AI/ML in specific sectors.

The AI industry would benefit from leveraging strengths and resources of public and private sectors to enhance and scale AI employment opportunities.

The government should partner with industry to ensure a resilient workforce ahead of broad cross-sector AI implementation. Well-conceived private–public partnerships have the potential to bring together ideas, funding, and talent in targeted investments that support national competitiveness. The process of catalyzing growth in these key areas begins with finding and prioritizing opportunities. Policymakers could work with public and private sector stakeholders, industry organizations, and academia to study potential public–private partnerships to accelerate the development of AI/ML systems in key industries. Studies could focus on high-leverage opportunities including education, health care, finance, housing, and transportation. The focus should be on opportunities where AI/ML solutions can address specific problems with well-qualified metrics to gauge progress. Policymakers could explore incentives for executing and investing in these partnerships to enhance the U.S. workforce and national competitiveness.

Well-conceived private–public partnerships have the potential to bring together ideas, funding, and talent in targeted investments that support national competitiveness.

127. Remarks of Dr. Rohit Chandra, Cleveland, OH Field Hearing Tr. at 12:54:26–12:54:36.
128. Remarks of Dr. Rohit Chandra, Cleveland, OH Field Hearing Tr. at 12:54:26–12:54:36.
129. Testimony from Shawn Wang, Cleveland, OH Field Hearing Tr. at 13:36:11–13:37:31.
130. Testimony from Dr. Rohit Chandra, Cleveland, OH Hearing Tr. at 12:54:26–12:54:36.

Education on AI

Direct policymakers in K-12 and higher education systems to reform the standard curriculum to better prepare students for developing AI/ML systems.

Commenters noted that addressing the long-term needs for skilled data and AI/ML practitioners will require sustained efforts to strengthen the entire educational system.[131] Some recommended that AI become more prevalent in schools, as students need to be taught about AI to become prepared for the 21st-century advanced manufacturing economy workforce.[132] Accordingly, there should be clear standards around AI at the state level.[133]

Policymakers could work to improve the consistency and content of standard K-12 curriculum coverage to emphasize STEM fields related to developing AI/ML systems. As Cheryl Oldham recognized at the Cleveland field hearing, "[i]f we're trying to address our workforce challenges by starting post-high school, we're failing."[134] The curriculum could also emphasize critical thinking, problem solving, and other skills difficult to automate and resilient to changing requirements. As Stefania Druga suggested at the Palo Alto hearing, ". . . instead of teaching people skills that will eventually be automated, we should teach young people how to become better at problem solving, how to develop creative thinking, and how to interact and collaborate with machines and come up with new creative ideas and applications that cannot be automated."[135] Druga emphasized the importance of a curriculum and suggested a national AI competition to incentivize young minds to imagine better tools and applications.[136] These curriculum enhancements can help build the foundation for future generations of the workforce to thrive in an AI/ML economy.

Currently, as Alex Koran noted in the Cleveland hearing, "[m]ost AI curricula out there are regulated to after-school programs and summer camps and schools that have the resources to actually deliver technology education through the lens of computer science."[137] This is because "computer science is an imperfect delivery vehicle for learning about AI, because many schools don't have computer science teachers whatsoever. And even schools that do have computer science teachers lack equitable access to those programs."[138]

Additionally, educators and stakeholders in curriculum and lesson plan development in K-12 education should consider methods of making mathematics—the backbone of all computer science—more real in its application to students. Understanding that math can be used for more than just derivative problem sets and multiplication tables could generate interest in downstream career paths, like artificial intelligence development or microchip design.

131. Remarks of Alex Koran, Cleveland, OH Field Hearing Tr. at 15:43:34–15:52:37.
132. Remarks of Alex Koran, Cleveland, OH Field Hearing Tr. at 15:43:34–15:52:37.
133. Remarks of Alex Koran, Cleveland, OH Field Hearing Tr. at 15:43:34–15:52:37.
134. Remarks of Cheryl Oldham, Cleveland, OH Field Hearing Tr. at 14:42:19–14:42:41.
135. Remarks of Stefania Druga, Palo Alto, CA Field Hearing Tr. at 123:11.
136. Remarks of Stefania Druga, Palo Alto, CA Field Hearing Tr. at 125:1–12.
137. Remarks of Alex Koran, Cleveland, OH Field Hearing Tr. at 15:43:46–15:44-01.
138. Remarks of Alex Koran, Cleveland, OH Field Hearing Tr. at 15:44:08–15:44:20.

As Carson's testimony in Austin suggested, young people and most adults would view AI more favorably if they received more education on the topic.[139]

Consider AI solutions to address education gaps in underserved rural communities.

Many rural and lower-income communities struggle to keep up with the education and technological resource needs to develop an AI-capable workforce. This gap leaves a pool of potential talent underexposed to the skills and opportunities related to AI. Empowering future generations of the workforce to design and work with AI solutions will require tapping into these pools of talent. All children should have an opportunity to explore and pursue interests in AI/ML and related fields.

Potential AI-enabled solutions could enable educational systems in underserved communities to bolster local resources with teaching and education content tailored to individual needs. Similarly, AI-enabled resources for parents could support further learning in the home. High-quality online resources can be used to build cohesive learning programs for students looking to dive deeper into AI/ML learning.

> Additional support and resources for students and their families will be critical to leveling the playing field in underserved communities.

Additional support and resources for students and their families will be critical to leveling the playing field in underserved communities. Students and families will need access to technology so they can take advantage of online resources. The programs could seek to improve access to technology (high-speed internet, suitable devices) and opportunities (remote and in-person learning, internships, job opportunities) needed to acquire AI/ML skills. Private enterprises and industry organizations could be encouraged to participate in efforts in these communities to support the development of STEM and AI/ML programs in their school systems. Concerted action on this front can potentially deliver outsized benefits for workers in these communities.

Establish broad, responsible AI/ML frameworks so all stakeholders understand the limits of AI.

AI/ML solutions are capable of replicating certain human actions, offering a path to automating many tasks currently performed by humans. These tasks include computer vision, speech-to-text and text-to-speech applications, and virtual assistants. Many more tasks have the potential for AI/ML-enabled systems to support "human in the loop" decision-making. AI/ML-enabled systems can drive changes in how cognitive functions are used within organizations, driving personalization of services, issue identification, diagnostics, and more.

As AI/ML capabilities pervade the economy, it will be critical for the workforce to understand the limits of their solutions. The "human in the loop" must have sufficient knowledge, be empowered to question the solution output, interpret what influences a given outcome, communicate to a customer, and act on their understanding of the benefits and risks. These capabilities

139. Remarks of Austin Carson, Austin, TX Field Hearing Tr. at 138:14–140.

"I became convinced that all the talk of the robot apocalypse and robots coming to take workers' jobs was a lot of hyperbole."

— Doug Bloch, *Teamsters Joint Council 7*

are fundamental to effective human oversight. Frameworks for responsible and trustworthy AI/ML are key tools in fostering this understanding and establishing these responsibilities within organizations developing AI solutions.

As Doug Bloch articulated in the Palo Alto hearing, "I became convinced that all the talk of the robot apocalypse and robots coming to take workers' jobs was a lot of hyperbole. I think the bigger threat to the workers I represent is th[at] robots will come and supervise through algorithms and artificial intelligence."[140] He further suggested that "[w]e have to empower workers to not only question the role of technology in the workplace, but also use the tools such as collective bargaining and government regulation to make sure that workers also benefit from its deployment."[141] The biggest question for organized labor and worker advocates right now is how all of this technology relates to production standards, production, and discipline. Bloch opined that "[i]f the fight of the last century was for workers to have unions and protections like OSHA, I honestly believe that the fight of this century for workers will be around data, and that workers should have a say in what happens with it and to share in the profit with it."[142]

A framework for responsible AI development should ensure both AI experts and laypeople using AI systems understand and can assess the risks. This framework will allow individuals working on and with AI/ML systems to understand the risks as they apply to their roles, and organizations to establish effective controls for identified risks, including the following:

- Fairness and the potential for algorithmic bias
- Privacy
- Explainability
- Accountability and human agency
- Information security
- Process and third-party dependencies
- Ethics and workforce impact
- Algorithmic transparency and reproducibility

These frameworks could be a fundamental part of workforce education. Policymakers could support the creation of broad responsible AI/ML frameworks to drive trust. They could also explore ways to drive adoption of the frameworks and implementation of the necessary training. Policymakers in educational and vocational programs could incorporate best practices into their curricula to better prepare students for workplace roles.

140. Remarks of Doug Bloch, Palo Alto, CA Field Hearing Tr. at 79.
141. Remarks of Doug Bloch, Palo Alto, CA Field Hearing Tr. at 79.
142. Remarks of Doug Bloch, Palo Alto, CA Field Hearing Tr. at 83.

Open versus closed AI innovations.

The foundation of the U.S. academic education and research ecosystem is driven by the culture of openness and knowledge sharing. However, policies are needed to safeguard taxpayer-funded research outcomes so that the U.S. taxpayer benefits in ways that warrant further investments in AI research. Challenges arise from the fact that published research that is available to the general U.S. public is also available to everyone else in the world, including our adversaries. The concept of competition may therefore rest with the country that is able to adopt and deploy AI innovations most efficiently. More open debate needs to occur regarding the most efficient way to make publicly funded research accessible while benefiting U.S. taxpayers in the most practical ways.

Find innovative ways to reach the general public.

To promote AI literacy and awareness, policymakers should look for creative ways to reach the general public. For example, social media continues to transform the definition of what it means for someone to be an expert or an influencer. There is an emerging trend for people who may not have a formal education in a specific field to be globally famous due to their large online followings. Rather than countering this trend, policymakers could collaborate with this new group of experts and influencers to better promote AI awareness. Another way would be to have public figures appear on popular shows, podcasts, or other media. Numerous outreach possibilities exist; undoubtedly, establishing an "AI messenger" to reach the general public could have a profound effect on increasing AI literacy.

Training and Reskilling the Workforce

Invest in workforce reskilling programs that help ease worker transitions and improve incentives for businesses to invest in retraining.

Over the past six decades, the federal government has operated the Trade Adjustment Assistance (TAA) Program to assist workers displaced by trade agreements and offshoring of manufacturing. Especially since the 1990s, TAA has helped hundreds of thousands of displaced workers rebound through a blend of direct support, wage subsidies, skills retraining, and other transition assistance.[143] As artificial intelligence and robotics increase the pace of technological change, human labor will be under increasing pressure, and worker skills will be valued at an ever-higher premium. Recent analysis suggests that jobs previously insulated from automation in fields like law, journalism, and even computer coding may be affected by AI-enabled technologies. Policymakers may need to consider the creation of new worker transition programs that assist incumbent workers with TAA-like benefits for workers displaced by AI-driven changes to the labor market.

143. U.S. Dept. of Labor, *Trade Adjustment Assistance for Workers Program* 27, FY 2021 Annual Report, https://www.dol.gov/sites/dolgov/files/ETA/tradeact/pdfs/AnnualReport21.pdf#page=27.

Some believe the federal government should continue to initiate upskilling and reskilling programs to train workers in high-demand skills and alternative education pathways to careers in AI to ensure that U.S. citizens are adequately prepared for AI-driven workforce changes.[144] Currently, many upskilling and reskilling programs experience limited success because they provide generalized training rather than curricula created in close collaboration with companies that are hiring.[145] Some argue that "one-size-fits-all" approaches to higher education are not effective; approaches should instead be tailored to fit specific roles with basic literacy and AI fluency in mind as a first step.[146] Because traditional four-year degree programs may be too long and structured to respond to changing workforce needs, federal policies should be tailored to encourage alternative approaches—including hands-on technical training and streamlined, concentrated curricula. Federal policies should also support non-university job training, community colleges, technical schools, and professional apprenticeships.

Institutions of higher education should be incentivized to incorporate technology learning throughout degree programs. AI should be part of computer science (CS) and engineering curricula, and university STEM courses should include projects involving AI and critical analysis of AI-generated results by humans.[147] Further, educators should reduce the silos between STEM and non-STEM degrees, as non-STEM programs typically gain little exposure to emerging technologies.

Institutions of higher education should be incentivized to incorporate technology learning throughout degree programs.

Incorporating AI-adjacent programming into non-STEM curricula, including humanities, will enable more students to develop the baseline technical literacy necessary to learn AI. For example, Western Governors University, a national online university, focuses exclusively on highly marketable, industry-validated technical skills across its degree programs.[148] Similarly, ethics and privacy should be part of CS programs to educate AI programmers on fairness and bias.

Denver and San Francisco city governments have begun AI training by establishing data academies to help train city workers and others in basic skills needed to harness AI.[149] The National Security Commission on Artificial Intelligence has established a digital service academy, modeled after U.S. service academies, to produce a trained workforce that provides support to all federal agencies.

144. Remarks of Sakshi Mishra, Austin, TX Field Hearing Tr. at 160:21–63:20.
145. John O'Leary, Celina Bussey, and Sushumna Agarwal, "Job-Centric Upskilling: The New Workforce Development Imperative," *Deloitte Insights* (May 25, 2022), https://www2.deloitte.com/us/en/insights/industry/public-sector/onthe-job-upskilling.html.
146. A. Karkera, N. Hart, and V. Logan, "Data Literacy for the Public Sector: Lessons from Early Pioneers in the U.S." (Deloitte, Data Foundation, and the Data Lodge, March 2022), https://www.datafoundation.org/data-literacy-report-2022.
147. Letter from Andrey Semichaevsky to U.S. Chamber of Commerce AI Commission (February 14, 2022).
148. Jeffrey Selingo, Cole Clark, and Dave Noone, "The Future(s) of Public Higher Education: How State Universities Can Survive—and Thrive—in a New Era," *Deloitte Insights*, 36 (October 23, 2018), https://www2.deloitte.com/us/en/insights/industry/public-sector/future-of-public-higher-education-study.html.
149. William Eggers et al., "Scaling AI in Government," *Deloitte Insights* (December 13, 2021), https://www2.deloitte.com/us/en/insights/industry/public-sector/government-ai-survey.html.

Finally, certain tax changes may help to expand retraining opportunities for incumbent workers. Under the current law, the U.S. tax code favors investment in various forms of nonhuman capital over investment in worker skills. This imbalanced tax treatment tends to drive businesses toward labor "substitution" strategies that further reduce demand for human labor above what would otherwise occur under a more neutral tax policy. Although AI-driven economic change cannot and should not be avoided, policymakers should consider changes to the tax code that lessen the existing bias in favor of labor displacement and reduce disincentives for investment in skills acquisition. They should explore tax credits and other mechanisms to encourage small and medium-sized enterprises to offer on-the-job AI skills training and to account for regional and local economic strengths. State, local, academic, and business grants should also be considered to expand short-term educational and job training programming.

Invest in workforce reskilling solutions that leverage community colleges and vocational schools and enable workers to perform jobs alongside AI-enabled systems.

Just as high school enrollment helped Americans manage the transition from farm to factory, and expanded access to college supported the development of the service and information economy, new initiatives need to be implemented to build human skills for an AI-enabled economy. The effort to build AI-related skills should include both incumbent and new workers.

A growing share of the workforce will be using AI/ML-enabled systems in their jobs. The pervasiveness of data in the economy means many professionals have foundational skills that could accelerate adapting to these AI/ML-adjacent roles. Alternatives to traditional coursework including bootcamps, online courses, and data science competitions can help these professionals in adjacent industries quickly acquire the skills and knowledge to work with AI systems. These paths have driven significant interest in data science and AI/ML globally and could be further leveraged to quickly tap into a pool of capable professionals.

Community colleges and vocational schools could play a significant role in reaching a larger share of both the incumbent workforce and future generations. Policymakers could explore incentives for employers to partner with community colleges and technical and vocational schools to strengthen their offerings for professionals. Increased collaboration among public sector organizations, private sector employers, and academic institutions can help connect ideas, sources of funding, and talent to accelerate reskilling of workers. These efforts could focus on candidates with domain knowledge who need the technical skills that could help them transition to working with AI/ML-enabled systems. This might include trade workers who need to work with advanced AI/ML diagnostic tools and then use their judgment about how to proceed.

Community colleges and vocational schools could play a significant role in reaching a larger share of both the incumbent workforce and future generations.

It may also include professionals who could leverage AI/ML tools to assess damage to property, or real estate appraisers who can use AI/ML for richer data on listings to value properties. These programs would allow the workforce to complement existing expertise with AI/ML-compatible skills.

Given the limited supply of qualified AI/ML professionals, finding innovative solutions to maximize the reach of educators is critical. Such innovations might include "talent-sharing" between industry and community colleges to increase the number of teachers available to provide AI-related training. Other solutions could be similar to the rural medical doctor incentive program. Federal grants to incentivize the development of community college and industry partnerships could be effective in addressing regional and sector-based AI needs.

Expanding the AI Talent Pool

Enact targeted refinements to the H-1B visa process to encourage high-skill immigration to the U.S.

The U.S. will need to bolster its workforce to address the short-term shortage of data science and AI/ML professionals. To do so, the U.S. will need to obtain and retain the best entrepreneurial talent.[150] As AI in the workforce advances, it is important to confront a challenge—certain jobs will be displaced by AI, and workers who previously performed those jobs will need to be reallocated to jobs that are commensurate with their education and experience. For instance, if a truck driver's job is replaced by AI, it is not realistic for that individual to be expected to become an expert in differential equations. There should be a flexible response to job displacement and mechanisms to assist with transition. No evidence suggests that the U.S. is facing a workless future, but rather the questions concern what kinds of occupations will exist, what kinds of tasks will be needed, and how people keep moving up the value chain while maintaining the skill development to remain relevant to this work.

One potential path to addressing the shortage and challenges is improving our ability to attract, develop, and retain talent from across the globe.

> Immigrants represent approximately a quarter of all STEM workers and 34% of U.S. prime-working-age residents with a college, graduate, or professional degree.

150. Remarks of Karan Kanwar, Palo Alto, CA Field Hearing Tr. at 126.

Immigrants represent approximately a quarter of all STEM workers and 34% of U.S. prime-working-age residents with a college, graduate, or professional degree. Targeted measures to grow this capacity could add to the nation's base of expertise and drive adaptation to the future economy. Additional resources could enhance the nation's ability to develop AI/ML-related skills among incumbent workers and new generations.

Attracting AI/ML expertise globally could be accomplished through targeted refinements to the H-1B visa process for candidates in specialty occupations. Candidates who have an undergraduate degree or are pursuing a master's degree in data science could receive preferred treatment for a period, allowing the domestic workforce to acquire the necessary skills. This period could be as long as 10 years to allow for the U.S. to accumulate and integrate global AI/ML talent into the economy. The preferential treatment would then be phased out as labor market conditions for experts in AI/ML normalize.

Policymakers could also consider alternatives including creating a new category of H-1B visas for professionals with specific technical knowledge in AI/ML and related fields or making visas related to AI/ML skills exempt from the statutory cap. Easing the restrictions for employers to attract, develop, and retain AI/ML talent during the critical next several years can help the broader U.S. workforce, keeping them engaged with the best and brightest minds in AI/ML over the long term.

Bipartisan comprehensive immigration reform could also be a vehicle for accomplishing these objectives.

Overcoming the labor shortage with "hidden workers."

AI-driven economics holds tremendous promise in expanding the economy and driving wages. To achieve that objective, the U.S. will have to overcome chronic labor and skill shortages. Expanding education and training in AI-related skills to diverse, underemployed populations must be intentional. Certain "hidden workers" (i.e., veterans, opportunity youth, the formerly incarcerated, racial and ethnic minorities) require special outreach, training, and placement support. Special training initiatives that incorporate evidence-based sector training strategies in computer science and AI-powered industrial and business processes should be focused on these populations to help ensure access to the benefits of the AI economy.

Support the use of AI/ML solutions to address the unique needs of underserved communities.

Today's AI workforce lacks significant diversity, and certain commenters assert that too few options exist for underrepresented groups to pursue opportunities.[151] AI solutions may offer an opportunity for underserved communities to move up the economic curve faster. Currently, groups underrepresented in the AI workforce include Hispanics, African Americans, and women.[152] These communities have unique needs, which presents challenges to policymakers looking for solutions to common problems.

151. Ronit Avni and Rana El Kaliouby, "Here's Why AI Needs a More Diverse Workforce," World Economic Forum (September 21, 2020), https://www.weforum.org/agenda/2020/09/ai-needs-diverse-workforce/.
152. HAI, "The AI Index 2021 Annual Report," Stanford, CA: Human-Centered AI Institute, Stanford University (March 2021), https://aiindex.stanford.edu/wp-content/uploads/2021/03/2021-AI-Index-Report_Master.pdf.

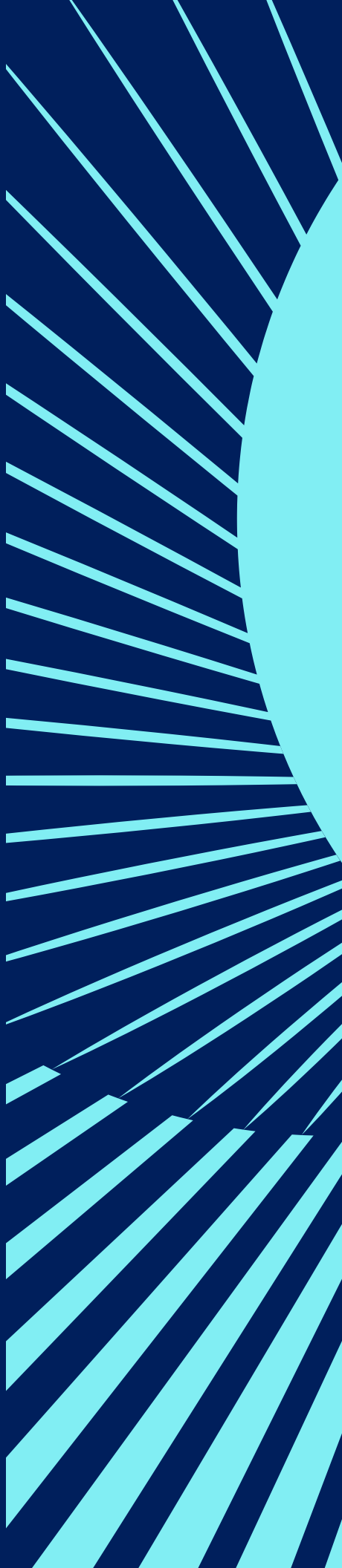
There could be opportunities to enable AI/ML-driven solutions to identify and address these issues. Combined with advances in online education that have reduced barriers for students and workers, AI/ML-enabled solutions can be fine-tuned to address the specific needs of communities looking to upskill their workforce. Policymakers at all levels support the development of AI/ML solutions that deliver targeted support to help these communities move up the economic curve. Targeted support could reduce inequalities and economic hardship in these communities and bolster the AI/ML-capable workforce by developing undiscovered pools of talent.

Policymakers should begin by addressing impediments to aid. Public misconceptions around AI could hinder efforts to broaden AI workforce opportunities.[153] Lack of familiarity with AI's beneficial applications and mistrust surrounding AI's decision-making processes could foster public distrust in AI.[154]

Lack of familiarity with AI's beneficial applications and mistrust surrounding AI's decision-making processes could foster public distrust in AI.

153. Katherine Mangan, "Race on Campus: Rooting Out Bias in Financial Aid," *Chronicle of Higher Education*, June 27, 2021, https://www.chronicle.com/newsletter/race-on-campus/2021-07-27.
154. Katherine Mangan, "Race on Campus: Rooting Out Bias in Financial Aid," *Chronicle of Higher Education*, June 27, 2021, https://www.chronicle.com/newsletter/race-on-campus/2021-07-27.

Global Competitiveness, Intellectual Property



With the U.S., China, and the EU adopting different AI policy approaches to "win the race,"[155] AI is "set to play an important role in the biggest geopolitical revolution in human history."[156] AI has important ramifications for the future of global competitiveness, intellectual property, and national security. While many complex issues are at play, and the intent is not to compromise the fundamental rights of U.S. citizens in pursuit of competitiveness, the nation can pursue commonsense efforts and policies to advance widely shared goals and values.

But without the right policies, the U.S. is at risk of losing its competitive advantages.

Global Competitiveness

The U.S. already faces stiff competition for global AI leadership. China has stated its intention to become an AI superpower by 2030 and is investing the equivalent of billions of dollars in research and AI startups.[157] Likewise, the EU has promulgated initiatives[158] and has led a charge to writing detailed "rules of the road" for AI regulation.[159] This is precisely the reason "why the United States has to lead in developing and advancing this fourth industrial revolution" of artificial intelligence.[160] But without the right policies, the U.S. is at risk of losing its competitive advantages.

Throughout the Commission's field hearings, witnesses agreed on the importance of maintaining global leadership in AI, especially in the context of increasing competition from China, while emphasizing the need to maintain our democratic values. As the Commission's co-chair, Representative Mike Ferguson, stated, "The American public has really spoken loud and clear about the importance of the United States being able to compete on the global stage, and not just compete to win, but to compete because America represents certain values which are important… to be prominent on the stage."[161] Representative John Delaney shared these sentiments, noting that our democratic values give the U.S. "certain advantages" over China.[162] Delaney continued that the U.S. has "the best universities in the world

155. A. Thierer, *A Global Clash of Visions: The Future of AI Policy*, The Hill (May 4, 2021), https://thehill.com/opinion/technology/551562-a-global-clash-of-visions-the-future-of-ai-policy.
156. K. Drum, *Welcome to the Digital Revolution*, Foreign Affairs (2018).
157. P. Mozur, *Beijing Wants AI to Be Made in China by 2030*, The New York Times (July 20, 2017), https://www.nytimes.com/2017/07/20/business/china-artificial-intelligence.html.
158. See European Commission, "The European AI Alliance," https://digital-strategy.ec.europa.eu/en/policies/european-ai-alliance.
159. D. Matthews, *EU and US Set Out Plan to Create Rules of the Road for Artificial Intelligence*, Science Business (Dec. 6, 2022), https://sciencebusiness.net/news/eu-and-us-set-out-plan-create-rules-road-artificial-intelligence.
160. Remarks of Rep. Mike Ferguson, Austin, TX Field Hearing Tr. at 18:1–8.
161. Remarks of Rep. Mike Ferguson, Austin, TX Field Hearing Tr. at 17:3–9.
162. Remarks of Rep. John Delaney, Austin, TX Field Hearing Tr. at 13:18–19.

because fundamentally great universities" exist in liberal democracies, and that gives the U.S. a huge head start; however, China has certain advantages too, such as a policy stance that allows the use of their citizens' data.[163] Obtaining a similar policy stance in the U.S. would be very challenging.

For the U.S., developing an effective AI regulatory framework will be crucial to its global leadership.[164] This is a "values competition"—AI technologies should be "developed according to our norms and ethics, which is the antithesis of how China is using it against their citizens… through surveillance [and] oppression of their minority groups."[165] If the U.S. falters, "others who do not share our values are going to fill that void. Eighty percent of Americans by some measure agree that the U.S. should develop AI, and that we are the best equipped to create the ethical standards and the framework needed to surround the proper development of AI."[166]

In comparing U.S. progress with that of China, some emphasized the goal should not be to compete at all. In her testimony, Carissa Véliz, associate professor on the faculty of philosophy and the Institute for Ethics in AI, and tutorial fellow, University of Oxford, stated that trying to compete with China rather than moving away from its techno-authoritarian style is a "mistake."[167] She emphasized, "This is a time to defend our liberal values and for [the] democracies of the world to come together…Our job as liberal democracies is to export democracy." Philip Lockwood, deputy head of Innovation, NATO, echoed this sentiment, stating that the core of AI strategy should be "our ethnical principles and our commitment to democratic norms and values…and to demonstrate that we are different, in fact, from other adversaries and competitors in this space."[168]

Several highlighted the need to find a sensible middle ground between innovation and privacy to remain competitive against adversaries who don't operate under the same principle of calculus that we do.[169] Values-based approaches to AI are vastly different between Western countries and authoritarian regimes like China and Russia. "In China, the idea of a right to privacy is not respected or thought of nearly the same way as it is in the United States. And for that reason, gargantuan amounts of very finite, very invasive data is collected on behalf of features that are developed for products."[170] China has sought to aggressively promote specific sectors and firms, but those firms, while enjoying vast innovative freedom, dare not cross the Communist Party leaders on state priorities.[171]

> Our democratic values give the U.S. "certain advantages" over China.

163. Remarks of Rep. John Delaney, Austin, TX Field Hearing Tr. at 13:18–14:5 (paraphrased).
164. Remarks of Rep. John Delaney, Austin, TX Field Hearing Tr. at 13:18–14:5.
165. Remarks of Yll Bajraktari, Washington, DC Field Hearing Tr. at 41.
166. Remarks of Rep. Mike Ferguson, Austin, TX Field Hearing Tr. at 18:9–15.
167. Remarks of Carissa Véliz, London, UK Field Hearing Tr. at 93.
168. Remarks of Philip Lockwood, London, UK Field Hearing Tr. at 43.
169. Remarks of Charlie Burgoyne, Austin Field Hearing Tr. at 102:17–23.
170. Remarks of Charlie Burgoyne, Austin Field Hearing Tr. at 101:9–14.
171. Adam Thierer, *A Global Clash of Visions: The Future of AI Policy*, The Hill (May 4, 2021), https://thehill.com/opinion/technology/551562-a-global-clash-of-visions-the-future-of-ai-policy.

For net governance, the U.S. adopted light-touch regulation, a general openness to immigration, and encouragement of robust venture capital markets. The same approach should apply to AI.

Karan Kanwar, CEO of Wing AI, emphasized this middle-ground approach in Palo Alto, noting that neither China nor the EU's models to privacy and data rights "feel like an American fit to the cultural value of privacy nor the entrepreneurial dynamism that America is known for."[172] A fundamental tension exists between China's model that "foster[s] aggressive innovation" with no regard for privacy and the EU's model that takes no chances on privacy but ends up "stifl[ing] innovation."[173]

Some suggest looking back on the policy paradigm that allowed the U.S. to dominate the internet and digital economy for the past several decades as a model to win the AI race.[174] While Europe is still grasping to reach America's domination of global internet sectors—including software, storage, search, semiconductors, social media, and cloud services—U.S.-based firms remain household names.[175] For net governance, the U.S. adopted light-touch regulation, a general openness to immigration, and encouragement of robust venture capital markets.[176] The same approach should apply to AI. Such a model would reject China's "techno-authoritarianism" and the EU's "techno-paternalism."[177]

The Commission provides the following recommendations to support and affirm the United States' global leadership position in AI:

Encourage more investment in AI and robotics.

The National AI Initiative Act of 2020[178] was an important first step in accelerating AI research and development to advance U.S. leadership in AI. Building on these bipartisan efforts across the past three presidential administrations and in Congress, policymakers should continue to push for expanded investment in AI and robotics

172. Remarks of Karan Kanwar, Palo Alto Field Hearing Tr. at 128.
173. Remarks of Karan Kanwar, Palo Alto Field Hearing Tr. at 128.
174. Adam Thierer, *A Global Clash of Visions: The Future of AI Policy*, The Hill (May 4, 2021), https://thehill.com/opinion/technology/551562-a-global-clash-of-visions-the-future-of-ai-policy.
175. Adam Thierer, *A Global Clash of Visions: The Future of AI Policy*, The Hill (May 4, 2021), https://thehill.com/opinion/technology/551562-a-global-clash-of-visions-the-future-of-ai-policy.
176. Adam Thierer, *A Global Clash of Visions: The Future of AI Policy*, The Hill (May 4, 2021), https://thehill.com/opinion/technology/551562-a-global-clash-of-visions-the-future-of-ai-policy.
177. Adam Thierer, *A Global Clash of Visions: The Future of AI Policy*, The Hill (May 4, 2021), https://thehill.com/opinion/technology/551562-a-global-clash-of-visions-the-future-of-ai-policy.
178. National Artificial Intelligence Initiative Act of 2020, H.R. 6216, 116th Cong., https://www.congress.gov/bill/116th-congress/house-bill/6216/text.

capabilities across the full range of relevant institutions (e.g., targeted educational programs and institutions, relevant federal labs).

Twenty-five percent of those currently submitting AI-related patent applications are individual inventors from across the country, not just tech hubs.[179] For example, in Oregon, patentees are using AI for fitness training and equipment.[180] In North Dakota, AI is used extensively for new agricultural innovations, and inventors from Maine and South Carolina are adapting AI for businesses.[181] In Montana, AI is being incorporated into inventions for analyzing the chemical and physical properties of materials.[182] In Wisconsin, AI is being applied to medical instruments and processes for diagnosis and surgery.[183] In Iowa, Kansas, Missouri, Nebraska, and Ohio, AI technologies are contributing to new inventions in telecommunications. "This means we can capitalize on the innovation taking place in all the different local industries in all the different regions of our country. It's not necessary any longer to be in a long-established tech hub to innovate and attract new investment, which suggests that there may be even more opportunities in traditionally underrepresented communities."[184]

America enjoys the most vibrant venture capital industry in the world, along with robust government investment in research and development. The government should invest in areas critical to national security that also benefit society as it has in other cases, such as the space race, the internet, and COVID-19, where venture capitalists and big companies were not always incentivized to invest. The government can maintain and strengthen the engine of American innovation, countering China and other nations looking to invest more in these capabilities.

Attract and retain global AI talent beginning with sensible immigration reform.

Investment in AI requires investment in talent,[185] including foreign talent. As Karan Kanwar notes, "America just does not have the numbers to be able to win the AI race against its adversaries. The available talent pool today is too small, and that just makes innovation for everybody difficult."[186] In his testimony, Kanwar tells the story of his own journey in the AI field: he was born in India, grew up in Hong Kong, and attended university in the U.S. His "biggest problem on this journey was not money... [it] wasn't an esoteric AI legislation, but it was a visa to stay here." Kanwar expended considerable resources, including retention of "top lawyers, $15,000 in legal fees, retaining a PR firm, a 500-page petition, and six years of carefully planned activity" to find a path to stay.[187] He stated it was a

> Investment in AI requires investment in talent.

179. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
180. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
181. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
182. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
183. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
184. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
185. J. Brandt, S. Kreps, C. Meserole, P. Singh, and M. Sisson, "Succeeding in the AI Competition with China" Brookings Institution (September 2022), https://www.brookings.edu/wp-content/uploads/2022/09/FP_20220930_us_china_tech.pdf.
186. Remarks of Karan Kanwar, Palo Alto Field Hearing Tr. at 127.
187. Remarks of Karan Kanwar, Palo Alto Field Hearing Tr. at 125-26.

"ridiculously high bar for a student with an idea."[188] Now, as CEO, he notes his company has lost plenty of talented people due to immigration barriers: "They've either all been forced to leave the United States or work at a company with the resources to provide those green card application fees."[189] Dave DeCaprio told a similar story, having "personally lost an incredibly good resource…because of his H-1."[190]

The U.S. needs to ensure the world's brightest minds are welcomed and can remain here to develop their skills and businesses, especially in sectors like health care, where other legal requirements necessitate data to remain in the U.S.[191] The U.S. government should also consider initiatives to attract new talent into the government. Removing barriers that prevent the flow of skilled workers is essential to increase the talent pipeline and encourage more of the remarkable, immigrant-driven entrepreneurialism that gave the U.S. an enormous advantage during the Digital Revolution. Now is the time to streamline immigration.[192] "If the Chinese government is going to steal our technology and our IP, let's steal their engineers," remarked former Rep. Will Hurd (R-TX).[193] "It is an open program to take our talent from the United States cultivated in our universities and moving back to China. That means we need to have a series of changes around how we think about granting student visas and who comes back," commented an attendee of the Washington, D.C., field hearings.[194] Another commenter stated, "If we enact nativist immigration policies or even the status quo that we have now…by the end of the decade the transition of the AI education and research power base to basically China and India [will] be complete and it's going to be really, really hard, if not impossible to overcome."[195] Many people noted that we need bipartisan immigration solutions that prioritize incentives for foreign talent to attend school, conduct research, work here, and become U.S. citizens.[196] Accordingly, lawmakers should take steps to significantly increase legal immigration to the U.S. and also expand access to education and investment opportunities for foreigners who can help advance AI and robotics.

Develop the workforce of the future.

The U.S. needs to boost STEM education to develop a highly skilled, technically proficient domestic workforce. "Currently, China is outpacing the U.S. in terms of STEM PhD growth," noted Nathan Benaich, Founder and General Partner at Airstreet, a venture capital firm investing in AI-first technology and life science companies. Since the mid-2000s, China has consistently graduated more STEM PhDs than the United States.[197] China is "projected to reach double the number of STEM PhD students by 2025. Meanwhile, in the Western world, you see numerous examples of depleting STEM budgets and that's driving this exodus in the industry."[198]

188. Remarks of Karan Kanwar, Palo Alto Field Hearing Tr. at 125-26.
189. Remarks of Karan Kanwar, Palo Alto Field Hearing Tr. at 126.
190. Remarks of Dave DeCaprio, Austin Field Hearing Tr. at 21:7-16.
191. Remarks of Dave DeCaprio, Austin Field Hearing Tr. at 21:17-22.
192. Opening Remarks of Rep. Will Hurd, Austin, TX Field Hearing Tr. at 9:15-21.
193. Opening Remarks of Rep. Will Hurd, Austin, TX Field Hearing Tr. at 9:15-21.
194. Remarks of Brian Drake, Washington, DC Field Hearing Tr. at 52.
195. Remarks of Colin Carroll, Washington, DC Field Hearing Tr. at 61.
196. Remarks of Colin Carroll, Washington, DC Field Hearing Tr. at 61–62; *see also* Remarks of Dmytro Filatov, Palo Alto, CA Field Hearing Tr. at 48 (arguing for points-based system to immigration).
197. R. Zwetsloot, J. Corrigan, S. Weinstein, D. Peterson, D. Gehlhaus, and R. Fedasiuk, "China Is Fast Outpacing U.S. STEM PhD Growth, Center for Security and Emerging Technology. (August 2021), https://cset.georgetown.edu/publication/china-is-fast-outpacing-u-s-stem-phd-growth.
198. Remarks of Nathan Benaich, London, UK Field Hearing Tr. at 84.

Instructors should create space for ethical reflection as part of training to ensure that everyone creating and implementing AI is doing so intentionally and ethically, and not as an afterthought.

For the U.S. to remain competitive globally, we must start with education. China has leveraged its centralized authority to mandate AI education in its high school curriculum, and since 2018, China has approved 345 universities to offer AI courses.[199] Some state that technology-related classes must become foundational parts of the U.S. educational system.[200] We have to do better at making our children prepared to compete in a 21st-century advanced manufacturing economy and equipped with the skill sets for "jobs that have yet to even be invented."[201] Supporters of technological education believe that computer science offerings should be integrated at the K-12 level.[202] "We must change the narrative in our education system that computer science isn't a vocation. It's foundational and it's not just about cultivating workers for intel, which you certainly need, it's for Scott's Miracle Grow, it's for Ernst and Young, it's for Kroger, it's for Procter and Gamble and every other major employer."[203] "[If] we want to have people and young people of different backgrounds, different ethnicities, who come from lots of different cultures and speak multiple languages, to not only have access to AI education as a right, but also be able to be at the table, be a part of the engineer teams…this type of curricula and education should be part of the school in K-12, and it should be designed such that it attracts a variety of people, a variety of learners, and address issues of representation as part of these classrooms."[204] As part of this curricula, there should be education on the ethical use of AI and the risk of its expansion in certain areas. Instructors should create space for ethical reflection as part of training to ensure that everyone creating and implementing AI is doing so intentionally and ethically, and not as an afterthought.

Work with like-minded governments internationally to advance common goals.

U.S. officials should work with policymakers in other countries to craft AI policies that advance common goals and values. For example, the United Kingdom and Singapore have both released flexible, pro-innovation AI governance frameworks that share many common characteristics. Both countries also advocate for a context-specific, risk-based policy approach that stresses the need for policy frameworks to be proportionate and adaptable, as opposed to rigid and controlling. U.S. statements on AI policy reflect these

199. Remarks of Stefania Druga, Palo Alto, CA Field Hearing Tr. at 123.
200. Remarks of Rick Carfagna, Cleveland, OH Field Hearing Tr. at 15:03:44–15:07:00.
201. Remarks of Rick Carfagna, Cleveland, OH Field Hearing Tr. at 15:03:44–55.
202. Remarks of Rick Carfagna, Cleveland, OH Field Hearing Tr. at 15:03:44–15:04:36.
203. Remarks of Rick Carfagna, Cleveland, OH Field Hearing Tr. at 15:03:44–15:04:36.
204. Remarks of Stefania Druga, Palo Alto, CA Field Hearing Tr. at 124.

goals and values. "When we don't have these democratic partnerships and dialogues, China moves ahead and sets the standards."[205]

Working with key partners to develop a more sensible governance framework for AI will help the U.S. and others push back against varying types of heavy-handed governance models seen in China or the EU. Over time, the U.S. could seek to formalize these relationships through more formal trade agreements or other accords. Like international relations, AI "spheres of influence" will exist.[206] Notes Kenneth Cukier, "We're going to have a Western flavor of AI based on Western values—it's going to make the balance between America and Europe over GDPR seem like a small trifle because there's so much more that brings us together than separates us—versus the totalitarian countries, China, Russia…and their flavor of AI. And it's going to be a battle. This can be positive because it's going to be played out in overseas markets like Latin America, Asia, and Africa. So, the stakes are really high, and the Chamber of Commerce has a great role to ensure that Western values are part of the AI conversation."[207]

See more about the AI Commission's recommendations on building a stronger workforce in Section VIII of this report.

Intellectual Property

With the continuing advancements in AI, particularly machine learning (ML), and the increasingly prevalent uses of these approaches, it is not surprising the pace of patent filing has rapidly increased.[208] In 2020, the U.S. Patent and Trademark Office (USPTO) published a report, "Inventing AI: Tracing the Diffusion of Artificial Intelligence with U.S. Patents," that found the number of AI patent applications more than doubled from 2002 to 2018.[209] More recently, the USPTO found that 80,000 of utility patent applications in 2020 involved AI, representing a 150% increase from 2002.[210] AI now appears in 18% of all utility patent applications the USPTO

> The number of AI patent applications more than doubled from 2002 to 2018.

205. Remarks of Yll Bajraktari, Washington, DC Field Hearing Tr. at 42.
206. Remarks of Kenneth Cukier, London, UK Field Hearing Tr. at 28.
207. Remarks of Kenneth Cukier, London, UK Field Hearing Tr. at 28.
208. K. Gulen, "Can an Artificial Intelligence-Enabled Invention Be Patented?" Dataconomy (October 4, 2022), https://dataconomy.com/2022/10/intellectual-property-artificial-intelligence/.
209. USPTO, *New Benchmark USPTO Study Finds Artificial Intelligence in U.S. Patents Rose By More Than 100% Since 2002* (Oct. 27, 2020), https://www.uspto.gov/about-us/news-updates/new-benchmark-uspto-study-finds-artificial-intelligence-us-patents-rose-more.
210. Remarks of Christian Hannon, Washington, DC Field Hearing Tr at 34; *see also* Remarks by USPTO Director Kathi Vidal at the 2022 SelectUSA Investment Summit (June 29, 2022), https://www.uspto.gov/about-us/news-updates/remarks-uspto-director-kathi-vidal-2022-selectusa-investment-summit.

receives and in more than 50% of all the technologies examined across the board. The surge in volume and increased complexity of AI/ML patent applications have led to long review processes and delays in the awarding of patents to innovators in the AI/ML space. Simply put, AI is "breaking" patent law.[211]

Enhancements to the USPTO and intellectual property processes are needed to accelerate the development and recognition of innovative AI solutions, or the U.S. risks its position as a global AI leader. In 2019, China surpassed the U.S. in international patent filings.[212] In 2020, at the height of the pandemic, China surpassed the U.S. lead again by 17%.[213] Many believe it's because China is stealing U.S. intellectual property and doing a "copy paste" into the patent system.[214] Further, China is not as restrained as the U.S. with the laws of privacy and data use and has other ways of sharing data internally.[215] The U.S., however, must "overcome that gap…making sure that we respect our sensitivities and privacy laws."[216]

During the Commission's Washington, D.C., field hearing, current and former USPTO officials and patent law practitioners achieved consensus about the need to modernize antiquated IP laws,[217] treating IP as a national security asset.[218] The principal focus was on the patent subject matter eligibility section of the patent code and whether current laws can adequately capture the patent eligibility of AI algorithms, with an acknowledgment that open-source activity can make it particularly difficult to protect AI-enabled IP.

In 2019, China surpassed the U.S. in international patent filings. In 2020, at the height of the pandemic, China surpassed the U.S. lead again by 17%.

While the number of AI patent applications continues to increase, the U.S. patent system remains antiquated and unable to adequately capture the patent eligibility of AI algorithms. The patent subject matter eligibility section of the U.S. Patent Code, Section 101, has not been readdressed by Congress since 1793.[219] "The patent code that [our] founders put in place was fantastic; however, they did not anticipate DNA processing, artificial intelligence, cryptography, software code, and all of the modern technologies of the next industrial revolution," stated Andrei Iancu, former undersecretary of commerce for intellectual property and director at the USPTO.[220] "So, to say that the patent system, at least from that perspective, needs to modernize is an

211. A. George, "Artificial Intelligence Is Breaking Patent Law," Nature (May 24, 2022), https://www.nature.com/articles/d41586-022-01391-x.
212. World Intellectual Property Organization, *China Becomes Top Filer of International Patents in 2019 Amid Robust Growth for WIP's IP Services, Treaties and Finances* (Apr. 7, 2020), https://www.wipo.int/pressroom/en/articles/2020/article_0005.html.
213. Remarks of Brian Drake, Washington, DC Field Hearing Tr. pg. 50.
214. Remarks of Brian Drake, Washington DC Field Hearing Tr. at 50.
215. Remarks of Brian Drake, Washington DC Field Hearing Tr. at 50.
216. Remarks of Andrei Iancu, Washington DC Field Hearing Tr. at 37.
217. Remarks of Rama Elluru, Washington DC Field Hearing Tr at 20.
218. Remarks of Brian Drake, Washington DC Field Hearing Tr. at 51.
219. 35 U.S.C. § 101.
220. Remarks of Andrei Iancu, Washington DC Field Hearing Tr. at 30.

understatement. It is absolutely critical, and it is a matter of immediate national security."[221]

In pursuing modernization, Iancu highlighted two critical questions that must be addressed: (1) should AI algorithms be eligible for patents? and (2) should an AI algorithm that innovates and creates something new be allowed to hold a patent? It is well established in patent law that mental processes are excluded from patent eligibility.[222] "AI by its definition is a computer processing information in a way that mirrors what a human being can do. And the United States computer implemented processes have been deemed mere abstract ideas that are not subject to patent eligibility."[223] Although China and Europe also do not allow for the patenting of mental processes, "they do not have a subject matter eligibility crisis as we do. They have allowed for the patenting of artificial intelligence forthright. Congress should amend section 101 to state explicitly that computer structures and hardware are patent eligible."[224]

"While China is making it easier to acquire patent rights, U.S. courts severely restricted patent protection for computer-implemented and biotech-related inventions."[225] In Alice v. CLS Bank, the Supreme Court set forth the legal standard that inventions must possess something more than what is well understood, routine, and conventional to establish a basis for patent eligibility.[226] The Court held that patent law should not restrain abstract ideas that are the "building blocks of human ingenuity" and that Alice's claims did nothing more than require a generic computer to implement an abstract idea by performing generic computer functions, which is not enough to transform an abstract idea into a patent-eligible invention.[227]

Another major constraint to AI patent eligibility is that patent law assumes inventors are human.[228] Courts are wrestling with this problem as patent applications naming an AI system as the inventor have increased. Recently, the U.S. Court of Appeals for the Federal Circuit affirmed a lower court's ruling in Thaler v. Vidal that the plain text of the Patent Act requires that inventors be human beings.[229] Thaler, creator of the AI system called Device for the Autonomous Bootstrapping of Unified Sentience (DABUS), argued that an AI system that has "created" several inventions should be granted a patent application, and that inventorship requirements should not be a bar to patent eligibility.[230] The appeal followed a Virginia federal court's affirmation of the USPTO's rejection of two DABUS patent applications, finding AI cannot be an inventor under U.S. patent law.[231]

Others noted the concerns over balancing the need for IP protection with explainability and transparency principles for AI. Many believed those two concepts can be separated: "The IP is usually in the algorithm you're running…you can separate those things in terms of are you using this piece of data, and at a high level how is that piece of data being used, and you can prove whether or not that

221. Remarks of Andrei Iancu, Washington DC Field Hearing Tr. at 37.
222. Remarks of Wen XIE, Washington, DC Field Hearing Tr. at 26.
223. Remarks of Wen XIE, Washington, DC Field Hearing Tr. at 26.
224. Remarks of Wen XIE, Washington, DC Field Hearing Tr. at 28.
225. Remarks of Rama Elluru, Washington DC Field Hearing Tr. at 22.
226. 573 U.S. 208.
227. 573 U.S. 208.
228. A. George, "Artificial Intelligence Is Breaking Patent Law," Nature (May 24, 2022), https://www.nature.com/articles/d41586-022-01391-x.
229. *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022).
230. *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022).
231. *Thaler v. Vidal*, 43 F.4th 1207 (Fed. Cir. 2022).

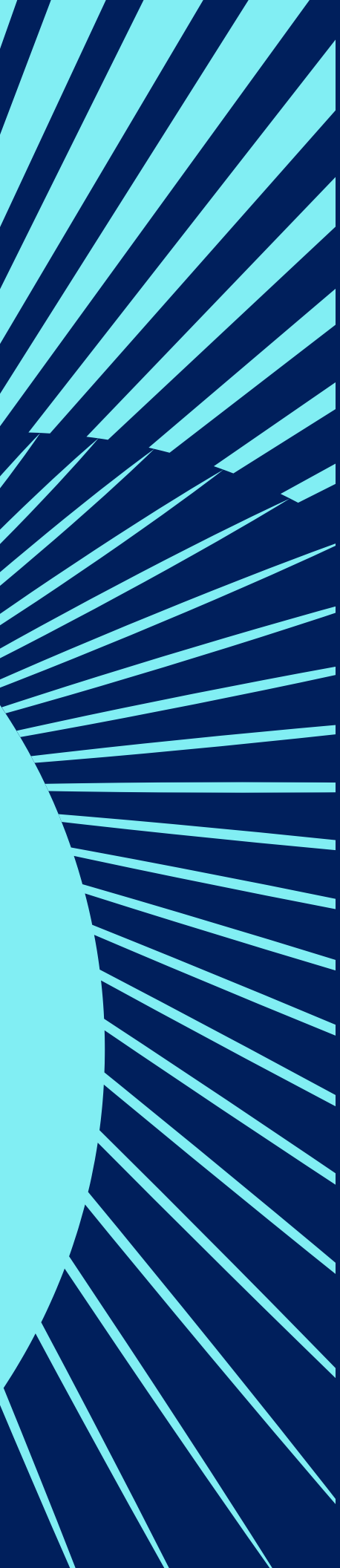
piece of data was significant, and there are several techniques for doing that that are independent of the source of core algorithm used."[232]

For many industries, patents are vital.[233] "[T]here's not a big newsletter that informs the tech industry of what everyone is working on. Companies and manufacturers use patent disclosures to learn about emerging fields of research."[234] The current unstable nature of U.S. patent laws as applied to AI has "enhanced the risk assessment of companies, including small companies and startups, when it comes to filing for a patent" and leads to this question: "How many efficient cross-industry collaborations are we losing out on as a society due to companies choosing to forgo this risk?"[235] Innovation in AI is not sustainable "without robust and reliable IP rights, which are essential to the prosperity of our innovative nation."[236] "To grow our economy and stay globally competitive, we must promote invention and patenting more than ever, including in those underserved communities."[237]

The Commission makes the following recommendations for improving intellectual property processes to accelerate the development and recognition of innovative AI solutions:

- Clarify intellectual property law subject matter requirements for AI to ensure adequate protection of AI-enabled intellectual property, but understand its limits given how much open-source activity dominates this field.
- Any legislative changes to inventorship of patent law should involve relevant stakeholders to consider potential unintended effects.[238]
- Policymakers should provide additional resources to the USPTO to support the acquisition of technical expertise, training, and other resources to speed the review of AI/ML-related public patent applications.
- Policymakers should also explore opportunities to grant provisional approvals for submissions under review where appropriate to mitigate the effects of lengthy delays. These measures would help individuals and organizations at the forefront of AI/ML innovation protect their intellectual property, speed time to market, and expand workforce opportunities by growing their businesses.
- Take greater steps to address industrial espionage of U.S. patents.

232. Remarks of Dave Decaprio, Austin Field Hearing Tr. at 24:17–25:1.
233. Responses to U.S. Chamber of Commerce's AI Commission RFI.
234. Remarks of Wen XIE, Washington, DC Field Hearing Tr. at 26.
235. Remarks of Wen XIE, Washington, DC Field Hearing Tr. at 26.
236. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
237. Remarks of Christian Hannon, Washington, DC Field Hearing Tr. at 34.
238. Responses to U.S. Chamber of Commerce's AI Commission RFI.



National Security

Artificial intelligence is fundamental to—and poses potentially significant implications for—national security, including, according to the Department of Defense (DOD), "the very character of war."[239] In January 2018, the U.S. National Defense Strategy identified AI as one of the key technologies that will "ensure [the United States] will be able to fight and win the wars of the future."[240] In 2021, the National Security Commission on AI (NSCAI) made an urgent call to action, warning that the U.S. government is not yet sufficiently organized or resourced to prepare to defend against AI-enabled threats or to rapidly adopt AI applications for national security purposes.[241]

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International competitors in the AI market are putting pressure on the U.S. to compete for innovative military AI applications.[242] AI, from a national security perspective, "is a full-spectrum attack" on the U.S.[243] "[A]ll the instruments of national power from our adversaries [are] being directed at all of our national security instruments and economic power centers," said one commenter. "That means intelligence apparatuses, that means their direct and indirect funding apparatuses, that means their commercial military integration activities. All of those are being directed toward artificial intelligence. And make no mistake, it is about winning the future war."[244]

In early 2020, DOD adopted ethical principles for AI following consultation with leading AI experts in commercial industry, government, academia, and the American public.[245] The principles build on the U.S. military's existing ethical frameworks based on the U.S. Constitution, Title 10 of the U.S. Code, Law of War, existing international treaties, and longstanding norms and values. The following principles apply to both combat and noncombat functions:

- Responsible: DOD personnel will exercise appropriate levels of judgment and care while remaining responsible for the development, deployment, and use of AI capabilities.
- Equitable: The Department will take deliberate steps to minimize unintended bias in AI capabilities.

239. U.S. Government Accountability Office, "How Artificial Intelligence Is Transforming National Security" (April 19, 2022), https://www.gao.gov/blog/how-artificial-intelligence-transforming-national-security.
240. Department of Defense, Summary of the 2018 National Defense Strategy, p.3, https://dod.defense.gov/Portals/1/_Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.
241. NSCAI, *The Final Report* (March 1, 2021), https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf.
242. Congressional Research Service, *Artificial Intelligence and National Security* (November 10, 2020), https://sgp.fas.org/crs/natsec/R45178.pdf.
243. Remarks of Brian Drake, Washington, DC Field Hearing Tr. p. 49.
244. Remarks of Brian Drake, Washington, DC Field Hearing Tr. p. 49.
245. U.S. Department of Defense, *DOD Adopts Ethical Principles for Artificial Intelligence* (Feb. 24, 2020), https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/.

- Traceable: The Department's AI capabilities will be developed and deployed such that relevant personnel possess an appropriate understanding of the technology, development processes, and operational methods applicable to AI capabilities, including with transparent and auditable methodologies, data sources, and design procedure and documentation.

- Reliable: The Department's AI capabilities will have explicit, well-defined uses, and the safety, security, and effectiveness of such capabilities will be subject to testing and assurance within those defined uses across their entire life cycles.

- Governable: The Department will design and engineer AI capabilities to fulfill their intended functions while possessing the ability to detect and avoid unintended consequences and the ability to disengage or deactivate deployed systems that demonstrate unintended behavior.[246]

In November 2021, DOD's Defense Innovation Unit (DIU) released its "Responsible AI Guidelines" intended to operationalize the Department's ethical principles of AI[247] into its commercial prototyping and acquisition efforts.[248] The guidelines "provide a step-by-step framework for AI companies, DOD stakeholders and program managers that can help ensure that AI programs are built with the principles of fairness, accountability and transparency at each step in the development of an AI system."[249] Further to those guidelines, DOD issued its "Responsible Artificial Intelligence Strategy and Implementation Pathway," providing a roadmap for how DOD will advance the responsible use of AI.[250] The report lists proposed actions to promote responsible AI use based on six tenets: RAI governance, warfighter trust, AI product and acquisition life cycle, requirements validation, responsible AI ecosystem, and AI workforce.[251]

In releasing the DOD AI principles, Secretary of Defense Dr. Mark T. Esper emphasized that the "United States, together with our allies and partners, must accelerate the adoption of AI and lead in its national security applications to maintain our strategic position, prevail on future battlefields, and safeguard the rules-based international order."[252] "AI technology will change much about the battlefield of the future, but nothing will change America's steadfast commitment to responsible and lawful behavior."[253] These sentiments were emphasized during the AI Commission's field hearing in Washington, D.C.,

246. U.S. Department of Defense, *DOD Adopts Ethical Principles for Artificial Intelligence* (Feb. 24, 2020), https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/.
247. U.S. Department of Defense, *DOD Adopts Ethical Principles for Artificial Intelligence* (Feb. 24, 2020), https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/.
248. Defense Innovation Unit, *Responsible AI Guidelines: Operationalizing DoD's Ethical Principles for AI* (Nov. 14, 2021), https://www.diu.mil/responsible-ai-guidelines.
249. U.S. Department of Defense, *Defense Innovation Unit Publishes "Responsible AI Guidelines"* (Nov. 18, 2021), https://www.defense.gov/News/News-Stories/Article/Article/2847598/defense-innovation-unit-publishes-responsible-ai-guidelines/.
250. U.S. Department of Defense, *Responsible Artificial Intelligence Strategy and Implementation Pathway* (June 2022), https://media.defense.gov/2022/Jun/22/2003022604/-1/-1/0/Department-of-Defense-Responsible-Artificial-Intelligence-Strategy-and-Implementation-Pathway.PDF.
251. U.S. Department of Defense, *Responsible Artificial Intelligence Strategy and Implementation Pathway* (June 2022), https://media.defense.gov/2022/Jun/22/2003022604/-1/-1/0/Department-of-Defense-Responsible-Artificial-Intelligence-Strategy-and-Implementation-Pathway.PDF.
252. U.S. Department of Defense, *DOD Adopts Ethical Principles for Artificial Intelligence* (Feb. 24, 2020), https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/.
253. U.S. Department of Defense, *DOD Adopts Ethical Principles for Artificial Intelligence* (Feb. 24, 2020), https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/.

which focused in part on national security. "In the face of digital authoritarianism, the United States needs to present a democratic model of responsible use of AI for national security.... Public trust will hinge on justified assurance that our government use of AI will respect privacy, civil liberties, and civil rights."[254]

Many emphasized that failure to integrate AI efficiently or responsibly in the U.S. military will have severe global implications. "The implications for our national security when China or any other authoritarian model sets the standards and rules for emerging technologies are rather severe," said Yll Bajraktari, CEO of the Special Competitive Studies Project and member of the National AI Advisory Committee.[255] "Tech leadership means setting the rules for how they're used, controlling the infrastructure for their use, building the industries of the future, and building the best militaries to protect our societies."[256]

While AI has the potential to create numerous advantages in national security, it will also present unique challenges.[257] Global governance in this space may be next to impossible. While our allies might adhere to the rules, it's dangerous to assume that our adversaries will do the same. At present, the world does not have an effective way to deal with that imbalance. The best way to address the imbalance is for the U.S. to encourage constant dialogue,[258] communication, and discussions about current threats and unify both domestically and internationally in this space.

Such a framework should encourage international standards, diplomacy, and agreements to uphold human rights; promote innovation and commerce; and govern AI systems and techniques.

The AI Commission makes the following recommendations:

- Lead development of international code of conduct: The U.S. should lead the development of an international code of conduct framework and promote its use and further development among allies and like-minded nations.[259] Such a framework should encourage international standards, diplomacy, and agreements to uphold human rights; promote innovation and commerce; and govern AI systems and techniques.[260]

254. Remarks of Yll Bajraktari, Washington, DC Field Hearing Tr. at 41.
255. Remarks of Yll Bajraktari, Washington, DC Field Hearing Tr. at 41.
256. Remarks of Yll Bajraktari Washington, DC Field Hearing Tr. at 41.
257. Congressional Research Service, *Artificial Intelligence and National Security* (November 10, 2020), https://sgp.fas.org/crs/natsec/R45178.pdf.
258. J. Brandt, S. Kreps, C. Meserole, P. Singh, and M. Sisson, "Succeeding in the AI Competition with China," Brookings Institution (September 2022), https://www.brookings.edu/wp-content/uploads/2022/09/FP_20220930_us_china_tech.pdf.
259. IEEE USA, "Position Statement: Democratic Use of AI" (November 2021), https://ieeeusa.org/assets/public-policy/positions/ai/Democratic_Use_of_AI_1121.pdf.
260. IEEE USA, "Position Statement: Democratic Use of AI" (November 2021), https://ieeeusa.org/assets/public-policy/positions/ai/Democratic_Use_of_AI_1121.pdf.

The U.S. should use existing and evolving standards; encourage diplomatic efforts; strengthen both domestic and international agreements on the ethical uses of AI systems and how data are collected used and retired; and undertake and promote collaboration with companies, academics, and stakeholders in relevant technical and social scientific fields within the context of this framework.[261]

- Enforce existing international law: While global governance in this space will be difficult, if not impossible, the AI Commission's principle of enforcing existing law still applies internationally. Countries should work together to require the development of AI-enabled weapons to align with existing norms in international laws and risk prevention.[262] Numerous existing treaties, statutes, and agreements cover current and emerging technologies that should continue to apply to AI uses in national security.

- Expand the responsible AI pathway: The recent DOD report on its implementation pathway for responsible AI was a welcome addition to the statement of AI principles released in 2020. But the guidance on developing and deploying AI responsibly remains abstract rather than concrete—what's needed now is to expand the implementation pathway to include more specific and concrete guidance, such as the adoption of NIST's AI RMF, particularly for the most commonly used and highest-risk applications and systems.

- Lead the way in AI safety: Modern AI systems that rely on machine learning often fail in unpredictable and unknowable ways—with potentially catastrophic consequences for AI-enabled military systems and applications. The U.S. should invest heavily in new ways of testing, evaluating, verifying, and validating (TEVV) military AI/ML systems to ensure they are used safely. In tandem, the U.S. should also seek to establish global norms for transparency with respect to the processes used to test and evaluate military AI/ML systems. Doing so will not only make AI-enabled military systems safer but also reduce the risk of a failure or accident rapidly leading to conflict escalation.

- Revisit data silos: Modern AI/ML needs training data to be effective, yet most weapons systems are vertically integrated and siloed. To remain on the cutting edge, the U.S. will need to revise its data collection and management. Although the DOD's AI and Data Acceleration initiative[263] was a step in the right direction, the Pentagon needs to do far more to ensure that each military system does not reinvent the wheel.

- Double down on American ingenuity: One of the nation's greatest advantages remains the vitality and creativity of its technology sector. China may have emerged as the most significant pacing threat to the United States, but fears that China's model of civil-military fusion will decisively eclipse the U.S. private enterprise model are misplaced. The strength of the U.S. remains the ingenuity and innovation of its private sector, all the more so for dual-use technologies like AI. To stay at the cutting edge of military technology,

261. IEEE USA, Position Statement: Democratic Use of AI (November 2021), https://ieeeusa.org/assets/public-policy/positions/ai/Democratic_Use_of_AI_1121.pdf.
262. F. Ying and J. Allen, *Together, The U.S. and China Can Reduce the Risks From AI*, Noema Magazine (Dec. 17, 2020), https://www.noemamag.com/together-the-u-s-and-china-can-reduce-the-risks-from-ai/.
263. T. Cronk, "Hicks Announces New Artificial Intelligence Initiative," DOD News (June 22, 2021), https://www.defense.gov/News/News-Stories/Article/Article/2667212/hicks-announces-new-artificial-intelligence-initiative/.

the U.S. does not need to radically reform its model but rather better harness the vitality of industry—for example, by better streamlining its acquisition processes and finding new ways of incorporating industry expertise and experience within the military enterprise.

- Invest intelligently—and globally: The war in Ukraine has demonstrated both the value of novel high-end military technology and the value of common, interoperable weapons systems across NATO and its partners. Yet the defense innovation and investment funds established by the U.S., NATO members, and other democratic partners remain largely uncoordinated. Rather than protecting their domestic military industries, the U.S. should open its investment opportunities to companies in NATO countries, and vice versa.

AI Regulation

No federal law or regulation on AI exists currently in the U.S. Regulators, however, have sent the message that "it's on the horizon."[264] State and local governments have already begun to fill the gaps.[265] The proposed American Data Privacy and Protection Act (ADPPA)[266] represents part of the growing trend calling for federal regulation of AI and related technologies.[267] The challenge lies in regulating in a way that mitigates risk; provides safeguards; and promotes reliable, trustworthy AI throughout its life cycle, while enabling innovation and the promise of AI for societal benefit.[268] Effective regulation will provide the guardrails to build public trust and prevent societal harm; however, there is active debate on which approach is most appropriate. The Commission recommends an "as-necessary" distributed but coordinated approach to AI regulation that leverages existing laws and relies, whenever possible, on specific agencies to provide guidance and fill statutory gaps where AI presents a different scale or phenomenon while aiming for alignment with common principles and practices.

Why Regulate AI?

Google succinctly states, "AI is too important *not* to regulate."[269] Preparing for regulation has already become a paramount consideration for companies that design, develop, and/or use AI.[270] Companies are crafting policies and procedures to create compliance programs that promote AI innovation while ensuring the transparency and explainability of systems and the responsible use of AI.[271]

AI has tremendous capacity to "fundamentally transform our life" but also presents "some flashing yellow lights."[272] Health care is a prime example of why AI regulation is necessary. Health disparities and inequities are already abundant in this country, and without AI regulation, those disparities are going to "get built into" and amplified by AI models and automation.[273]

> AI is too important NOT to regulate.

264. Remarks of Iwao Fusillo, Austin, TX Field Hearing Tr. at 41:6.
265. See 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code §§ 20-870–20-874.
266. See American Data Privacy and Protection Act, H.R. 8152, 117th Cong., https://www.congress.gov/bill/117th-congress/house-bill/8152/text#toc-H4B489C75371741CBAA5F38622BF082DE; American Data Privacy and Protection Act Draft Legislation Section by Section Summary (2022), S. Comm. on Commerce, Science, and Transportation, https://www.commerce.senate.gov/services/files/9BA7EF5C-7554-4DF2-AD05-AD940E2B3E50.
267. See White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.
268. Google, *Recommendations for Regulating AI*, https://ai.google/static/documents/recommendations-for-regulating-ai.pdf.
269. Remarks of Katharine McAden, Austin, TX Field Hearing Tr. at 126:3-4 (citing Google, *Recommendations for Regulating AI*, https://ai.google/static/documents/recommendations-for-regulating-ai.pdf).
270. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
271. Remarks of Iwao Fusillo, Austin, TX Field Hearing Tr. at 41:6–12.
272. Remarks of Rep. John Delaney, Austin, TX Field Hearing at 14:12–18.
273. Remarks of Dave DeCaprio, Austin, TX Field Hearing Tr. at 22:3–14.

Work must be done to prevent intrusions on fundamental privacy rights and further embedding or reinforcing biases the U.S. has worked and continues to work hard to remove.[274]

AI is not just a developing policy area but a rapidly advancing technology. In 2021, a survey found that a bipartisan majority of Americans believe that government oversight of the use of algorithms is needed, with many expressing distrust in the use of AI to process loan applications, make hiring decisions, and drive vehicles.[275] As a democracy, our federal leaders should address an issue on which a majority of Americans are demanding action. However, instead of federal leadership, state and local governments have begun to weave an uneven patchwork of law in the U.S., while the EU sets a global benchmark for comprehensive regulation abroad.[276] Such a federated approach can lead to extremes. A lack of guidance and direction at the federal level will only lead to more state or further localized rules and regulations to fill the perceived gap to provide basic protections. In response, testifying witnesses at the various hearings noted that federal action is necessary to address public trust in AI and keep up with policymakers at the state and local level and our allies in Europe.[277]

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274. Remarks of Rep. John Delaney, Austin, TX Field Hearing at 14:19–24.
275. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 12.
276. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 13.
277. See Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 16.

Approaches to AI Regulation

There is an ongoing discussion around the specific responsibility of the government to regulate AI versus the duties of private entities that develop and consume AI. Many questions are still being debated on the optimal regulatory approach to providing the necessary transparency, explainability, and accountability of AI while supporting innovations that will benefit our country and society. Too much AI regulation could unintentionally slow innovation or reduce competition by lowering its adoption.[278] Too little regulation may lead to societal harm, legal uncertainty, and low adoption rates, thereby leading to missed opportunities for AI benefits. The challenge for policymakers lies in safeguarding its citizens, creating mandatory checks for the industry, and requiring companies to invest in responsible AI practices while preserving the flexibility that's essential to this field.[279]

"Common sense,"[280] "not burdensome,"[281] "adaptive,"[282] "harmonizing,"[283] "thoughtful,"[284] "risk-based," and "interoperable"[285] are just some of the words and phrases used to describe desired AI regulatory approaches throughout the Commission's field hearings and responses to RFIs. "To ensure responsible development of AI applications and position the U.S. as a global leader, U.S. policymakers must embrace commonsense regulatory approaches that invest in AI research and development, open government data, and support the creation of global AI standards," remarked Robert Armstrong at the Texas field hearing.[286]

Many expressed concerns about an overly complex regulatory environment that would harm the nation's competitive posture and risk stifling innovation,[287] stating that "absent global standards and federal regulations on AI, there is an interest from state and local governments to regulate....[and] before local policies are developed, policymakers should ensure that the proposed rules are in line with existing regulations, that they do not lead to burdensome rules that can hinder recent investments and interest in AI."[288]

Several participants in the hearings articulated the need for consistency as a proliferation of laws and regulations around AI creates a patchwork of conflicting requirements with varying levels of protection, creating compliance challenges.[289] In its responses to the Commission's RFI, C_TEC commented that any U.S. regulation should align

278. Remarks of Benjamin Larsen, Palo Alto, CA Field Hearing Tr. at 39–41.
279. Remarks of Evi Fuelle, Washington, DC Field Hearing Tr. at 11.
280. Remarks of Robert Armstrong, Austin, TX Field Hearing Tr. at 78:11–16.
281. Remarks of Robert Armstrong, Austin, TX Field Hearing Tr. at 78:5.
282. Remarks of Shawn Wang, Cleveland, OH Field Hearing Tr. at 13:41:26–13:42:11.
283. Remarks of Benjamin Larsen, Palo Alto, CA Field Hearing Tr. at 39–41.
284. Remarks of Nyung Ho, Palo Alto, CA Field Hearing Tr. at 120–121.
285. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 13.
286. Remarks of Robert Armstrong, Austin, TX Field Hearing Tr. at 78:11–16.
287. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
288. Remarks of Robert Armstrong, Austin, TX Field Hearing Tr. at 77:22–78:6.
289. Responses to U.S. Chamber of Commerce AI Commission RFI (April 8, 2022).

globally[290] as a fragmentation of approaches across jurisdictions may add cost and uncertainty and limit any potential benefits.[291] Others similarly stated that new laws should seek to achieve consistency across legal frameworks so that consumers are afforded uniform protections and companies have a clear understanding on how AI can and cannot be used.[292]

Clarity and legal certainty in proposed regulatory approaches were another theme, with many highlighting that clarity and the need for a consistent approach in application are crucial for companies.[293] As stated in its RFI response, C_TEC believes that legal certainty around AI obligations can still be achieved while preserving the flexibility necessary to accommodate changing needs and norms and the ability to take full advantage of the powerful economic benefits of AI as technology continues to evolve.[294] Testifying witnesses also remarked that AI regulation should serve to safeguard citizens, ensuring that companies are doing the work out of responsibility, not merely to gain a certain leverage.[295] The Food and Drug Administration (FDA) was often referenced as the leading example on how to model AI regulation, with some commenters arguing we should "bottle the FDA."[296] Like AI, commenters noted that drugs and medical devices are "complicated, very dangerous, and [have] possibly deadly consequences," and regulation requires experts and an organization with a broad mission.[297] However, the FDA's approach to regulation does not come without tradeoffs—delays in FDA review times often hold back many lifesaving treatments.[298]

A consensus appears to be emerging in the U.S.,[299] the UK, Canada, and the EU toward risk-based approaches to AI regulation to help foster innovation and promote fair, trustworthy, and responsible AI.[300] A thoughtful, risk-based approach can prioritize innovation while preventing specific harm.[301] Such approaches typically recommend a lighter legal regime for AI applications with negligible risk, heavier auditing for applications with higher risk throughout its life cycle, and complete

290. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
291. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
292. Responses to U.S. Chamber of Commerce AI Commission RFI (April 8, 2022).
293. Responses to U.S. Chamber of Commerce's AI Commission RFI.
294. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
295. Remarks of Shanuak Chatterjee, Palo Alto, CA Field Hearing Tr. at 115.
296. Remarks of Melissa Kargiannakis, Austin Field Hearing Tr. at 46:14–47:5; *see also* Remarks of Ben Ko, Cleveland, OH Field Hearing Tr. at 13:48:52-13:50:09; Remarks of Carissa Véliz, London, UK Field Hearing Tr. at 90.
297. Remarks of Melissa Kargiannakis, Austin Field Hearing Tr. at 46:14–47:5; 51:8–12.
298. See M. Jones, "Are Regulatory Hurdles Hurting Patient Care?" (October 2015), https://crstoday.com/articles/2015-oct/are-regulatory-hurdles-hurting-patient-care.
299. See Algorithmic Accountability Act of 2022, H.R. 6580, 117th Cong., https://www.congress.gov/bill/117th-congress/house-bill/6580/text#:~:text=To%20direct%20the%20Federal%20Trade,Algorithmic%20Accountability%20Act%20of%202022%E2%80%9D (requires bias impact assessment of any automated decision-making system that makes critical decisions in variety of sectors).
300. White House, U.S.-EU Trade and Technology Council Inaugural Joint Statement (September 29, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/29/u-s-eu-trade-and-technology-council-inaugural-joint-statement/.
301. See remarks of Nyung Ho, Palo Alto Field Hearing Tr. at 120-121.

banning of applications with unacceptable risk.[302] The risk assessments are typically based on the AI application or context of use rather than the technology itself. However, many civil society organizations criticize this approach for not addressing broad and grave risks to fundamental rights. They have called for an approach that puts the burden of proof on the entity wanting to develop or deploy the AI system to demonstrate that it does not violate the rights of a specific group or society at large, rather than their own operational risk.

A consensus appears to be emerging in the U.S., the UK, Canada, and the EU toward risk-based approaches to AI regulation to help foster innovation and promote fair, trustworthy, and responsible AI.

Regardless of the approach, most agreed that a collaboration with, and engagement of, stakeholders will be critical to the success of an AI framework that strikes the right balance between regulation and innovation.[303] A collaboration among companies, consumer advocates, academia, civil society, and regulators will ensure the U.S. is moving in the right direction.[304] In its response to the Commission's RFI, C_TEC also recommended that policymakers work with organizations and agencies like NIST to develop a multistakeholder governance framework.[305] C_TEC argues that doing so would help translate regulatory goals into practical steps for implementation and compliance.[306] For example, in the health sector, incorporating input from agencies that leverage health technology considerations into their regulations is ideal.[307] Standards development organizations such as Health Level Seven International, a nonprofit that leverages stakeholder consensus to create data interoperability standards, would also help the larger community to consider appropriate opportunities for data integration.[308]

302. See National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf; European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/; OECD, *Framework for the Classification of AI systems* (February 22, 2022), https://www.oecd.org/publications/oecd-framework-for-the-classification-of-ai-systems-cb6d9eca-en.htm.
303. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022); see also Responses to U.S. Chamber of Commerce's AI Commission RFI.
304. Remarks of Mirit Eldor, London, UK Field Hearing Tr., p. 8.
305. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
306. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
307. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
308. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).

Addressing Fairness and Bias

Much of the concern AI regulation seeks to address is around fairness, bias, equity, and discrimination risk resulting from AI systems. Some criticized current legislative proposals that attempt to address fairness in AI by mandating certain requirements or quality standards for data sets.[309] In its RFI response, C_TEC stated that the problem is that approach assumes the primary issue with adverse bias comes from the data sets.[310] Further, to determine whether an algorithm is causing skewed distribution along protected class lines, an organization would first have to collect or infer protected class data, which may be in conflict with data minimization and protection principles.[311] Alternatively, C_TEC proposes a holistic approach to fairness, one that looks at the specific context in which the AI is used and whether the system's design, inputs, and outcomes are appropriate for that context rather than exclusively focusing on inputs.[312]

Bias is not new or unique to AI.[313] C_TEC asserted in its RFI response that the U.S. must implement, or support the implementation of, processes to identify and mitigate bias throughout the algorithmic life cycle and encourage continuous testing and evaluation.[314] The ability to conduct effective bias testing, however, is not without its limits. For one, companies often don't broadly collect the demographic data required based on restrictions in other laws or data minimization principles.[315] Second, determining who is vulnerable or what constitutes a vulnerable population is often a context-specific decision.[316] Stakeholders testifying at the DCWP's hearing on the NYC AEDT Law in November 2022 shared these limits. Several called on the DCWP to clarify the proposed rules surrounding the required bias audits. The proposed rules seek to mirror EEOC reporting for the bias audit requirements, but this assumes that vendors collect that demographic information. Employers, however, are not typically the ones creating AEDTs but instead rely on vendors. Vendors avoid collecting specific demographic information, often due to other legal requirements like privacy laws and data minimization principles. Further, collecting that information is not easy and takes too long to do correctly.[317]

While overcoming bias of all kinds is an appropriate societal goal, C_TEC pointed out that it is very difficult to have data sets, algorithms, or even human decision-making completely free from all potential biases.[318] AI in certain fields may in

309. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
310. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
311. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
312. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
313. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
314. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
315. See the 2017 New York State Department of Financial Services Cybersecurity Regulation (23 NYCRR 500).
316. G. Malgieri and J. Niklas, Vulnerable Data Subjects, Computer Law & Security Review, Vol. 37, 2020, 105415, ISSN 0267-3649, https://doi.org/10.1016/j.clsr.2020.105415.
317. See DCWP AEDT Rules Virtual Public Hearing Tr. (Nov. 4, 2022), https://www1.nyc.gov/assets/dca/downloads/pdf/about/HearingTranscript-AEDT-Rules-Virtual-Public-Hearing.pdf.
318. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).

fact involve research that is explicitly predicated on looking for differences as bias can contribute to better, more precise outcomes for specific populations—particularly historically underserved communities—compared with algorithms that are overly generalized for a broad population.[319] Some respondents believe the focus should not be on completely eliminating bias but on identifying and mitigating potential harms that result from bias.[320]

One example of industry-led best practices in this area is BSA's Framework to Build Trust in AI.[321] In this 2021 report, BSA lays out a framework for performing impact assessments to identify and mitigate risks of AI bias; recommends best practices, tools, and resources to mitigate bias; and sets out key corporate governance structures, processes, and safeguards needed to implement and support an effective AI risk management program. BSA first recommends that corporations have clear governance on AI risk management and bias in an effort to avoid bias during every step of the AI life cycle.[322] This involves action such as having several internal levels of AI review with teams that can assess risk as it arises.[323] BSA's framework also provides guidance for organizations to assess the risk of AI bias, such as holding AI-related training or information sessions for employees and having accountability measures for AI developers.[324] If bias is found after the AI is developed, BSA recommends using postprocessing algorithms to mitigate the effects of the bias by changing the AI's output.[325] Developers should also document how the AI was developed so that companies can review the process.[326] Frameworks such as BSA's should be emulated to correctly identify and mitigate bias as AI continues to grow and change.

Transparency

To achieve transparency, regulators or certified third parties seek to have a consistent set of standards and frameworks against which to measure the impacts of AI to ensure they are safe, reliable, and equitable. Many proposed regulations, like the draft EU AI Act, require developers of high-risk AI systems to perform both predeployment conformity assessments and postmarket monitoring analyses to demonstrate their systems are compliant. Others, however, advocate for additional process-based assessments, as is already done in the fraud and safety industries (e.g., the Occupational Safety and Health Administration (OSHA) Process Safety Management standard[327]). Process-based approaches emphasize adhering to and reporting on an agreed set of best practices to mitigate and communicate known risks, incidents, and near misses. However, multiple methods exist for

319. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
320. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
321. *Confronting Bias: BSA's Framework to Build Trust in AI* (2021), https://ai.bsa.org/confronting-bias-bsas-framework-to-build-trust-in-ai/.
322. *Confronting Bias: BSA's Framework to Build Trust in AI* 11 (2021), https://ai.bsa.org/confronting-bias-bsas-framework-to-build-trust-in-ai/.
323. *Confronting Bias: BSA's Framework to Build Trust in AI* 11 (2021), https://ai.bsa.org/confronting-bias-bsas-framework-to-build-trust-in-ai/.
324. *Confronting Bias: BSA's Framework to Build Trust in AI* 14 (2021), https://ai.bsa.org/confronting-bias-bsas-framework-to-build-trust-in-ai/.
325. *Confronting Bias: BSA's Framework to Build Trust in AI* 26 (2021), https://ai.bsa.org/confronting-bias-bsas-framework-to-build-trust-in-ai/.
326. *Confronting Bias: BSA's Framework to Build Trust in AI* 27 (2021), https://ai.bsa.org/confronting-bias-bsas-framework-to-build-trust-in-ai/.
327. U.S. Department of Labor, OSHA, Process Safety Management, https://www.osha.gov/process-safety-management.

inspecting or auditing algorithms—each requiring different kinds of access and ways to measure outcome-based concepts such as fairness and bias.

Some commenters stated that transparency is "the most important thing in regulation."[328] Encouraging companies to be as transparent as possible[329] when creating new AI, rather than trying to hide aspects that break regulations, provides people the incentive to keep creating.[330] However, rather than attempting to mandate *how* people should build and use AI, prescribing rules that may not be one size fits all, some recommend that we should start by requiring that everybody explain what they are doing.[331] If we gain insight into what's already happening, then we can figure out where regulations are needed and where they are not. "We can't just assume we know if the right answer is going to be attributed to the question," remarked one witness during the Texas field hearing; therefore, transparency should be the first goal of regulation.[332] Others echoed this sentiment, noting that rather than attempting to create detailed regulations on what algorithms are doing, we should figure out how to answer the questions about what is most concerning.[333]

Many endorse a high-risk approach to transparency and explainability requirements,[334] such that any obligation to provide impact assessments, audits, or reports or to explain logic should apply only to high-risk AI applications.[335] C_TEC noted in its RFI response that this requirement, however, should not be too prescriptive regarding technical details, allowing enough room for stakeholders to develop and deliver the right tools and explain to both expert and nonexpert audiences.[336] Others argue that sector regulators are the ones best positioned to assess context-specific uses and impacts of AI—for example, the FDA would be best positioned to evaluate the use of AI in medical devices.[337]

A formative question examines whether the government should require transparency for companies using AI and whether the government should be a clearinghouse for such private information. Some believed that a government clearinghouse for AI creates significant privacy and security concerns for sensitive data and algorithms[338] and may lead to unnecessarily revealing proprietary information about a training data set or how a certain model works.[339]

328. Remarks of Dave DeCaprio, Austin, TX Field Hearing Tr. at 23:17–24:9.
329. Note challenges in transparency and considerations that "a one-size-fits-all Transparency mechanism is exactly the wrong direction." See J. Sherer, Archimedes' Lever and Audience Participation, 5 RAIL 1 (2022), citing C. F. Kerry, J. B. Morris Jr., C. T. Chin, and N. E. Turner Lee, *Bridging the Gaps, A Path Forward to Federal Privacy Legislation*, Governance Studies at the Brookings Institution (June 2020), https://www.brook.ings.edu /wp-content/uploads/2020/06/Bridging-the-gaps_a-path-forward-to-federal-privacy-legislation.pdf.
330. Remarks of Kathy Baxter, Palo Alto, CA Field Hearing Tr. at 28.
331. Remarks of Dave DeCaprio, Austin, TX Field Hearing Tr. at 23:17–24:9.
332. Remarks of Dave DeCaprio, Austin, TX Field Hearing Tr. at 23:17–24:9.
333. Remarks of Johnathan Stray, Palo Alto, CA Field Hearing Tr. at 85-86.
334. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
335. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
336. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
337. Responses to U.S. Chamber of Commerce AI Commission RFI (April 8, 2022).
338. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
339. Note transparency issues where "Transparency can also create a platform for easy access to technology that would allow bad actors to steal intellectual property." See J. Sherer, Archimedes' Lever and Audience Participation, 5 RAIL 1 (2022), *citing* J.M. Meyers, "Artificial Intelligence and Trade Secrets," A.B.A. Landslide Vol. 11 No. 3, 2019. https://www.americanbar.org/groups/intellectual_property_law/publications/landslide/2018-19/january-february/artificial-intelligence-trade-secrets-webinar.

Others acknowledged that many areas already exist where companies are required to provide proprietary data to the government for review, such as for FDA approval. Simply reporting AI uses may not even resolve issues and may lead to an unnecessary burden for companies and organizations.[340] C_TEC recommended that the focus instead be on establishing principles and practices that promote accountability and responsible AI development, deployment, and assessment.[341] Focusing on developing principles and guidelines allows mitigation of issues in earlier stages of AI rather than auditing the vast breadth of AI postdeployment.[342]

Focusing on developing principles and guidelines allows mitigation of issues in earlier stages of AI rather than auditing the vast breadth of AI postdeployment.

Intersection with Privacy Law

Throughout the Commission's hearings, many articulated that AI regulation should be informed by laws that protect the privacy of people's data. Rules around AI should keep people's data safe across all industries, not maintained differently for each.[343] To remain competitive internationally, the U.S. must pass its own robust federal privacy law to allow for better data practices and development of AI systems.[344] As one commenter remarked in a Cleveland field hearing, "How the U.S. deals with the notion of individual rights vis-à-vis data about them and their environment is critically important to whether or not the U.S. is going to be a leader or a follower in developing artificial intelligence. We basically have three different systems that are in competition....We have Europeans who have been able to find political consensus around the utilization of data with GDPR...we have state governments trying to fill the void... and then we have China where any data that the government wants the government gets."[345]

Other commenters noted the fundamental shift in attitudes toward privacy in the U.S. since the pandemic. As one witnesses expressed: "[W] e happened to just have survived—over the last 24 months—a monumental shift in the idea of privacy...leading up to the pandemic there was

340. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
341. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
342. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
343. Remarks of Richard Cardwell, Cleveland, OH Field Hearing Tr. at 15:03:32–15:08:59.
344. See Remarks of Rick Carfagna, Cleveland, OH Field Hearing Tr. at 15:24:18; Remarks of Richard Cardwell, Cleveland, OH Field Hearing Tr. at 15:27:27.
345. Remarks by Jerry Jones, Cleveland, OH Field Hearing Tr. at 15:22:50.

already a bifurcation of mentalities around privacy between, I would say, the Millennials and...Gen Z....That relationship with privacy fundamentally shifted because of the exposure, I think, to digital capabilities. And now individuals...50 and younger right now are very comfortable exposing immense amounts of extremely—what we would traditionally consider extremely—private data on behalf of services."[346] The pandemic also served as a major catalyst for individuals to change their relationship with digital services generally.[347] One commenter noted, "If you had told me three years ago that we would be having regular doctors' visits digitally, that I would be performing the plurality of my commerce digitally, even going as far as not interacting with my grocery store directly anymore, I'd say I thought you were crazy."[348]

Recommendations for an AI Regulatory Framework

Building on its five key principles articulated at the beginning of this report, the AI Commission provides the following recommendations for an as-necessary, risk-based, distributed, and coordinated AI regulatory framework that leverages existing laws and allows the private sector to lead innovation.

Evaluate existing laws for use and application to AI.

AI did not start and does not live in a vacuum.[349] As a society, we have been dealing with algorithmic decision-making for at least 50 years,[350] providing considerable precedent in employment, housing, financial services, and banking to provide a solid foundation.[351] Many of the concerns raised about the use of AI, such as algorithmic bias and discrimination, are issues that existing laws and sector-specific regulations have been designed to address, whether a human or a machine is performing the task.[352] "A fair regulatory system can and should be prepared to address AI-related injury under privacy, security, or discrimination principles—in much the same way that a regulatory system should address those injuries in the absence of AI tools."[353]

To effectively apply existing law to AI, U.S. government capacity needs to be expanded to enforce existing rules. As the Stanford Institute for Human-Centered Artificial Intelligence has pointed out in its review of the "three pillars of America's strategy for AI innovation" (the AI in Government Act of 2020, Executive Order 13,859

346. Remarks of Charlie Burgoyne, Austin, TX Field Hearing Tr. at 106:18 0 107:14.
347. Remarks of Charlie Burgoyne, Austin, TX Field Hearing Tr. at 108:4–13.
348. Remarks of Charlie Burgoyne, Austin, TX Field Hearing Tr. at 108:4–13.
349. Remarks of Brenda Leong, Washington, DC Field Hearing Tr. at 6.
350. Remarks of Brenda Leong, Washington, DC Field Hearing Tr. at 5.
351. Remarks of Brenda Leong, Washington, DC Field Hearing Tr. at 5.
352. Responses to U.S. Chamber of Commerce AI Commission RFI (April 8, 2022).
353. Responses to U.S. Chamber of Commerce AI Commission RFI (April 8, 2022).

A fair regulatory system can and should be prepared to address AI-related injury under privacy, security, or discrimination principles—in much the same way that a regulatory system should address those injuries in the absence of AI tools."

on AI Leadership, and Executive Order 13,960 on AI in Government), "America's AI innovation ecosystem is threatened by weak and inconsistent implementation of these legal requirements."[354] "The significant challenges in implementing pillars of the national AI strategic goals manifest a serious resource shortage, leadership vacuum, and capacity gap."[355] To advance these goals, more funding will be required to ensure the government is prepared for the AI transition and that agencies are properly staffed with the resources and technical expertise to comply with requirements.[356]

Further, many sectors are already highly regulated within this space, such as the financial services sector.[357] As a result, it is "vitally essential for legislators, regulators, and the business community to work together" to determine if current requirements suffice or if further regulation is necessary.[358] Before drafting new laws, policymakers should evaluate existing laws for use and application to AI as a "level-setting exercise" to determine next steps.[359] This gap analysis will demonstrate where further regulations or clarifications may be needed, such as in cases where AI is doing something new, affecting citizens uniquely, or scaling on a level greater than before.

Regulators like the FTC and EEOC have already issued guidance responsibly developing and using AI, under existing laws like Section 5 of the FTC Act (prohibiting unfair or deceptive acts or practices in or affecting commerce),[360] the Fair Credit Reporting Act (FCRA, regulating consumer reporting agencies that may assemble consumer information to automate decision-making about eligibility for credit, employment, insurance, housing, or similar benefits),[361] the Equal Credit Opportunity Act (ECOA, prohibiting credit discrimination on the basis of race, color, religion, national origin, sex, marital status, age, or because

354. C. Lawrence, I. Cui, and D. Ho, *Implementation Challenges to Three Pillars of America's AI Strategy*, Stanford Institute for Human-Centered Artificial Intelligence, December 2022, https://hai.stanford.edu/sites/default/files/2022-12/HAIRegLab%20White%20Paper%20-%20Implementation%20Challenges%20to%20Three%20Pillars%20of%20America%E2%80%99s%20AI%20Strategy.pdf.
355. C. Lawrence, I. Cui, and D. Ho, *Implementation Challenges to Three Pillars of America's AI Strategy*, Stanford Institute for Human-Centered Artificial Intelligence, December 2022, https://hai.stanford.edu/sites/default/files/2022-12/HAIRegLab%20White%20Paper%20-%20Implementation%20Challenges%20to%20Three%20Pillars%20of%20America%E2%80%99s%20AI%20Strategy.pdf.
356. C. Lawrence, I. Cui, and D. Ho, *Implementation Challenges to Three Pillars of America's AI Strategy*, Stanford Institute for Human-Centered Artificial Intelligence, December 2022, https://hai.stanford.edu/sites/default/files/2022-12/HAIRegLab%20White%20Paper%20-%20Implementation%20Challenges%20to%20Three%20Pillars%20of%20America%E2%80%99s%20AI%20Strategy.pdf.
357. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
358. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
359. Remarks of Brenda Leong, Washington, DC Field Hearing Tr. at 6.
360. FTC Act, 15 U.S.C. §§ 41–58.
361. FCRA, 15 U.S.C. § 1681.

a person receives public assistance),[362] and the Americans with Disabilities Act (ADA, prohibiting employers from discriminating on the basis of disability).[363] The AI Commission's recommendation for an as-necessary, distributed but coordinated approach to AI regulation builds on the importance of specific agencies' needs to provide guidance on AI under existing laws. As those agencies develop a view on how to apply specific industry laws to AI use cases, they should proactively involve the private industry, civil society, and academia in that conversation. In instances where existing laws and requirements do not cover certain AI use cases, specific agencies should examine what updates are required and, in many cases, are already endowed with the power to do so by enforcing the existing statutory regimes under their purview.

To advance these goals, more funding will be required to ensure the government is prepared for the AI transition and that agencies are properly staffed with the resources and technical expertise to comply with requirements.

Further, AI has sometimes been described as a "black box,"[364] and as a result, without the right information, enforcement of existing laws and protection of key rights may prove difficult. Regulation is necessary to mandate some form of information and disclosure requirements to determine whether a particular AI use violates existing law.

Laws should be technology-neutral and focus on applications and outcomes of AI, not the technologies themselves.

The use cases for AI are numerous and their impacts are not all the same.[365] Any regulatory approach or guidance should be principles-based and technology-neutral, focus on outcomes, and not impose requirements on specific processes or techniques.[366] Existing laws may need to be updated to ensure that specific agencies apply a technology-neutral approach.

Adopt a risk-based approach to AI regulation.

Given the thousands of potential uses of AI, each presenting different risk profiles, one-size-fits-all approaches to AI regulation are challenging.[367] Instead, a risk-based approach to AI focuses on consequential decisions that have the potential to infringe on an individual's legal rights, such as access to housing, education, employment, health care, physical safety and

362. FCRA, 15 U.S.C. § 1691.
363. Americans with Disabilities Act of 1990, 42 U.S.C. § 12101 et seq. (1990).
364. A. Rai, Explainable AI: From Black Box to Glass Box, *Journal of the Academy of Marketing Science* 48, 137–141 (2020). https://doi.org/10.1007/s11747-019-00710-5.
365. Responses to U.S. Chamber of Commerce AI Commission RFI (April 8, 2022).
366. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (February 25, 2022).
367. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 14.

freedom, and other basic goods and services, without harmful discrimination.[368] This approach prescribes requirements around information disclosure, transparency, and explainability, and may limit use to high-risk applications of AI.

Such an approach also may support interoperability between AI regulations across borders.[369] At the direction of Congress, NIST is establishing a voluntary framework for AI risk management, which is scheduled to be completed in early 2023. Further, the EU's AI Act also adopts a risk-based approach to governing AI applications. Risk-based management of AI has begun to serve as the common language for AI governance on both sides of the Atlantic.[370]

The AI Commission proposes that a risk-based regulation should assume the following:

I. Risk classification should be determined based on impact to an individual, not broad predefined categories.

A risk-based approach to AI regulation may require classification of AI uses into three categories: (1) low-medium risk, (2) high risk, and (3) unacceptable risk. The benefits to a risk-based approach are clear: risk classifications limit the need for onerous regulatory requirements and align the U.S. with the EU's model of AI regulation and proposals from Canada, and it allows new regulations to zero in on the areas requiring safeguards.

However, a risk-based approach is not without challenge or contention, especially when it comes to defining what constitutes AI high risk.

While predetermined categories of AI use cases are helpful examples of potentially high-risk AI uses, the commenters widely criticized a one-size-fits-all or all-or-nothing approach, like those proposed in the EU AI Act. The EU AI Act predefines eight categories of AI as high risk, covering all AI uses within, for example, education, employment, and training. Such an approach is too broad to be manageable in a regulatory context as the risk factor is nuanced based on AI's many applications.[371]

Some advocate that risk-based regulation requires greater differentiation,[372] such as between AI that directly affects patient care (higher risk) and AI used early in the research and development process to inform the development of future products that are subsequently rigorously tested in clinical trials (lower risk).[373] Others argue that risk factors should be evaluated, such as whether the AI system uses personal information or involves profiling of individuals.[374]

Others go a step further and argue that what qualifies as high risk AI should not be dictated by law at all but based on a risk assessment of each AI use, which is different from the fairness monitoring and testing performed *after* implementing an AI application.[375] Such an approach aligns with the GDPR's approach to Data Protection Impact

368. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 13.
369. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 13.
370. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 13.
371. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
372. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
373. Responses to U.S. Chamber of Commerce's AI Commission RFI.
374. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022).
375. For example, some human rights advocates also argue that independent human rights impact assessments should be conducted to determine whether there are unintended consequences of certain applications, which would then determine the risk category of a system. See A. Mantelero and M. Esposito, *An Evidence-Based Methodology for Human Rights Impact Assessment (HRIA) in the Development of AI Data-Intensive Systems*, Computer Law & Security Review, Vol. 41 (2021), https://www.sciencedirect.com/science/article/pii/S0267364921000340.

Assessments (DPIAs), which are required when the processing of personal data is likely to result in high risk to the rights and freedoms of individuals. The DPIA is designed to assess the level of risk, looking at the likelihood and severity of potential harm, and the benefits.

The AI Commission generally recommends that high-risk categories should focus on key areas as identified by civil society, including legal rights; safety; freedom; and access to housing, education, employment, and health care. Ultimately, however, the risk classification should be based on the impact to the *individual and communities*, rather than just these items as broad categories. As such, no AI use case under one of those categories will necessarily result in a high-risk classification.

High-risk categories should focus on key areas as identified by civil society, including legal rights; safety; freedom; and access to housing, education, employment, and health care.

II. Require impact assessments to confirm high-risk uses of AI.

The AI Commission recommends that impact assessments be required in the key areas identified previously to determine whether any specific AI use should be categorized as high risk. Impact assessments stand in contrast to other AI accountability tools that have been proposed, such as third-party audits that require technical and organizational standards to function properly.[376]

Some argue that external, independent audits should be required to ensure that companies are properly identifying risk.[377] However, in the absence of an agreed-upon framework or uniform standards, the AI Commission does not recommend mandating third-party assessments. Third-party audits require technical standards to cultivate trust and accountability. For example, in privacy and cybersecurity, third-party audits rely on the ISO/IEC 27000 family of standards. Those technical standards are built into NIST's Cybersecurity and Privacy Frameworks and serve as a common global reference point against which companies can audit.

AI technical standards, however, are still largely in development, leaving the AI audit space to become the "wild west."[378] AI experts agree there are no consensus standards for auditing AI systems. ISO/IEC is still in the early stages of an AI work program, as is the IEEE. NIST's AI RMF is still under development, and it is likely too early to know how widely it will be adopted. Without technical standards, the quality of AI audits will vary widely between competing third-party consulting firms and may lead to reduced trust in AI overall. Not all audits offered by external AI consulting firms are equivalent. A lack of technical standards allows companies to seek an AI auditor offering different and favorable methods, criteria, and scope.

376. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 14.
377. Remarks of Julie Dawson, London, UK Field Hearing Tr. at 99.
378. Third-Party AI Audit Requirements: Outpacing AI Standards Development Responses to U.S. Chamber of Commerce's RFI.

Further, there are not yet any professional bodies to govern or train third-party auditors on AI. Typically, auditors maintain professional bodies to institute baseline criteria, maintain professional ethics, and educate staff to meet the market demand for audits. Educational bodies, such as the International Association of Privacy Professionals (IAPP)[379] or the International Information System Security Certification Consortium (often referred to as (ISC)^2)[380] offer member certifications and training to meet the demand for qualified professions. No such educational body currently exists for AI professionals.

Rather, a risk-based approach should leverage impact assessments already used by organizations for data security and privacy, allowing organizations to identify and mitigate potential risks that can emerge throughout the AI systems' life cycle.[381] Organizations should build into these processes considerations of risk relevant to AI systems, including questions around bias, fairness, and impact on the public.

Rather, a risk-based approach should leverage impact assessments already used by organizations for data security and privacy, allowing organizations to identify and mitigate potential risks that can emerge throughout the AI systems' life cycle.

However, such an approach does not come without challenges. For example, companies may be disincentivized from producing high-risk AI systems, many of which will be critical in supporting continued innovation and competition, particularly in the national security space. To address this concern, the government may consider safe-harbor approaches to incentivize companies to conduct thorough due diligence that respects the rights of those potentially affected by the risks. Further, disclosure requirements may be necessary to hold companies accountable, allowing relevant government agencies or independent third parties such as NIST to evaluate a company's impact assessments.

III. Stricter legal safeguards and transparency requirements should focus on high-risk areas; lower-risk uses of AI should be supplemented by soft law and industry best practices.

For high-risk AI use cases, once identified, a risk-based regulation should proscribe certain requirements, legal safeguards, and disclosure requirements before such a system can be launched into the public. These requirements put the onus on the developer and deployer of the AI system, rather than the individual user, to address potential AI-related harms.

For lower-risk uses of AI, soft law options such as adherence to industry standards and best practices, like NIST's AI RMF, should supplement rules and

379. IAPP, *About the IAPP, The World's Largest Global Information Privacy Community* (undated), https://iapp.org/about/.
380. (ISC)^2, *Our Vision, Inspire a Safe and Secure Cyber World* (undated), https://www.isc2.org/About.
381. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 14.

Strict bans, beyond activities and actions that are already banned or extremes like those prohibited by the EU AI Act, may unintentionally limit beneficial innovations.

standards. Flexible, context-specific standards can adjust as the technology rapidly changes. Although legal rules are important, they can quickly become outdated as technology grows, potentially leading to both under- and overregulation of technology. Industry standards, like NIST's AI RMF, should inform legislation—this adaptable approach proved integral to the rise of the internet and should be applied here as well. Further, policymakers should work with organizations and agencies like NIST to develop a multistakeholder governance framework.

IV. Avoid categorical bans on AI uses unless the ban deals with actions otherwise illegal or extreme.

As long as AI regulation focuses on addressing potentially harmful impacts of AI through legal protections and transparency requirements, broad categorical bans are likely unnecessary. Strict bans, beyond activities and actions that are already banned or extremes like those prohibited by the EU AI Act,[382] may unintentionally limit beneficial innovations. Since AI is not contained within borders, explicitly banning certain uses of AI serves only to cede control to nation states that do not see barriers in the same way. Such bans, however, may be useful if the U.S. government identifies certain areas of AI innovation that should remain under the government's control to prevent harmful impacts, similar to controls on nuclear technology and weapons that the public should not be allowed to freely produce.

Distinguish between roles and responsibilities of AI providers and AI deployers.

AI providers and deployers are not always the same. However, building trust in AI is a responsibility shared by both.[383] The role of each of these stakeholders within the AI governance life cycle is conditioned by different technical, legal, and organizational considerations that vary from context to context.[384] AI developers may create general, customizable AI tools, of which the intended purpose is low risk, and it is up to the customer (i.e., the AI deployer) to decide how these tools are employed. This means that it is the AI deployer who ultimately controls when to use the products; which data are submitted to the AI and when; how the AI is configured; and, most critically, how the resulting predictions are used. It is the AI deployer, and not the AI developer, that knows what has been disclosed, and the risk of harm, to the affected individual. Any AI legislation should include clear language delineating the role of a provider of an AI system, including their

382. The EU AI as currently proposed prohibits uses of AI for remote biometric identification for law enforcement, subliminal manipulation, exploitation of children or mentally disabled persons, and social scoring. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.

383. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 14.

384. Remarks of Evangelos Razis, Washington, DC Field Hearing Tr. at 14.

corresponding responsibilities and the role of the customer/user deploying the AI system.[385]

Policymakers should look to NIST's AI RMF to determine how best to distinguish the roles and responsibilities among AI actors. With its AI RMF, NIST published a companion resource AI Playbook, which includes suggested actions, references, and documentation guidance for the four proposed functions in the AI RMF.[386] The Playbook distinguishes between AI actors and their roles, including design; development; deployment; operating and monitoring; test, evaluation, verification, and validation; domain experts; impact assessors; procurers; third-party entities; organizational management; end users; operators; affected individuals; and the general public.

Provide notice, explanation, redress, and remediation.

When automated systems are used on individuals, OSTP recommends that notice and explanation be provided so users know that an automated system is being used and can understand why and how it contributes to outcomes that affect them.[387] Specifically, as the AI Bill of Rights notes, designers, developers, and deployers of automated systems should provide accessible plain language documentation including clear descriptions of the system functioning and the role automation plays; notice that such systems are in use; the individual or organization responsible for the system; and explanations of outcomes that are clear, timely, and accessible.[388] This documentation is especially applicable in the employment context as states begin to implement laws such as the NYC AEDT Law. Employers must tell applicants they will be evaluated by an automated tool, explain what the tool is supposed to measure, and provide the option to request an alternative.

Notices should be kept up to date and users should know how and why an outcome was determined, including when the automated system is not the sole input determining the outcome.[389] Additionally, in line with EEOC guidance and state privacy laws, individuals should be able to request an accommodation from being subject to an AI tool, and to request information regarding the data that was collected about them.

Government use of AI.

Federal and state governments are, and will remain, major consumers of privately developed AI products. As such, government has an outsized role in funding the companies that develop these systems and incentivizing the development of certain product standards and requirements. The government has a responsibility to lead by example in the procurement and use of such systems, ensuring its own procurement laws and policies adequately protect individuals and communities and support responsible AI innovation.

As the government shines a spotlight on AI practices in the private sector, any regulation should also require the government to actively evaluate and report on its own procurement, use, governance, practices, and outcomes given the important impact government decisions can have on human rights. While other regulatory proposals, such as the draft EU AI Act, include some transparency requirements to help the public understand how governments use AI, human

385. *See* 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-870.
386. National Institute of Standards and Technology, AI Risk Management Framework Playbook, https://pages.nist.gov/AIRMF/.
387. White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.
388. White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.
389. White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.

AI regulatory frameworks should require a level of vetting and reporting on impact and accuracy before government entities use AI in high-risk contexts.

rights organizations argue that more specific data are needed for meaningful transparency, such as the names of specific government agencies using specific systems, dates of service, and for what purpose the system is being used.

AI regulatory frameworks should require a level of vetting and reporting on impact and accuracy before government entities use AI in high-risk contexts. For example, the U.S. Government Accountability Office (GAO) published a set of key practices[390] to help ensure accountability and responsible use of AI by federal agencies and other entities involved in the design, development, deployment, and continuous monitoring of AI systems. These key practices can serve as a helpful starting point. The framework, "Artificial Intelligence: An Accountability Framework for Federal Agencies and Other Entities," focuses on four key areas: (1) organization and algorithmic governance, (2) system performance, (3) documenting and analyzing the data used to develop and operate an AI system, and (4) continuous monitoring and assessment of the system to ensure reliability and relevance over time.[391]

The federal government should also develop robust acquisition strategies[392] and update existing procurement regulations to help address some of the public sector's challenges in evaluating, monitoring, and using AI systems. These procurement regulations should include developing clear standards that call for the disclosure of data and information on the design and operation of contractors' algorithms, requirements that ensure contractors adhere to ethical AI standards, and testing infrastructures that allow for iterative testing and evaluation. Where possible, the federal government or presidential administration should also take steps to encourage states to adopt similar standards.

Consider regulatory sandboxes for high-priority areas of innovation.

Many fear that AI regulations will hinder innovation, particularly for AI applications deemed high risk but also likely critical to U.S. competitiveness.

To address this fear, the Commission strongly supports creating regulatory sandboxes—that is, establishing and strengthening regional hubs throughout the U.S. to advance workforce, training, representation, and overall digital equity.[393] Regional innovation centers can help develop and meet the needs of those particular regions while helping foster an environment that engages academic data science research and developing talent with

390. U.S. Government Accountability Office, *Artificial Intelligence: An Accountability Framework for Federal Agencies and Other Entities, Highlights of GAO-21-519SP*, https://www.gao.gov/assets/gao-21-519sp-highlights.pdf.
391. U.S. Government Accountability Office, *Artificial Intelligence: An Accountability Framework for Federal Agencies and Other Entities, Highlights of GAO-21-519SP*, https://www.gao.gov/assets/gao-21-519sp-highlights.pdf.
392. World Economic Forum, "AI Procurement in a Box" (May 2022), https://www.weforum.org/reports/ai-procurement-in-a-box/.
393. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).

industry peers to drive sustained innovation and solution developments in those specific regions.[394]

Further, in its RFI response, C_TEC stated that the U.S. must continue to support both public and private funding and development of AI research and development opportunities.[395] For example, Anthem's Digital Data Sandbox provides one of the largest certified de-identified health data sets in the U.S.[396] The Anthem Digital Data Sandbox uses certified de-identified data to protect the privacy of individuals. Pursuant to, and in accordance with, Anthem's issued certificate of de-identification via expert determination, no identifiable Anthem member data are used in the sandbox. This sandbox enables developers to work with applicable U.S. health care system information to test their algorithms, which may assist in appropriate testing, updates, and eventual scaling of algorithms to the U.S. health care market.[397]

Regulatory sandboxes are an important way for regulators and the industry to collaborate in controlled environments to test and learn how to best harness these innovations with a view toward shaping regulatory frameworks.[398] Regulatory sandboxes are also one of the best ways to ensure we can look at what assessments are working for various sectors and models.[399] For example, NIST's AI RMF provides a series of tools that can be applied depending on how the model is developed and where it is deployed. The threshold of its acceptability will vary based on the use case.[400]

Support access to critical data to fuel AI innovation.

I. Support public access to key data sets to unlock broader value.

Strengthening our use of data is essential to U.S. economic competition in AI.[401] Today, "data is more valuable than currency."[402] "If we commit to strengthening economic competition, the use of data must be central to that strategy."[403] The value of data increases "on a daily basis, and the correlation between the volume of data available and its value is totally positive, meaning when there's more data available the value of data increases to show that in the connective capitalism, in the connective era driven by artificial intelligence, it creates huge opportunities in extracting economic competition."[404]

AI/ML solutions derive their value from the insights within the underlying data. Linking disparate data sets can also unlock new value for AI/ML solutions. However, critical data sets that could fuel innovations in key areas of the economy are often siloed, published in challenging formats, or simply not publicly accessible. These challenges are prevalent in official government data on the economy, energy production and use, the flow of goods, and the use of public resources. Official data are reported on a lag, often published in inaccessible formats such as PDFs, and often require merging multiple data sets from different

394. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
395. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
396. B. H. Wixom et al., *Anthem's Digital Data Sandbox*, MIT CISR no. 451 (Oct. 1, 2021), https://cisr.mit.edu/publication/MIT_CISRwp451_Anthem_WixomPiccoliSebastianBeath.
397. U.S. Chamber of Commerce Technology Engagement Center's Responses to U.S. Chamber of Commerce's AI Commission RFI (April 8, 2022).
398. Responses to U.S. Chamber of Commerce's AI Commission RFI.
399. Remarks of Evi Fuelle, Washington, DC Field Hearing Tr. at 17.
400. Remarks of Evi Fuelle, Washington, DC Field Hearing Tr. at 17.
401. Remarks of Bdar Boussabat, Austin, TX Field Hearing Tr. at 67:6–68:2.
402. Remarks of Bdar Boussabat, Austin, TX Field Hearing Tr. at 67:6–9.
403. Remarks of Bdar Boussabat, Austin, TX Field Hearing Tr. at 67:6–9.
404. Remarks of Bdar Boussabat, Austin, TX Field Hearing Tr. at 67:20–68:2.

sources. Policymakers could look to examples like Federal Reserve Economic Data (FRED), the data portal managed by the Federal Reserve Bank of St. Louis.[405] The tool allows easy exploration and access to data from a variety of reporting sources and includes an application programming interface (API) secured by access credentials. These tools make it easier to create reliable, timely data pipelines that can support the use of AI/ML.

Challenges with access to large data sets are also relevant for innovative, new AI/ML models including large language models. The massive data sets require storage and compute capabilities that only large, well-funded organizations can work with effectively. Access challenges weigh especially heavily on individuals, smaller companies, and independent researchers who could assess the potential risks of using the data. Wider access to large text data sets can level the playing field for these entrepreneurs and smaller organizations, potentially creating additional jobs as these companies grow. Wider access can also allow for independent assessments of the underlying data for risks tied to privacy, bias, intellectual property, and other issues.

Policymakers could look to fuel innovation in key AI/ML fields by supporting reliable public access to key data sets that can unlock broader value, taking into account important privacy and security considerations. Better public access to data sets would support the development of AI/ML solutions broadly, level the playing field for smaller organizations, help understand the risks of widely used data, and improve our understanding of an evolving economy and workforce.

Policymakers could look to fuel innovation in key AI/ML fields by supporting reliable public access to key data sets that can unlock broader value, taking into account important privacy and security considerations.

II. Support the development of solutions for responsible storage and sharing of data.

Advances in collecting and sharing data have significantly enhanced opportunities for finding insights by bringing different data sets together. Combining disparate data sets can provide highly personalized insights and content for users. For example, aggregated geolocation data in combination with other data can provide value in assessing economic activity, resource utilization, public health, transportation preferences, and spending patterns. Recent events clearly demonstrated the value of combining disparate data. Both Apple and Google released aggregated mobile device-based data in various forms as part of a public health response to COVID-19. Combined with U.S. Census data on communities and populations, these data provided a unique view of economic activity, transportation use, and public health. Many other opportunities exist to combine various types of data across organizations to unlock insights.

405. Federal Reserve Bank of St. Louis, Economic Research, FRED, https://fred.stlouisfed.org/.

Sharing data even in anonymized form also presents significant privacy and security risks. Anonymized data can be linked back to the individuals, potentially exposing sensitive information. These risks are especially relevant for some types of data (e.g., geolocation and device-based IDs). Policymakers could support the development and adoption of solutions that allow for secure, responsible use of these data sets, such as privacy-enhancing technologies (PETs). These systems could help achieve a suitable balance between security and access to data that allows faster innovation and the creation of new opportunities in AI/ML development.

Encourage the development of industry standards and best practices for AI governance.

Frameworks for responsible AI/ML development help establish an understanding of the potential risks of using AI in general. However, the specific risks and benefits of using AI/ML solutions can vary widely and can be highly specific to the use case. This variability makes specific rulemaking regarding AI use within sectors and industries challenging for policymakers to assess. In contrast, industry organizations are better positioned to understand the nuances and specific risks of using AI within their fields. These organizations are also able to influence best practices to encourage adoption of these frameworks.

Policymakers could support industry organizations in developing and driving the adoption of industry-level frameworks as an alternative to rulemaking on the use of AI in specific areas. Opportunities to incentivize adoption of broad frameworks and industry-level responsible AI practices could also be explored. Leveraging industry organizations' influence can reduce the risk of onerous industry-level rules while promoting effective policies for assessing and controlling the specific risks of AI in these fields.

For example, and as previously discussed, ISO and IEEE are both engaged in drafting cross-sector and sector-specific voluntary consensus-driven standards that could be key sources for crafting legal definitions of AI.[406] Groups such as ACM's Special Interest Group on Artificial Intelligence (SIGAI) are also working to promote high-quality AI with academic educators, researchers, professionals, and students.[407] Through this work, ISO, IEEE, and SIGAI have been able to encourage industry-level frameworks instead of rulemaking.

Leverage transparency and human-centric design to build trust in AI/ML systems.

Policymakers, industry organizations, and private sector organizations could embrace responsible AI/ML development standards and best practices as a tool for enhancing public trust. One key component of this approach will be emphasizing human-centric design of AI/ML systems. In this context, human-centric means being transparent about the use of AI/ML and putting the human users of AI/ML systems in control. For consumers, it means providing control over the use of their data. For workers using AI/ML-enabled systems, it means retaining their autonomy and having sufficient understanding of the system to provide effective human oversight. Human-centric design is especially critical in use cases involving sensitive decision-making.

406. The Association of Test Publishers' Responses to U.S. Chamber of Commerce's AI Commission RFI (February 18, 2022); see also the IEEE P2863 Organizational Governance of Artificial Intelligence Working Group, https://sagroups.ieee.org/2863/meeting/ieee-p2863-full-working-group-meeting-6/.
407. ACM SIGAI, https://sigai.acm.org/main/.

Organizations could leverage commitments to responsible AI/ML development, including transparency and human-centric designs to build confidence among both consumers and workers. Increased trust in AI/ML could fuel interest in new and existing AI/ML applications and raise confidence among workers who will increasingly encounter AI/ML-enabled systems in their roles.

Building trust and confidence requires a focus on what technology can do for businesses that are unsure about the advantages of AI. At the London field hearing, several speakers discussed the benefits of reducing distrust in AI and suggestions on how to do so. Zitah McMillan stated that there needs to be emphasis on the idea that AI exists to help businesses, as opposed to how good the AI actually is.[408] As previously discussed, AI advancement is a work in progress and AI's impact on the workforce will change over time. Tani Duarte mentioned that the public needs to learn more about AI so they can participate in critical thinking discussions about its advancement without having a bias against it.[409] Clarrisa Véliz raised the proposition that companies stop selling and buying personal data so that people are not considered and looked upon as mere data.[410] Alex Cresswell suggested that national computer infrastructure should be a joint effort from the private sector and the government because it could provide an advantage in AI development.[411] Nathan Benaich testified that equity is needed within the AI workforce because some innovators do not have access to or receive funding to move forward with their AI work.[412]

Increased trust in AI/ML could fuel interest in new and existing AI/ML applications and raise confidence among workers who will increasingly encounter AI/ML-enabled systems in their roles.

408. Remarks of Zitah McMillan, London, UK Field Hearing Tr. at 38:2–7.
409. Remarks of Tani Duarte, London, UK Field Hearing Tr. at 71:10–12.
410. Remarks Carissa Véliz, London, UK Field Hearing Tr. at 93:3–4.
411. Remarks of Alex Cresswell, London, UK Field Hearing Tr. at 54:5–6.
412. Remarks of Nathan Benaich, London, UK Field Hearing Tr. at 83.

Current AI Ethical Frameworks & Legislation

Although the federal government has begun to turn its attention to AI policy in recent years, it has yet to enact an overarching statutory or regulatory framework. Before discussing the AI Commission's recommendations for such a framework, policymakers should understand the landscape of AI regulation as it currently exists, both nationally and globally.

NIST AI Framework

NIST leads the federal government's charge for assessing and managing risks in AI with its AI Risk Management Framework (AI RMF, mentioned in the section Recommendations for an AI Regulatory Framework). NIST's AI RMF aims to improve the ability to incorporate trustworthiness considerations into the design, development, use, and evaluation of AI products, services, and systems.[413] NIST intends to evolve the AI RMF and its companion documents over time to reflect new knowledge, awareness, and practices as AI technologies develop.[414] While NIST frameworks are voluntary, they can inform and have informed legislation at the state and federal levels[415] while also influencing industry[416] and international bodies.[417]

On January 26, 2023, NIST released the AI RMF 1.0.[418] NIST developed the AI RMF through a consensus-driven, open, transparent, and collaborative process that included a Request for Information, multiple draft versions for public comments, and several workshops.[419]

NIST highlights several key attributes of the AI RMF as it strives to do the following:

- Be risk-based, resource-efficient, pro-innovation, and voluntary.
- Use an open, transparent process that is consensus-driven, developed, and regularly updated.
- Use clear and plain language that is understandable for a broad audience, including senior executives, government officials, nongovernment organization leadership, and those who are not AI professionals—while still incorporating sufficient technical depth to be useful to practitioners.
- Provide common language and understanding to manage AI risks.
- Be easily usable and fit well with other aspects of risk management.

413. National Institute of Standards and Technology, AI Risk Management Framework, https://www.nist.gov/itl/ai-risk-management-framework.
414. National Institute of Standards and Technology, AI Risk Management Framework, https://www.nist.gov/itl/ai-risk-management-framework.
415. See the 2017 New York State Department of Financial Services Cybersecurity Regulation (23 NYCRR 500).
416. A. Davidson, *Credo AI Comments on NIST's Artificial Intelligence Risk Management Framework* (Oct. 7, 2021), https://www.credo.ai/blog/credo-ai-comments-on-nists-artificial-intelligence-risk-management-framework.
417. C. I. Gutierrez, Lessons from the NIST AI RMF for the EU AI Act—Input for the US-EU TTC, Future of Life Institute (Apr. 2022), https://futureoflife.org/wp-content/uploads/2022/08/Lessons_from_NIST_AI_RMF-v2.pdf.
418. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
419. National Institute of Standards and Technology, AI Risk Management Framework, https://www.nist.gov/itl/ai-risk-management-framework.

- Be useful to a wide range of perspectives, sectors, and technology domains.
- Be outcome-focused and nonperspective.
- Leverage and foster greater awareness of existing standards, guidelines, best practices, methodologies, and tools for managing AI risks.
- Be law- and regulation-agnostic and support organizations' abilities to operate under existing applicable domestic and international legal or regulatory regimes.
- Be a living document.[420]

The AI RMF promotes trustworthy AI—valid and reliable, safe, fair, secure and resilient, accountable and transparent, explainable and interpretable, and privacy-enhanced.[421] This framework also accepts that AI systems are sociotechnical in nature, meaning they are a product of the complex human, organizational, and technical factors involved in their design, development, and use.[422] Many of the trustworthy AI characteristics, such as bias, fairness, interpretability, and privacy, are directly connected to societal dynamics and human behavior.[423]

The AI RMF is risk-based, where "risk" refers to the composite measure of an event's probability of occurring and the magnitude of the resulting consequences.[424] While risk management focuses on addressing negative impacts, the AI RMF offers approaches to both minimize anticipated negative impacts of AI systems *and* identify opportunities to maximize positive impacts.[425] Additionally, the AI RMF is designed to be responsive to new risks as they emerge. This flexibility is particularly important when impacts are not easily foreseeable and applications are evolving. While some AI risks and benefits are well known, it can be challenging to assess negative impacts and the degree of harmful impacts.[426]

In pursuit of AI trustworthiness, drafters of the AI RMF identified the following challenges:

- Risk measurement: Risks and impacts that are not well defined or adequately understood are difficult to measure quantitatively or qualitatively.
- Risk tolerance: The organization's or stakeholder's readiness or appetite to bear the risk to achieve its objectives.
- Risk prioritization: The organization determines which risks are the highest for the AI systems within a given context of use and prioritizes these risks accordingly to manage them.
- Organizational integration and management of risk: The idea that AI RMF should be integrated

420. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
421. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
422. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
423. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
424. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
425. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
426. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.

within the organization developing and using AI technologies and incorporated into broader risk management strategy and processes so that AI will be treated along with other critical risks, yielding a more integrated outcome and resulting in organizational efficiencies.[427]

NIST outlines the AI RMF Core, which provides outcomes and actions that enable dialogue, understanding, and activities to manage AI risks. The Core includes four functions: (1) Govern, (2) Map, (3) Measure, and (4) Manage.[428]

3. The **Govern** function ensures that risks and potential impacts are identified, measured, and managed effectively and consistently. It provides a structure through which AI risk management functions can align with organizational policies and strategic priorities whether or not they are related to AI systems.[429]

4. The **Map** function establishes the context to frame risks related to an AI system. The information gathered while carrying out this function enables risk prevention and informs decisions for processes such as model management and an initial decision about the appropriateness or the need for an AI solution. Determination of whether AI use is appropriate or warranted can be considered in comparison to the status quo per a qualitative or quantitative analysis of benefits, costs, and risks.[430]

5. The **Measure** function employs quantitative, qualitative, and mixed-method tools, techniques, and methodologies to analyze, assess, benchmark, and monitor AI risk and related impacts. It uses knowledge relevant to AI risks identified in the Map function and informs the Manage function. Measuring AI risks includes tracking metrics for trustworthy characteristics, social impact, and human–AI configurations. Processes developed or adopted through the Measurement function should include rigorous software testing and performance assessment methodologies that include associated measures of uncertainty, comparisons to performance benchmarks, and formalized reporting and documentation results.[431]

6. The **Manage** function entails allocating risk management resources to mapped and measured risks on a regular basis and as defined by the Govern function. Contextual information gleaned from stakeholder feedback and other expert consultation processes established in the Govern function and carried out in the Map function are also used in this function to decrease the likelihood of system failures and negative impacts. Systematic documentation practices established in the Govern function and used in the Map and Measure functions bolster AI risk management efforts to increase transparency and accountability.[432]

427. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
428. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
429. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
430. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
431. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.
432. National Institute of Standards and Technology, AI Risk Management Framework (AI RMF 1.0), https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf.

AI Bill of Rights

In October 2022, almost a year after announcing its development,[433] the White House Office of Science and Technology Policy (OSTP) released a white paper titled "Blueprint for an AI Bill of Rights."[434] The AI Bill of Rights contains five nonbinding principles to guide the design, use, and deployment of automated systems to protect the American public in the age of AI, each of which is coupled with a practical document to guide the incorporation of the following principles in the technological design process:[435]

- Safe and Effective Systems: Americans should be protected from unsafe or ineffective systems.
- Algorithmic Discrimination Protections: Americans should not face discrimination by algorithms, and systems should be used and designed in an equitable way.
- Data Privacy: Americans should be protected from abusive data practices via built-in protections, and Americans should have agency over how data about them are used.
- Notice and Explanation: Americans should know that an automated system is being used and understand how and why it contributes to outcomes that affect them.
- Human Alternatives, Consideration, and Fallback: Americans should be able to opt out, where appropriate, and have access to a person who can quickly consider and remedy problems they encounter.

These principles apply broadly to "automated systems that… have the potential to meaningfully impact the American public's rights, opportunities, or access to critical resources or services."[436] Automated systems are also defined very broadly, encompassing essentially any system that makes decisions using computation.[437] The Blueprint is intended to further ongoing discussions among federal government stakeholders; however, the impact on the private sector will likely be limited due to OSTP's lack of enforcement, oversight, and statutory authority.[438]

433. White House, *Join the Effort to Create a Bill of Rights for an Automated Society* (Nov. 10, 2021), https://www.whitehouse.gov/ostp/news-updates/2021/11/10/join-the-effort-to-create-a-bill-of-rights-for-an-automated-society/.
434. White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.
435. White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.
436. White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.
437. An automated system is any system, software, or process that uses computation as a whole or part of a system to determine outcomes, make or aid decisions, inform policy implementation, collect data or observations, or otherwise interact with individuals and/or communities. Automated systems include, but are not limited to, systems derived from machine learning, statistics, or other data processing or artificial intelligence techniques, and exclude passive computing infrastructure. Passive computing infrastructure is any intermediary technology that does not influence or determine the outcome of decisions; make or aid in decisions; inform policy implementation; or collect data or observations, including web hosting, domain registration, networking, caching, data storage, or cybersecurity. Throughout this framework, automated systems that are considered in scope are only those that have the potential to meaningfully affect individuals' or communities' rights, opportunities, or access. See White House, OSTP, *Blueprint for an AI Bill of Rights* (October 2022), https://www.whitehouse.gov/ostp/ai-bill-of-rights/.
438. Gibson, Dunn, & Crutcher LLP, Artificial Intelligence and Automated Systems Legal Update (3Q22) (November 17, 2022), https://www.gibsondunn.com/artificial-intelligence-and-automated-systems-legal-update-3q22/#_ftnref3.

American Data Protection and Privacy Act

In July 2022, the House Energy & Commerce Committee advanced a comprehensive data security and privacy measure, the American Data Protection and Privacy Act (ADPPA),[439] representing a major step forward by Congress to develop a federal data security and privacy framework. The law, as currently proposed and in addition to its core privacy protections, has provisions related to AI governance. Under ADPPA, covered entities and service providers that knowingly develop an algorithm to collect, process, or transfer covered data must produce an algorithm design evaluation—including training data—that must specifically consider any data used to develop the algorithm to reduce the risk of potential harmful impacts.[440] Large data holders must conduct an additional annual impact assessment of any algorithm that is used to collect, process, or transfer covered data, where such algorithms may cause potential harm to an individual.[441] Assessments must describe the algorithm's design process, purpose, foreseeable uses, data inputs and outputs, and steps taken to mitigate potential harms.[442] Harmful impacts related to the following areas or constituencies must be addressed: (1) individuals under the age of 17; (2) advertising for housing, education, employment, health care, insurance, or credit opportunities; (3) access to, or restrictions on the use of, a place of public accommodation; or (4) a disparate impact on the basis of protected characteristics.[443] Entities must use an external, independent researcher or auditor to the extent possible, and both design evaluations and impact assessments must be submitted to the Federal Trade Commission (FTC) within 30 days of completion.[444]

The ADPPA mirrors the risk-based approach taken in the EU AI Act and contemplates a scenario where the FTC will promulgate regulations that allow entities to exclude—from design evaluations and impact assessments—any algorithms that present low or minimal risk for enumerated harms.[445]

439. American Data Privacy and Protection Act (ADPPA), H.R. 8152, 117th Cong., https://www.congress.gov/bill/117th-congress/house-bill/8152/text#toc-H4B489C75371741CBAA5F38622BF082DE.
440. ADPPA § 207(c)(2).
441. ADPPA § 207(c)(1).
442. ADPPA § 207(c)(1).
443. ADPPA § 207(c)(1)(B)(vi)(I)–(IV).
444. ADPPA § 207(c)(3)(B).
445. ADPPA § 207(c)(5)(B).

New York City AEDT Law

In December 2021, New York City passed the NYC AEDT Law,[446] which regulates employers and employment agencies' use of "automated employment decision tools" on candidates and employees for hiring or promotions in New York City. The law took effect on January 1, 2023, but the NYC Department of Consumer and Worker Protection (DCWP) has delayed enforcement until April 15, 2023.

The law prohibits an employer or employment agency from using an automated decision tool unless the following requirements are met: (1) the tool has been subject to a bias audit completed by an independent auditor no more than one year prior to the tool's use and (2) a summary of the most recent bias audit and the distribution date of the tool have been made publicly available on the employer or employment agency's website prior to the use of the tool.[447]

The law further requires that employers and employment agencies provide notice to candidates or employees who reside in New York City (1) that an automated employment decision tool will be used in connection with the assessment or evaluation of a candidate or employee, and (2) about the job qualification and characteristics that the tool will use in the assessment.[448] Such notice must be provided no fewer than 10 business days before use of the tool and allow the candidate or employee to request an alternative selection process or accommodation.[449] The employer or employment agency must also disclose on their website or make available to a candidate or employee within 30 days of receiving a written request (1) information about the type of data collected for the automated employment decision tool, (2) the source of the data collection, and (3) the employer or employment agency's data retention policy.[450]

Violations of the law will result in liability for a civil penalty of up to $500 for the first violation and each additional violation occurring on the same day as the first violation, and between $500 and $1500 for each subsequent violation.[451] Each day the automated employment decision tool is used in violation of the law constitutes a separate violation, and failure to provide the required notices constitutes a separate violation.[452]

Further to the law, on September 19, 2022, the NYC DCWP proposed rules[453] to implement the NYC AEDT Law and provided for a public hearing that took place on November 4, 2022. The proposed rules attempted to clarify defined terms, the requirements for a bias audit and public results, notice requirements, and other obligations for employers and employment agencies.[454] Given the high volume of public

446. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code §§ 20-870–20-874.
447. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-871(a).
448. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-871(b).
449. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-871(b)(1).
450. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-871(b)(3).
451. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-872.
452. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-872.
453. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
454. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.

comments received,[455] the DCWP planned a second public hearing for January 23, 2023, and released revised proposed rules regarding the implementation of the law. Changes to the rules were oriented toward the following:

- Modifying the definition of AEDT to ensure it is focused (see discussion of the definition of an AEDT supra)
- Clarifying that an "independent auditor" may not be employed or have a financial interest in an employer/employment agency that seeks to use or continue to use an AEDT, or in a vendor that developed/distributed the AEDT
- Revising the required calculation to be performed where an AEDT scores candidates.
- Clarifying that the required impact ratio must be calculated separately to compare sex categories, race/ethnicity categories, and intersectional categories
- Clarifying the types of data that may be used to conduct a bias audit
- Clarifying that multiple employers using the same AEDT may rely on the same bias audit as long as they provide historical data, if available, for the independent auditor to consider in such bias audit
- Clarifying that an AEDT may not be used if its most recent bias audit is more than one year old[456]

Under the proposed rules, the minimum requirements for a bias audit depend on the type of AEDT used. Where an AEDT selects candidates for employment, selects employees considered for promotion, or classifies them into groups, a bias audit must (1) calculate the selection rate for each category and (2) calculate the impact ratio for each category; then (3) the calculations in conditions 1 and 2 must separately calculate the impact of the AEDT on sex categories, race/ethnicity categories, and intersectional categories of sex, ethnicity, and race; then, (4) where an AEDT classifies candidates for employment or employees being considered for promotion into groups (e.g., leadership styles), the calculations in conditions 1, 2, and 3 must be performed for each group.[457] Where an AEDT scores candidates for employment or employees being considered for promotion, a bias audit must (1) calculate the median score for the full sample of applicants; (2) calculate the scoring rate for individuals in each category; and (3) calculate the impact ratio for each category; then, (4) the calculations required in conditions 1, 2, and 3 must separately calculate the impact of the AEDT on sex categories, race/ethnicity categories, and intersectional categories of sex, ethnicity, and race.[458]

The proposed rules additionally require that bias audits use historical data of the AEDT or test data if insufficient historical data are available to conduct a statistically significant bias audit.[459] However, if a bias audit uses such test data, the summary of the results of the bias audit must explain why historical data were not used and describe how test data were generated and obtained.

455. See New York City Department of Consumer and Worker Protection, Comments Received by the Department of Consumer and Worker Protection on Proposed Rules related to Automated Employment Decision Tools, https://www.nyc.gov/assets/dca/downloads/pdf/about/PublicComments-Proposed-Rules-Related-to-Automated-Employment-Decision-Tools.pdf.
456. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
457. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-301(b), https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdfhttps://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
458. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-301(c), https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdfhttps://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
459. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-302, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.

The proposed rules clarify that an employer or employment agency in New York City must make the summary of the results of the most recent bias audit publicly available on the employment section of their website in a clear and conspicuous manner.[460] Accessing the results could be achieved through the use of an active hyperlink to a website containing the required summary of results and distribution date, provided the link is clearly identified as a link to the results of a bias audit.[461]

The proposed rules additionally define independent auditor as "a person or group that is capable of exercising objective and impartial judgment on all issues within the scope of a bias audit of an AEDT."[462] The rules clarify that an auditor is not independent if the auditor (1) is or was involved in using, developing, or distributing the AEDT; (2) at any point during the bias audit has an employment relationship with the employer or employment agency that seeks to use or continue the use of the AEDT or with a vendor that developed or distributes the AEDT; or (3) at any point during the bias audit has a direct financial interest or a material indirect financial interest in an employer or employment agency that seeks to use or continue to use the AEDT or in a vendor that developed or distributed the AEDT.[463]

Regarding the notice requirement, the proposed rules have several ways that employers or employment agencies may provide notice to both candidates and employees.[464] For both candidates and employees, notice may be provided in a job posting or via U.S. mail or email.[465] For candidates, notice may be provided on the careers or jobs section of a website; for employees, notice may be provided in a written policy or procedure.[466] Further, an employer or employment agency must provide information on the employment section of its website in a clear and conspicuous manner about its AEDT data retention policy, the type of data collected for the AEDT, and the source of the data.[467]

While the NYC AEDT Law required—and the proposed rules clarified—that the notice must include instructions for how an individual can request an alternative selection process or reasonable accommodation under other laws if available,[468] the proposed rules also clarified that an employer or employment agency is not obligated to provide an alternative selection process.[469]

460. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-303, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdfhttps://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
461. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-303, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
462. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
463. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
464. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-304, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
465. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-304, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
466. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-304, https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
467. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-304(d), https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
468. 2021 N.Y.C. Local Law No. 144, N.Y.C. Admin. Code § 20-871(b)(1); New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-304(a), https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.
469. New York City Department of Consumer and Worker Protection, Proposed Rule Amendments, § 5-304(a), https://rules.cityofnewyork.us/wp-content/uploads/2022/12/DCWP-NOH-AEDTs-1.pdf.

State Privacy Laws—Automated Processing

Several recently enacted state privacy laws address automated decision-making. While the California Consumer Privacy Act (CCPA)[470] is silent about automated decision-making, the California Privacy Rights Act (CPRA), which amends the CCPA, grants consumers opt-out rights for the processing of their personal information for purposes of profiling, and creates requirements that affect automated decision-making. The CPRA added a new definition of profiling giving consumer opt-out rights with respect to businesses' use of "automated decision-making technology," which includes profiling consumers based on their "performance at work, economic situation, health, personal preferences, interests, reliability, behavior, location or movements."[471]

The CPRA designates the California Privacy Protection Agency (CPPA) to issue regulations governing automated decision-making, including "governing access and opt-out rights with respect to businesses' use of automated decision-making technology."[472] However, to date, the CPPA has not published rules that address automated decision-making. Unlike other state privacy laws and the General Data Protection Regulation (GDPR), commenters have pointed out that CPRA's language casts a wide net that could cover, for example, invasive facial recognition in public places and routine automated processes like spellcheckers that may process personal information.[473] As expressed in public record comments, many stakeholders had hoped the initial set of regulations would at least clarify the definition of profiling to limit it to automated technologies that create a material impact on a person similar to other laws and the GDPR.[474]

Similarly, the Virginia Consumer Data Protection Act (VCDPA) and Colorado Privacy Act (CoPA) provide consumers the right to opt out of "profiling in furtherance of decisions that produce legal or similarly significant effects"[475] where profiling is defined as "any form of automated processing performed on personal data to evaluate, analyze, or predict personal aspects related to an identified or identifiable natural person's economic situation, health, personal preferences, interests, reliability, behavior, location, or movements."[476] Further, the law requires controllers to conduct a data protection impact assessment (DPIA) if the processing of personal data creates a heightened risk of harm to a consumer, including if it presents a reasonably foreseeable risk of (1) unfair or deceptive treatment of, or unlawful disparate impact on, consumers; (2) financial or physical injury to consumers; (3) a physical or other intrusion upon the solitude or seclusion, or the private affairs or concerns, of consumers if the intrusion would be offensive to a reasonable person; or (4) other substantial injury to consumers.[477] Connecticut's Data Privacy Act (CDPA) provides a similar opt-out right to Colorado and Virginia, but only for "solely automated decisions."[478]

470. Cal. Civ. Code § 1798.100, *et seq*.
471. Cal. Civ. Code § 1798.140(z).
472. Cal. Civ. Code § 1798.185(a)(16).
473. Gibson, Dunn, & Crutcher LLP, Artificial Intelligence and Automated Systems Legal Update (2Q22) (August 10, 2022), https://www.gibsondunn.com/artificial-intelligence-and-automated-systems-legal-update(2q22)/#_ftnref25.
474. Gibson, Dunn, & Crutcher LLP, Artificial Intelligence and Automated Systems Legal Update (2Q22) (August 10, 2022), https://www.gibsondunn.com/artificial-intelligence-and-automated-systems-legal-update(2q22)/#_ftnref25.
475. VCDPA § 59.1-573(A)(5); CoPA § 6-1-1306(a)(C).
476. VCDPA § 59.1-571; CoPA § 6-1-1303(20).
477. VCDPA § 59.1-576(A)(3); CoPA § 6-1-1309(2)(a).
478. CDPA § 4(a)(5)(C).

Equal Employment Opportunity Commission AI Guidance

Employers are now provided with a variety of computer-based tools to assist in the hiring process, monitor employee performance, determine pay or promotion, and establish the terms and conditions of employment.[479] These tools attempt to save time, increase objectivity, and decrease bias.[480] However, the use of automated tools may disadvantage job applicants, and employees with disabilities and employers may risk violating Equal Employment Opportunity (EEO) laws that protect such individuals.[481]

On May 12, 2022, the Equal Employment Opportunity Commission (EEOC) issued guidance on how existing ADA[482] requirements may apply to the use of artificial intelligence in employment-related decision-making.[483] The EEOC's guidance document offered practical tips to employers on complying with the ADA when using AI decision-making tools and to applicants and employees who think their rights may have been violated.[484]

In the employment context, the EEOC noted that AI has typically meant that "the developer relies partly on the computer's own analysis of data to determine which criteria to use when making employment decisions," including machine learning, computer vision, natural language processing and understanding, intelligent decision support systems, and autonomous systems.[485] The EEOC provided several examples of algorithmic decision-making at various stages in the employment process that may involve AI, including resume scanners that prioritize applications using keywords; employee monitoring software that rates employees based on keystrokes; chatbots that ask job candidates about their job qualifications and reject those who don't meet predefined requirements; video interviewing software; and testing software that provides

479. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.
480. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.
481. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.
482. Americans With Disabilities Act of 1990, 42 U.S.C. § 12101 et seq. (1990).
483. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence. Note that the EEOC points to the National Artificial Intelligence Initiative Act of 2020's definition of AI as well as NIST's description.
484. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.
485. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.

"job fit" scores regarding personality, aptitude, cognitive skills, or perceived "cultural fit."[486]

Generally, the ADA prohibits employers, employment agencies, labor organizations, and joint labor-management committees from discriminating on the basis of disability.[487] Under the ADA, a physical or mental impairment is a "disability" if it would, when left untreated, "substantially limit" one or more "major life activities," including seeing, reaching, communicating, speaking, concentrating, or the operation of major bodily functions such as brain or neurological functions.

The EEOC provided the following ways an employer's use of algorithmic decision-making tools may potentially violate the ADA:

- The employer does not provide a "reasonable accommodation" necessary for a job applicant or employee to be rated fairly and accurately by the algorithm.
- The employer relies on an algorithmic decision-making tool that intentionally or unintentionally "screens out" an individual with a disability, even though the individual is able to do the job with a reasonable accommodation.
- The employer adopts an algorithmic decision-making tool for use with its job applicants or employees that violates the ADA's restrictions on disability-related inquiries and medical examinations.

The EEOC cautioned that an employer's use of a tool designed or administered by a third-party vendor does not shield it from liability under the ADA.[488]

486. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.

487. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence; Americans with Disabilities Act of 1990, 42 U.S.C. § 12101 et seq.

488. U.S. Equal Employment Opportunity Commission, *The Americans with Disabilities Act and the Use of Software, Algorithms, and AI to Assess Job Applicants and Employees* (May 12, 2022), EEOC-NVTA-2022-2, https://www.eeoc.gov/laws/guidance/americans-disabilities-act-and-use-software-algorithms-and-artificial-intelligence.

Federal Trade Commission AI Guidance

On April 19, 2021, the FTC issued guidance titled "Aiming for Truth, Fairness, and Equity in Your Company's Use of AI."[489] The guidance referenced, in large part, the FTC's April 2020 post "Using Artificial Intelligence in Algorithms."[490] The recent guidance also relied on older FTC work on AI, including a January 2016 report, "Big Data: A Tool for Inclusion or Exclusion?"[491] In its guidance, the FTC sought to answer this question: "How can we harness the benefits of AI without inadvertently introducing bias or other unfair outcomes?"[492] The FTC pointed to three existing laws of which AI developers and users should be mindful.

First, the FTC referenced Section 5 of the FTC Act,[493] which prohibits unfair or deceptive practices, including the sale or use of racially based algorithms, for example.[494] Second, the FTC addressed the Fair Credit Reporting Act (FCRA),[495] which would be applicable when an algorithm is used to deny people employment, housing, credit, insurance, or other benefits.[496] Finally, the FTC addressed the Equal Credit Opportunity Act (ECOA),[497] which makes it illegal for a company to use a biased algorithm that results in credit discrimination on the basis of race, color, religion, national origin, sex, marital status, age, or because a person receives public assistance.[498]

With these laws in mind, the FTC offered several "important lessons" on using AI truthfully, fairly, and equitably:[499]

- Start with the right foundation: The FTC emphasized starting with "a solid foundation." The Commission cautioned that if a data set is missing information from certain populations, using those data to build an AI model may yield unfair results. The FTC noted that developers should think about ways to improve data sets; design models to account for data gaps; and, in light of any shortcomings, limit where or how the model is used.[500]

489. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
490. U.S. Federal Trade Commission, *Using Artificial Intelligence and Algorithms* (April 8, 2020), ftc.gov/business-guidance/blog/2020/04/using-artificial-intelligence-and-algorithms.
491. U.S. Federal Trade Commission, *Big Data: A Tool for Inclusion or Exclusion? Understanding the Issues (FTC Report)* (January 2016), https://www.ftc.gov/reports/big-data-tool-inclusion-or-exclusion-understanding-issues-ftc-report.
492. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
493. FTC Act, 15 U.S.C. §§ 41–58.
494. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
495. FTC Act, 15 U.S.C. §§ 41–58.
496. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
497. FTC Act, 15 U.S.C. §§ 41–58.
498. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
499. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
500. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.

- Watch out for discriminatory outcomes: The FTC highlighted examples where algorithms designed for benign purposes, like health care resource allocation or advertising, actually resulted in racial bias. The Commission emphasized the need to test an algorithm—both before it's used and periodically after—to ensure it does not discriminate on the basis of race, gender, or another protected class.[501]

- Embrace transparency and independence: The FTC highlighted that, as companies develop and use AI, they should consider ways to embrace transparency and independence such as conducting and publishing the results of independent audits or opening data and source codes to outside inspection.[502]

- Don't exaggerate what your algorithm can do or whether it can deliver fair or unbiased results: The FTC reminded companies that under the FTC Act, statements to business customers and consumers must be truthful, nondeceptive, and supported by evidence. The Commission cautioned companies from overpromising what algorithms can deliver.[503]

- Tell the truth about how you use your data: The FTC pointed to several of its enforcement actions that highlight the need for businesses to be careful about how they get the data that power their algorithms. For example, the FTC's complaint against Facebook[504] alleged that the company misled consumers by telling them that they could opt in to the company's facial recognition algorithm, when in fact Facebook was using their photos by default. The FTC's action against app developer Everalbum reinforced this point.[505] The FTC alleged that Everalbum, in using its users' photos to train its facial recognition algorithm, deceived users about their ability to control the app's facial recognition feature and made misrepresentations about users' ability to delete photos and videos upon deactivation.[506]

- Do more good than harm: Under the FTC Act, a practice is unfair if it causes more harm than good. The FTC cautioned that if a model causes more harm than good—that is, under Section 5, if it causes or is likely to cause substantial injury to consumers that is not reasonably avoidable by consumers and not outweighed by countervailing benefits—the FTC can challenge the use of the model as unfair.[507]

- Hold yourself accountable—or be ready for the FTC to do it for you: The FTC reminded companies to hold themselves accountable under established FTC consumer protection principles to avoid the FTC doing it for them.[508]

501. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
502. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
503. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
504. Complaint, United States v. Facebook, Inc., No. 19-cv-2184 (D.D.C. July 24, 2019), ECF No. 1.
505. Complaint, *Everalbum, Inc.*, FTC Docket No. C-4743 (May 6, 2021), https://www.ftc.gov/system/files/documents/cases/1923172_-_everalbum_complaint_final.pdf.
506. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
507. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.
508. U.S. Federal Trade Commission, *Aiming for Truth, Fairness, and Equity in Your Company's Use of AI* (April 19, 2021), https://www.ftc.gov/business-guidance/blog/2021/04/aiming-truth-fairness-equity-your-companys-use-ai.

EU General Data Protection Regulation

Pursuant to Article 22 of the EU's GDPR, data subjects have the right not to be subject to a decision based solely on automated processing—for example, profiling—that "produces legal effect concerning him or her or similarly significantly affects him or her."[509] Exceptions include where the decision is (a) necessary for the entry into or performance of a contract; or (b) authorized by domestic law applicable to the controller; or (c) based on the individual's explicit consent.[510] For (1) and (3), the data controller must implement suitable measures to safeguard the data subject's rights and freedoms and legitimate interests, at a minimum to include the right to obtain human intervention, express his or her point of view, and contest the decision.[511]

EU AI Act

The EU's AI Act, once final, will be the first law on AI by a major regulator anywhere in the world. The law adopts a risk-based approach and assigns applications of AI to three risk categories: (1) applications and systems that create an unacceptable risk, (2) high-risk applications, and (3) minimal or no risk.[512] Systems with unacceptable risk, like China's use of social scoring, are strictly prohibited.[513] Specifically, the EU AI Act would ban certain AI practices and types of AI systems, including subliminal manipulation, social scoring systems, exploitation of children or mentally disabled people, and real-time biometric identification of individuals for law enforcement purposes (with certain exceptions).[514]

509. General Data Protection Regulation (EU) 2016/679 Article 22(1).
510. General Data Protection Regulation (EU) 2016/679 Article 22(2).
511. General Data Protection Regulation (EU) 2016/679 Article 22(3).
512. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/; European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.
513. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/; European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.
514. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/. The prohibition on real-time biometric identification by law enforcement is subject to three narrowly defined exceptions where use of AI is strictly necessary to achieve a substantial public interest, the importance of which outweighs the risks: (1) to search for potential victims of a crime, including missing children; (2) regarding certain threats to the life or physical safety of individuals or a terrorist attack; and (3) regarding the detection, localization, identification, or prosecution of perpetrators or suspects of certain particularly reprehensible criminal offenses.

Uses that present a high risk would be permitted subject to specific legal requirements.[515] The EU AI Act specifically identifies categories of high-risk AI uses: (1) safety components of regulated products and (2) certain AI systems in the following eight fields: biometric identification and categorization of natural persons; management and operation of critical infrastructure; education and vocational training; employment and workers' management; access to and enjoyment of essential private services and public services and benefits; law enforcement; migration, asylum, and border control management; and administration of justice and democratic processes.[516]

For high-risk uses, the EU AI requires the use of conformity assessments; a risk management system; technical documentation and design logging features; an appropriate degree of transparency and information; human oversight; and robustness, accuracy, and cybersecurity.[517] Further, the EU AI demands high-risk systems that use data sets for training, validation, and testing be subject to appropriate data governance and management practices that address design choices, data collection, and data preparation; formulation of assumptions; assessments of the availability of data; and an examination of possible biases and the identification of any possible data gaps or shortcomings.[518] Such data sets must be relevant, free from errors, and complete; account for the characteristics or elements of the specific geographical, behavioral, or functional setting within which the AI system is intended to be used; and include only special categories of personal data if appropriate safeguards are in place.[519]

The EU Commission notes that most AI systems will not be high risk. Uses with minimal or no risk are permitted and largely left unregulated.[520] While no mandatory obligations are prescribed for AI with minimal or no risk, the EU AI Act encourages voluntary codes of conduct.[521] Certain AI systems may require specific transparency obligations, regardless of whether the use is high risk, such as notifying humans that they are interacting with an AI system unless it is obvious, notifying humans that emotional recognition or

515. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/; European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.

516. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.

517. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.

518. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.

519. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.

520. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/; European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.

521. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/; European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.

biometric categorization systems are applied to them, or applying labels to deep fakes.[522]

The EU Act also provides obligations for operators and users.[523] Under the Act, operators are required to establish and implement quality management systems in their organizations, keep technical documentation updated, log obligations to enable other users to monitor the operation of the high-risk AI system, undergo conformity assessment, register the AI system in the EU database, affix CE marketing and signed declaration of conformity, conduct postmarket monitoring, and collaborate with market surveillance authorities.[524] Users are required to operate AI systems in accordance with instructions, ensure human oversight when using AI, monitor operations for risks, inform providers or distributors about any serious incidents, and apply existing legal obligations.[525]

To implement this act at the European level, the European Commission will act as secretariat. The Commission also established an Artificial Intelligence Board and intends to introduce an expert group in the implementation process.[526] At the national level, it has established competent authorities to oversee the regulation.[527]

To maximize its potential and global competitive advantage, the EU also established a Coordinated Plan, a joint commitment between the Commission and member states.[528] In 2018, member states developed the plan, and were encouraged to develop national AI strategies and update the plan regularly. In 2021, the plan was reviewed in light of the COVID-19 pandemic, the European Green Deal, policy alignment with the 2020 White Paper on AI (human-centric and trustworthy AI), technological developments (new components, computing concepts, data infrastructure, and new applications), and lessons learned from the past two years of implementation, moving from intention to action.[529]

The 2021 Coordinated Plan on AI sets forth four key policy objectives for artificial intelligence in the EU and the member states:

- Set enabling conditions for AI development and uptake in the EU.

522. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/; European Commission, *A European Strategy for Artificial Intelligence* (April 23, 2021), https://www.ceps.eu/wp-content/uploads/2021/04/AI-Presentation-CEPS-Webinar-L.-Sioli-23.4.21.pdf.
523. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.
524. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.
525. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.
526. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.
527. European Commission, *Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts* (April 21, 2021), https://artificialintelligenceact.eu/the-act/.
528. European Commission, *Coordinated Plan on Artificial Intelligence* (December 7, 2018), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0795.
529. European Commission, *Annexes to the Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions Fostering a European approach to Artificial Intelligence* (April 21, 2021), https://digital-strategy.ec.europa.eu/en/library/coordinated-plan-artificial-intelligence-2021-review.

    - » Acquire, pool, and share policy insights.
    - » Tap into data's potential.
    - » Foster critical computing capacity.
- Make the EU the place where excellence thrives from the lab to the market.
    - » Collaborate with stakeholders through, for example, the European Partnership on AI, Data and Robotics, and expert groups.
    - » Build and mobilize research capacities.
    - » Provide an environment for developers to test and experiment and for SMEs and public administrations to take up AI.
    - » Support the funding and scaling of innovative AI ideas and solutions.
- Ensure that AI works for people and is a force for good in society.
    - » Nurture talent and improve the supply of skills necessary to enable a thriving AI ecosystem.
    - » Develop a policy framework to ensure trust in AI systems.
    - » Promote the EU vision on sustainable and trustworthy AI in the world.
- Build strategic leadership in high-impact sectors.
    - » Bring AI into play for climate and environment.
    - » Use the next generation of AI to improve health.
    - » Maintain Europe's lead: Strategy for Robotics in the world of AI.
    - » Make the public sector a trailblazer for using AI.
    - » Apply AI to law enforcement, migration, and asylum.[530]

530. European Commission, *Annexes to the Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions Fostering a European approach to Artificial Intelligence* (April 21, 2021), https://digital-strategy.ec.europa.eu/en/library/coordinated-plan-artificial-intelligence-2021-review.

UK Data Protection and Digital Information Bill

In July 2022, the UK released the Data Protection and Digital Information Bill,[531] which includes measures to "use AI responsibly while reducing compliance burdens on businesses to boost the economy."[532] The bill clarifies the circumstances in which organizations can use automated decision-making. If a decision produces a legal or similarly significant effect for an individual and processes sensitive "special category" data, it cannot be taken solely on an automated decision basis with no "meaningful" human involvement.[533] Otherwise, automated decision-making systems can be used, subject to safeguards intended to "protect the rights and freedoms of the individual."[534] Included with the release of the bill was a new AI paper, which "outlines the government's approach to regulating the technology in the UK, with proposed rules addressing future risks and opportunities so businesses are clear how they can develop and use AI systems and consumers are confident they are safe and robust."[535] The UK reiterated its commitment to sector-specific regulation and a "less centralized approach than the EU."[536]

The UK government highlighted its "focus on supporting growth and avoiding unnecessary barriers being placed on businesses," emphasizing the proposal will "allow different regulators to take a tailored approach to the use of AI in a range of settings…[which] better reflects the growing use of AI in a range of sectors."[537] The guidance further sets forth six core principles that require developers and users of AI to (1) ensure AI is used safely, (2) ensure AI is technically secure and functions as designed, (3) ensure AI is appropriately transparent and explainable, (4) consider fairness, (5) identify a legal person to be responsible for AI, and (6) clarify routes to redress or contestability.[538]

531. Data Protection and Digital Information Bill, https://publications.parliament.uk/pa/bills/cbill/58-03/0143/220143.pdf.
532. Gov.UK, Press Release, *UK sets out proposals for new AI rulebook to unleash innovation and boost public trust in the technology* (July 18, 2022), https://www.gov.uk/government/news/uk-sets-out-proposals-for-new-ai-rulebook-to-unleash-innovation-and-boost-public-trust-in-the-technology.
533. Gibson, Dunn, & Crutcher LLP, Artificial Intelligence and Automated Systems Legal Update (3Q22) (November 17, 2022), https://www.gibsondunn.com/artificial-intelligence-and-automated-systems-legal-update-3q22/#_ftnref3.
534. Gibson, Dunn, & Crutcher LLP, Artificial Intelligence and Automated Systems Legal Update (3Q22) (November 17, 2022), https://www.gibsondunn.com/artificial-intelligence-and-automated-systems-legal-update-3q22/#_ftnref3.
535. Gov.UK, Press Release, *UK sets out proposals for new AI rulebook to unleash innovation and boost public trust in the technology* (July 18, 2022), https://www.gov.uk/government/news/uk-sets-out-proposals-for-new-ai-rulebook-to-unleash-innovation-and-boost-public-trust-in-the-technology.
536. Gov.UK, Press Release, *UK sets out proposals for new AI rulebook to unleash innovation and boost public trust in the technology* (July 18, 2022), https://www.gov.uk/government/news/uk-sets-out-proposals-for-new-ai-rulebook-to-unleash-innovation-and-boost-public-trust-in-the-technology.
537. Gov.UK, Press Release, *UK sets out proposals for new AI rulebook to unleash innovation and boost public trust in the technology* (July 18, 2022), https://www.gov.uk/government/news/uk-sets-out-proposals-for-new-ai-rulebook-to-unleash-innovation-and-boost-public-trust-in-the-technology.
538. Gov.UK, Press Release, *UK sets out proposals for new AI rulebook to unleash innovation and boost public trust in the technology* (July 18, 2022), https://www.gov.uk/government/news/uk-sets-out-proposals-for-new-ai-rulebook-to-unleash-innovation-and-boost-public-trust-in-the-technology.

Canada Artificial Intelligence and Data Act

The Canadian government recently introduced Bill C-27 introducing the Artificial Intelligence and Data Act (AIDA) that aims to regulate the development and use of AI in Canada.[539] If passed, AIDA would regulate the design, development, and use of AI systems with a focus on mitigating risk of harm and bias in "high-impact" AI systems. What constitutes a high-impact system has not yet been defined, with the proposal stating that such criteria will be established in future regulations.[540] Harm, however, has been defined as (a) physical or psychological harm to an individual, (b) damage to an individual's property, or (c) economic loss to an individual.[541] Unlike the EU AI Act, AIDA does not stipulate an outright ban on AI systems presenting an unacceptable risk level.[542] However, AIDA prohibits possessing or using personal information to create an AI system if the personal information was not lawfully obtained, knowingly using an AI system likely to cause serious physical or psychological harm to an individual or substantial damage to property, or making an AI system available for use with intent to defraud.[543]

Other AI-Related Laws

The Illinois Artificial Intelligence Video Interview Act[544] was recently amended to provide that employers that rely solely on AI to determine whether applicants will qualify for an in-person interview must gather and report certain demographic information annually to the state, which must conduct an analysis to determine if there was racial bias in the use of AI. Additionally, the pending Washington, D.C., Stop Discrimination by Algorithms Act of 2021[545] would prohibit the use of algorithmic decision-making in a discriminatory manner and would require notices to individuals whose personal information is used in certain algorithms to determine employment, housing, health care, and financial lending.

539. Bill C-27, "*An Act to Enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts,*" https://www.parl.ca/DocumentViewer/en/44-1/bill/C-27/first-reading.
540. Bill C-27, "*An Act to Enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts,*" https://www.parl.ca/DocumentViewer/en/44-1/bill/C-27/first-reading.
541. Bill C-27, "*An Act to Enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts,*" https://www.parl.ca/DocumentViewer/en/44-1/bill/C-27/first-reading.
542. Bill C-27, "*An Act to Enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts,*" https://www.parl.ca/DocumentViewer/en/44-1/bill/C-27/first-reading.
543. Bill C-27, "*An Act to Enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts,*" https://www.parl.ca/DocumentViewer/en/44-1/bill/C-27/first-reading.
544. 820 ILCS 42.
545. District of Columbia Bill 24-0558.

Conclusion

Throughout the hearings, former Representatives John Delaney (D-MD) and Mike Ferguson (R-NJ) and the AI Commission received and developed important insights into, and perspective about, the American public's concerns around AI—its use, how to regulate it, what it means for competition, and its impact on the workforce. The AI Commission subsequently generated this report to account for and voice those insights and to provide recommendations for moving forward in an AI-driven economy.

Overall, the AI Commission recommends an as-necessary approach to AI regulation, one that begins with existing law and addresses gaps in law to intentionally address new challenges, such as larger-scale use or new uses of AI. Policymakers in Congress can take advantage of experience associated with some of the newer AI-directed laws, such as the NYC AEDT Law. But legislators should also learn from the challenges presented in developing an AI-directed law, from both Europe (taking a very precise approach) and New York (taking a high-level approach), which have garnered interest, questions, and iterations of regulation. A higher-level, as-necessary, and as-warranted approach to new AI law and regulation will provide for subject matter experts' input and the maintenance of industry sensibilities while also continuing to support important U.S. protections of democracy, privacy, safety, security, knowledge, and individual autonomy.

That common thread of protecting individual rights has underscored the entire AI Commission's work, including rights related to data privacy (particularly for children), knowledge, and autonomy. While countries like China are aggressively expanding AI via government-collected data sets that seem to offer no privacy to its citizens, the EU's comprehensive approach to AI regulation may be affecting progress and development, thereby slowing the growth of AI progress and economic success in Europe. This report and these recommendations reflect the AI Commission's attempt to balance encouraging innovation and protecting citizens' privacy, while also keeping the U.S. competitive in the race to responsibly develop and deploy AI. By regulating as necessary and using various approaches in support (including existing law, risk-based regulation, industry-led standards, and soft law), the government, industry, and public can continue to innovate competitively while actively assessing and appropriately addressing AI risks—thereby complying with legal safeguards to protect the public from harm.

That common thread of protecting individual rights has underscored the entire AI Commission's work, including rights related to data privacy (particularly for children), knowledge, and autonomy.

Appendix 1

AI Commission Members

Co-chairs:

Congressman John Delaney (D-MD)

Congressman Mike Ferguson (R-NJ)

Commissioners:

Alexandros Dimakis
Professor, ECE Department, UT Austin; Co-director, National AI Institute on the Foundations of Machine Learning (IFML)

Rachel Gillum
Head of Global Policy, Office of Ethical and Humane Use of Technology, Salesforce

Jerry Jones
Chief Ethics and Legal Officer, LiveRamp

Shekar Katuri
AI Program, Strategy, and Governance Executive, Bank of America

Chris Meserole
Director, AI Initiative, Brookings Institution

Christina Montgomery
Chief Privacy Officer and Vice President, IBM

Brent Orrell
Senior Fellow, American Enterprise Institute

Osonde Osoba
Senior AI Researcher, Fairness, LinkedIn

Adam Thierer
Senior Fellow, R Street Institute

Conrad Tucker
Arthur Hamerschlag Career Development Professor of Mechanical Engineering, Carnegie Mellon University

To provide bipartisan recommendations for policymakers, the AI Commission held field hearings in key locations nationally and internationally.

Austin, Texas, Field Hearing

The AI Commission held its first field hearing on March 10, 2022, at the Austin Chamber of Commerce. Testimonies explored topics such as global competition and fairness in AI through the lens of issues like health care, finance, privacy, defense, energy, immigration, education, and employment. Speakers agreed that the U.S. should prioritize its leadership in AI development, especially in the face of increasing competition from China, while emphasizing our values of fairness, diversity, and combatting bias.

Witnesses:

Congressman Will Hurd (R-TX)

Dave DeCaprio
CTO and Co-founder, ClosedLoop.ai

Iwao Fusillo
Chief Data and Analytics Officer, General Motors

Melissa Kargiannakis
Founder and CEO, Skritswap

Douglas Matty
Director, Army Artificial Intelligence Capabilities

Bdar Boussabat
President, AI TOGETHER

Aschalew Abiko
Dean, School of Computing and Informatics, Wachemo University

Robert Armstrong
U.S. State Government Affairs, Senior Manager, Central, SAP

Elizabeth Adams
Chief AI Ethics and Culture Advisor, Leadership of Responsible AI

Charlie Burgoyne
Founder and CEO, Valkyrie

Katharine McAden
Public Policy and External Affairs, Google

Austin Carson
Founder & CEO, SEEDAI

Sherri Greenberg
Professor of Practice; Fellow of Max Sherman Chair in State and Local Government; Graduate Advisor, Master of Public Affairs, University of Texas

Sakshi Mishra
Senior Autonomous Systems Engineer, Microsoft

Anshumali Shrivastava
Founder and CEO, ThirdAI

Claire Vishik
Fellow and GMT CTO, Intel Corporation

Cleveland, Ohio Field Hearing

At the Cleveland, Ohio, field hearing held on April 28, 2022, the Commission heard from panels of experts across civil society, government, academic, and industry on the impact of AI on health care and the workforce. According to testimony, perhaps the new dictum of working with AI should be "Do no harm." According to testimonies, AI has greatly improved health care, not only in helping patients and health providers but also in reducing inequities, costs, and inefficiencies, particularly during COVID-19.

However, health care providers also highlighted bias, impersonality, and privacy concerns around AI. On AI's impact on the workforce, experts highlighted AI's ability to create new job opportunities while cautioning its likely effect in displacing many jobs and the broader economy. To prepare the workforce, experts emphasized the need for education and training through industry and academia across all age groups.

Witnesses:

Tom Mihaljevic
MD, CEO and President, Cleveland Clinic

Dr. Serpil Erzurum
MD, Cleveland Clinic

Dr. Lara Jehi
MD, Cleveland Clinic

Rohit Chandra
PhD, Cleveland Clinic

Shawn Wang
Anthem

Ben Ko
Kaleidoscope

Tanya Berger-Wolf
Ohio State University

Carly Eckert
Olive

Cheryl Oldham
U.S. Chamber

Richard Cardwell
Infosys

Rick Carfagna
Ohio Chamber of Commerce

Elizabeth Hyman
XRA

Alex Koran
AIEDU

Almutwakel Hassan
Student

Erin Henninger
Case Western Reserve University

Palo Alto, California, Field Hearing

At the Palo Alto, California, field hearing on May 9, 2022, speakers called for policymakers, technologists, and business leaders to work together to create ethical AI. Testimonies stressed augmenting jobs instead of merely automating them through AI. Many highlighted that workers should be empowered by AI, not threatened. To continue developing AI, people's safety and livelihoods must be kept in mind.

Witnesses:

Rep. Anna Eshoo (CA-18)

Rep. Ro Khanna (CA-17)

Erik Brynjolfsson
Stanford HAI

Katya Klinova
Partnership on AI

Kathy Baxter
Salesforce

Navdeep Gill
H20.ai

Benjamin Larsen
World Economic Forum

Miles Brundage
OpenAI

Dmytro Filatov
DeepX

Alka Roy
The Responsible Innovation Project and RI Labs

Jonathan Stray
Berkeley Center for Human-Compatible AI

Igor Jablokov
Pryon

Doug Bloch
Teamsters Joint Council 7

Shaunak Chatterjee
LinkedIn

Jacob Snow
ACLU

Roy Wang
Eightfold.ai

Johnathan Budd
NURO

Nhung Ho
Intuit

Stefania Druga
Moonshot Factory

Peter Hallinan
Amazon

Karan Kanwar
Wing

London, UK, Field Hearing

At the London, UK, field hearing on June 13, 2022, many witnesses stressed the importance of AI's impact on financial services, the need for AI regulation, and AI's social and global influences. Speakers discussed the need to identify bad actors within AI, especially given the private sector, not the government, is currently leading AI development. Therefore, the private sector should adhere to regulations, particularly to avoid AI-related financial crises.

Witnesses:

Lizzie Greenhalgh
Deputy Director for Regulation and AI, Department for Digital, Culture, Media and Sport (DCMS)

Mirit Eldor
Director of Strategy, Elsevier

Rupak Ghose
Chief Operating Officer, Galytix

Kenneth Cukier
Deputy Executive Editor and host of Babbage podcast The Economist

Zitah McMillan
CEO and Cofounder, Predictive Black

Philip Lockwood
Deputy Head of Innovation, NATO (virtual)

Miri Zilka
Research Fellow in Machine Learning and Associate Fellow, University of Cambridge

Alex Creswell
Vice President of Public Policy, Graphcore

Tania Duarte
Cofounder, We and AI

Rohit Israni
Chairman INCITS/Artificial Intelligence

Laura Galindo
AI Policy Manager, Meta

Nathan Benaich
Founder, Air Street

Julie Dawson
Chief Policy and Regulatory Officer, Yoti

Siva Chamarti
Head of Machine Learning, Shell

Sasha Haco
Founder, Unitary AI

Carissa Véliz
Associate Professor, Faculty of Philosophy and the Institute for Ethics in AI, and Tutorial Fellow, University of Oxford (virtual)

Jonathan Kewley
Partner and Co-chair of Global Tech Group, Clifford Chance

Washington, D.C., Field Hearing

At the Washington, D.C., field hearing on July 21, 2022, speakers offered six recommendations: (1) modernize the IP system, (2) treat IP theft as a national security threat, (3) bolster AI as a national security priority, (4) elevate the United States' strategic advantage in AI, (5) ensure that AI is effective for decision-making, and (6) win the competition for talent. The hearing elaborated on each topic, highlighting areas that were most important to the American public.

Witnesses:

Brenda Leong
Partner, BNH.ai

Evi Fuelle
Global Policy Director, Credo AI

Evangelos Razis
Senior Manager, Workday

Rama G. Elluru
Senior Director for Society and Intellectual Property, Special Competitive Studies Project

Appolo Tankeh
Professor, Bowie State University

Wen Xie
Partner, Global IP Counselors, LLP

Andrei Iancu
Former Under Secretary of Commerce for Intellectual Property and Director, United States Patent and Trademark Office

Christian Hannon
Patent Attorney, Office of Policy and International Affairs, United States Patent and Trademark Office

Ylli Bajraktari
CEO, Special Competitive Studies Project

Terry Roberts
Founder and CEO, White Hawk

Benjamin Harvey
Founder and CEO, AI Squared

Brian Drake
Federal Chief Technology Officer, Accrete AI Government

Colin Carroll
Director, Applied Intuition

Sean Gourley
Founder and CEO, Primer.ai

Ryan Lewis
Partner, SRI Ventures

Mark Elszy
Regional Vice President, Federal, Dataiku

Miriam Vogel
President and CEO, EqualAI

U.S. Chamber of Commerce
Technology
Engagement Center