U.S. Artificial Intelligence Governance in the Obama-Trump Years

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Abstract—**Artificial intelligence technologies and the public policies that govern them are both likely to evolve rapidly in coming years. This essay briefly outlines how AI governance was being formulated in the United States from 2009 to 2020 during the presidencies of Barack Obama and Donald Trump. Although these two administrations differed on most policy matters, they shared a common approach to AI governance. Generally speaking, both administrations adopted a "light-touch" regulatory and industrial policy stance toward AI. Although both administrations highlighted potential areas of policy concern—safety and security issues, in particular—promoting the growth of AI sectors and technologies was prioritized over preemptively restricting them. "Soft law" mechanisms were typically tapped before hard law solutions. In this sense, AI policy in the Obama-Trump AI governance approach has been an extension of the governance vision previous administrations applied to the internet and digital commerce. The US policy approach to these sectors and technologies stands in contrast to the different governance stances adopted by China and the European Union. However, there are indications that US could be moving closer to those competing policy visions.**

Index Terms—**Artificial intelligence, algorithms, digital, governance, industrial policy, internet, policy, regulation, robotics, soft law, technology.**

I. INTRODUCTION

THE governance of artificial intelligence (AI) systems and technologies continues to evolve rapidly across the globe. While China and the European Union (EU) have been actively developing coordinated governance frameworks for AI, some critics claim the United States (US) lacks any coherent vision or is failing to keep up with more aggressive industrial policy plans

It is true that the China and the EU have articulated a somewhat clearer vision for AI governance, complete with multiple official state pronouncements and corresponding programs. The US approach, by contrast, has been incremental and decentralized.

Nonetheless, over the past decade, the Obama and Trump administrations did take steps to articulate a general governance framework for AI, machine-learning, and quantum computing. When discussing the US governance approach for AI, it is useful to divide the exploration into *regulatory policy* and *industrial policy* efforts. Generally speaking, regulatory policy

efforts place certain limits on AI innovations while industrial policy efforts actively promote sectors and technologies. While there can be tension between these two types of governmental activities, they can also work together to advance various State objectives. This is made clear by briefly exploring how AI governance currently works in Europe and China after examining the US model in more detail.

II. US AI GOVERNANCE

A. Influence of the Internet Model on AI Policy

A better understanding of US AI policy during the Obama and Trump years requires a step back to the 1990s and the origins of Internet policy during that decade. In the early and mid-1990s, the Clinton administration and Congress took steps to limit the breadth of older regulatory schemes that applies to traditional information and communications technologies (ICT).[1]

Prior to the advent of the internet and digital systems, the governance of ICT included a wide variety of traditional "hard law" regulatory instruments, including: restrictions on entry (often through licensing and permitting requirements), price controls, equipment regulations, and various quality-of-service or requirements. Regulation was also multi-jurisdictional, imposed by authorities at the federal, state, and local level.

ICT began evolving rapidly in the 1980s and 1990s, however, driven by the invasion of personal computers and digital connectivity. The growth of the computer sector was happening long before the internet, of course, and federal regulators did take some important steps to ensure that computer technologies and networks were treated differently than older analog systems. Beginning in the late 1960s, for example, the Federal Communications Commissions (FCC) began a series of proceedings that came to be known as the *Computer Inquiries*. Through these inquires, which continued into the 1980s, the agency signaled that these new systems lie outside its statutory authority and that "enhanced" computer services were also generally more competitive than the "basic" communications services that were to remain tightly controlled as regulated monopolies.

This "basic" vs. "enhanced" dichotomy was important for two reasons. First, it effectively created a sort of policy firewall between the old and new ICT worlds. Federal and state

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[1] For a fuller exploration, see: Adam Thierer, "A Brief History of Soft Law in ICT Sectors," forthcoming, *Jurimetrics*, 2021.

regulators would most focus on containing monopolistic power of traditional media (broadcast and cable companies) and communications providers (most notably, AT&T), while allowing computer systems and digital networks to flourish in a relatively free-market environment. Second, this firewalling approach would later influence the Telecommunications Act of 1996, which would continue to focus mostly on governing older ICT technologies and sectors using hard law approaches, while leaving the internet largely unregulated. This distinction would also influence policy thinking in the Clinton administration, which in 1997 released a policy statement called *The Framework for Global Electronic Commerce*.[2] The statement advocated a clean break from traditional ICT regulation, arguing that "the private sector should lead [and] the Internet should develop as a market driven arena, not a regulated industry."[3]

The Framework also made it clear that soft law mechanisms would take on greater importance, explaining that "governments should encourage industry self-regulation and private sector leadership where possible" while "avoid[ing] undue restrictions on electronic commerce."[4] Multistakeholder processes would quickly become central to this new vision, with government officials adopting more of a cooperative, co-regulatory approach that mixed public and private oversight standards and mechanisms. Agencies tapped other "soft law" approached with increasing regularity,[5] including the widespread use of guidance documents, policy statements, workshops and workshop reports, public-private blue-ribbon commissions, and other non-binding governance instruments, many of which resulted in the promulgation of best practice recommendations.[6]

This policy stance had an important influence on the ongoing development of the internet, computing, electronic commerce, digital systems, and online media. As I have argued elsewhere, this new governance approach effectively meant that subsequent digital technologies—search engines, social media platforms, smartphones, etc.—were "born free" instead of being "born in regulatory captivity."[7] Importantly, state and local regulation also played a much smaller role for these newer technologies and sectors.

This light-touch regulatory model has essentially become the basis of artificial intelligence governance in the United States. Because AI systems are dependent upon many of the same digital computing and communications technologies that the internet more generally relies upon, it has meant that the light-touch internet policy vision that the US adopted for it became the basis of US AI policy.

The next two sections discuss some of the high-level AI policy developments in the Obama and Trump administrations and identifies their similarities. As will be shown, AI policy during both administrations has been characterized by very light-touch regulation and moderate industrial policy efforts. For the most part, to the extent there was any real governance of AI during this period, it arrived in the form of various soft law efforts.[8]

B. Obama Administration AI Policy

"The way I've been thinking about the regulatory structure as AI emerges," President Obama said in a 2016 *Wired* interview, "is that, early in a technology, a thousand flowers should bloom. And the government should add a relatively light touch, investing heavily in research and making sure there's a conversation between basic research and applied research."[9] This was a concise summation of how his administration generally approached AI policy during his time in office. The administration focused primarily on promoting AI instead of preemptively restricting it. Jason Furman, the Chairman of the Council of Economic Advisers in the Obama administration, went so far to note that, "the biggest worry I have about it: that we do not have enough of AI."[10]

Most of these efforts came late in the Obama administration, however. There was a flurry of AI policy activity during the final year of Obama's presidency. Perhaps the most important development was the May 2016 creation of a subcommittee on machine learning and AI (MLAI) within the National Science and Technology Council (NSTC), which is overseen by the White House Office of Science and Technology Policy (OSTP).[11] The MLAI was an effort to coordinate AI policy across over 20 federal agencies and offices. Importantly, reflecting the increased reliance on soft law and multistakeholdism that was already predominant in the internet policy arena, the MLAI charter mentions the need to "interact with and receive *ad hoc* advice from various private-sector

[2] White House, *The Framework for Global Electronic Commerce* (July 1997), http://clinton4.nara.gov/WH/New/Commerce.

[3] Ibid.

[4] Ibid.

[5] Gary E. Marchant & Braden Allenby, "New Tools for Governing Emerging Technologies," Bulletin of the Atomic Scientists, Vol. 73 (2017), p. 108. (Defining define soft law as "a variety of nonbinding norms and techniques," which include "instruments or arrangements that create substantive expectations that are not directly enforceable, unlike 'hard law' requirements such as treaties and statutes.")

[6] Ryan Hagemann, Jennifer Huddleston Skees & Adam Thierer, "Soft Law for Hard Problems: The Governance of Emerging Technologies in an Uncertain Future," *Colorado Technology Law Journal*, Vol. 17, 2018, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3118539.

[7] Adam Thierer, *Evasive Entrepreneurs and the Future of Governance: How Innovation Improves Economies and Governments*, Mercatus Center at George Mason University, 2020, p. 104-7.

[8] Gary Marchant, "'Soft Law' Governance Of Artificial Intelligence," *AI Pulse*, January 25, 2019, https://aipulse.org/soft-law-governance-of-artificial-

intelligence; John Villasenor, "Soft Law as a Complement to AI Regulation," Brookings Institution *Report*, July 31, 2020, https://www.brookings.edu/research/soft-law-as-a-complement-to-ai-regulation.

[9] Scott Dadich, "The President in Conversation With MIT's Joi Ito and WIRED's Scott Dadich." *Wired*, March 5, 2016, https://www.wired.com/2016/10/president-obama-mit-joi-ito-interview.

[10] Jason Furman, "Is This Time Different? The Opportunities and Challenges of Artificial Intelligence," Remarks at AI Now: The Social and Economic Implications of Artificial Intelligence Technologies in the Near Term, July 7, 2016, https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160707_cea_ai_furman.pdf.

[11] Tom Kalil, Office of Science & Technology Policy, "Charter of the Subcommittee on Machine Learning and AI," May 6, 2016, https://www.whitehouse.gov/sites/whitehouse.gov/files/ostp/MLAI_Charter.pdf.

groups" to further its mission.

In October 2016, the NSTC released two important reports setting forth the US government's governance vision for AI. The first report, *Preparing for the Future of Artificial Intelligence*,[12] provided a high-level survey of the state of AI, its "applications for public good," and the public policy surrounding the field. The report noted that expert commenters felt "that broad regulation of AI research or practice would be inadvisable at this time" and that existing regulations could likely cover some of the potential risks identified in the report.[13] Specifically, the report stressed the importance of values such as justice, fairness, accountability, safety, and control and recommended that federal agencies, universities, and private developers take these values into account when considering AI innovations.

The report stopped short of providing a more concrete policy blueprint, however, except to suggest that federal agencies that used AI-based systems, "should take extra care to ensure the efficacy and fairness of those systems."[14] Instead of offering more detailed advice for private-sector oversight, the report highlighted case studies of how two major autonomous technologies—driverless cars and drones—were already being overseen by agencies within the US Department of Transportation using existing statutory authority and regulatory mechanisms. In practice, however, much of that oversight took the form of soft law efforts, such as guidance documents, agency workshops and workshop reports, and other informal efforts. Those same soft law approaches for autonomous technologies would carry over to the Trump administration.[15]

The Obama administration was simultaneously promoting the development of AI technology via various industrial policy levers. The administration proposed increasing R&D funding for AI as well as expansion of the R&D tax credit to encourage firms to spend more on AI development.[16] The second OSTP report released in October 2016 further developed the Obama administration's *National Artificial Intelligence Research and Development Strategic Plan*.[17] While also discussing some of the "ethical, legal, and societal implications of AI" and the need for policy oversight on safety and security matters, the primary focus of this document was the need to "make long-term investments in AI research," that "will drive discovery and insight and enable the United States to remain a world leader in AI."[18] Beyond direct forms of government support for AI research and development, the report stressed the importance of information sharing, the establishment of standards and benchmarks, and ongoing steps to evaluate future workforce needs. Practically speaking, however, the Obama administration was unable to follow through on most of these efforts before leaving office at the beginning of 2017.

Consistent with the way his predecessors had approached the Internet and digital commerce, President Obama's governance approach for AI was characterized by very light-touch regulatory approach and a moderate-touch industrial policy vision. In his interview with *Wired*, Obama noted that greater regulatory scrutiny for AI might lie down the road, however. "As technologies emerge and mature," he said, "then figuring out how they get incorporated into existing regulatory structures becomes a tougher problem, and the government needs to be involved a little bit more. Not always to force the new technology into the square peg that exists but to make sure the regulations reflect a broad base set of values," he said.[19]

But those more far-reaching hard law efforts did not come about during his time in office. Nor did they materialize during the Trump administration, as noted next. Promoting the development of AI remained the priority over restricting it.

C. Trump Administration AI Policy

While it is challenging to find many topics where the Obama and Trump administrations shared a common policy vision, they largely agreed on most AI governance matters. In many ways, the Trump administration simply picked up where the Obama White House had left off.

Although AI policymaking got off to a slow start in the Trump administration, eventually they made several important policy pronouncements. In February 2019, President Trump issued Executive Order 13859 on "Maintaining American Leadership in Artificial Intelligence."[20] The Order announced the creation of the "American AI Initiative," which represented a comprehensive effort to "focus the resources of the Federal government to develop AI in order to increase our Nation's prosperity, enhance our national and economic security, and improve quality of life for the American people."[21] The Order also sought to "advance American innovation" and "reduce barriers to the use of AI technologies in order to promote their innovative application while protecting civil liberties, privacy, American values, and United States economic and national security."[22]

The Order identified various objectives, including prioritizing federal investments through AI-focused R&D spending, building a workforce ready for the AI era, international engagement on AI priorities, and the establishment governance standards for AI systems to "help Federal regulatory agencies develop and maintain approaches for the safe and trustworthy creation and adoption of new AI

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[12] National Science and Technology Council, "Preparing for the Future of Artificial Intelligence," October 2016.

[13] "Preparing for the Future of Artificial Intelligence," p. 17.

[14] Ibid., p. 34.

[15] Ryan Hagemann, Jennifer Huddleston Skees & Adam Thierer, "'Soft Law' Is Eating the World: Driverless Car Edition," *The Bridge*, October 11, 2018, https://www.mercatus.org/bridge/commentary/soft-law-eating-world-driverless-car.

[16] Furman, p. 11.

[17] National Science and Technology Council, "The National Artificial Intelligence Research and Development Strategic Plan," October 2016.

[18] "The National Artificial Intelligence Research and Development Strategic Plan," p. 3.

[19] Ibid.

[20] President Donald Trump, Executive Order No. 13589, "Maintaining American Leadership in Artificial Intelligence," February 11, 2019, https://www.whitehouse.gov/presidential-actions/executive-order-maintaining-american-leadership-artificial-intelligence.

[21] White House, "Accelerating America's Leadership in Artificial Intelligence," February` 11, 2019, https://www.whitehouse.gov/articles/accelerating-americas-leadership-in-artificial-intelligence.

[22] Executive Order No. 13589.

technologies."[23]

Regarding that last objective, the Order required the Office of Management and Budget and the OSTP to develop a framework and set of principles for federal agencies to follow when considering the development of regulatory and non-regulatory approaches for AI. That resulted in the January 2020 memorandum sent to heads of federal departments and agencies entitled, *Guidance for Regulation of Artificial Intelligence Applications* (hereinafter *AI Guidance Memorandum*).

Certain phrases within the memorandum elucidate the light-touch regulatory perspective the Trump administration has on AI. For instance, the *AI Guidance Memorandum* notes that agencies should "consider ways to reduce barriers to the development and adoption of AI technologies" and that they should "avoid regulatory or non-regulatory actions that needlessly hamper AI innovation and growth."[24] This reflects the guiding ethos of the Trump administration's vision for AI regulation and development; the administration desires that agencies and stakeholders presume AI technology to be innocent until proven guilty. For example, the most important figure in the Trump administration on AI policy has been Michael Kratsios, Chief Technology Officer of the United States. He repeatedly stressed how the US was taking a more hands-off approach to AI policy relative to other nations. "We recognize that we don't need to impose preemptive, overly-burdensome, and innovation-killing regulations to stay true to our values," he argued at 2019 Web Summit in Portugal. "The United States is demonstrating how this model of innovation works."[25] At the same time, the *AI Guidance Memorandum* was encouraging federal agencies to clarify "inconsistent, burdensome, and duplicative" AI related laws promulgated by states and localities. This suggested a willingness by the Trump administration to limit the reach of existing laws and regulations.

More importantly, the *AI Guidance Memorandum* simultaneously encouraged agencies to be open to "non-regulatory approaches to AI" policy, which essentially meant a reliance on more soft law approaches for AI governance. It specified that those non-regulatory approaches could include sector-specific policy guidances, "playbooks," or "voluntary incentive frameworks" (as the federal government was already using for other technologies like autonomous vehicles). Pilot programs and experiments were also recommended, as were "voluntary consensus standards" and assessment programs.

Practically speaking, this was precisely how AI governance was already unfolding on the ground across various sectors and agencies. The Trump administration was simply putting its stamp of approval on this approach. As noted, the Obama administration's earlier efforts for autonomous technologies like driverless cars, drones, and certain advanced medical devices were characterized by a shift toward soft law tools. For example, although the Department of Transportation under the Obama administration had flirted with applying some sort of premarket approval authority to autonomous vehicle innovations, the agency took no formal regulatory action.[26] By the time the DoT revised federal AV policy again in the Trump administration, it adopted an even more soft law-oriented approach. Essentially, from 2016 onward, the DoT cobbled together informal "rules of the road" for autonomous vehicles through guidance documents that were "versioned" as if they were computer software (i.e., Version 2.0, 3.0). The DoT released Version 4.0 of the DoT guidance for automated vehicles in January 2020.[27] These documents read more like friendly advice to developers rather than regulatory restrictions to be feared. These documents also stress how the US government planned to assist in developing AV technologies using various federal programs and resources.

Returning to industrial policy issues, after the Trump administration released its *AI Guidance Memorandum* to agencies, it quickly followed up with a proposal to double federal R&D spending on AI and quantum computing. "Early-stage research is a high priority," said Kelvin Droegemeier, director of the OSTP at the time.[28] However, the administration simultaneously announced cuts to basic R&D efforts at the National Science Foundation, the Department of Energy's Advanced Research Projects Agency-Energy, the National Institute of Standards and Technology, and several other agencies that support research and development.[29]

Earlier, in June 2019, the Trump administration had already signaled it was shifting the "expectation for the overall portfolio for Federal AI R&D investments" with its refreshed version of the *National Artificial Intelligence Research and Development Strategic Plan*, which the Obama administration had first released in 2016. The Trump administration's updated *Strategic Plan* showed a willingness to build on the Obama administration's early AI policy framework by reaffirming all seven of the principles contained in that report. An eighth strategy was added to stress the need for greater public-private

[23] Ibid.

[24] Russell T. Vought, Executive Office of the President, Office of Management and Budget, "Guidance for Regulation of Artificial Intelligence Applications," Memorandum for the Heads of Executive Departments and Agencies, *Federal Register*, January 13, 2020, https://www.whitehouse.gov/wp-content/uploads/2020/01/Draft-OMB-Memo-on-Regulation-of-AI-1-7-19.pdf

[25] Michael Kratsios, "Remarks by U.S. Chief Technology Officer Michael Kratsios at the Web Summit in Lisbon," U.S. Embassy & Consulate in Portugal, November 7, 2019. https://pt.usembassy.gov/u-s-chief-technology-officer-michael-kratsios-addresses-web-summit-2019.

[26] Adam Thierer & Caleb Watney, "Comment on the Federal Automated Vehicles Policy," Mercatus Center at George Mason University, *Public Interest Comment*, December 5, 2016,

https://www.mercatus.org/publications/technology-and-innovation/comment-federal-automated-vehicles-policy.

[27] National Science & Technology Council and United States Department of Transportation, "Ensuring American Leadership in Automated Vehicle Technologies: Automated Vehicles 4.0.," January 2020, transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/360956/ensuringamericanleadershipav4.pdf.

[28] Angus Loten, "Trump Wants to Double Spending on AI, Quantum Computing," *Wall Street Journal*, February 10, 2020, https://www.wsj.com/articles/trump-wants-to-double-spending-on-ai-quantum-computing-11581378069.

[29] Jonathan Shieber, "Trump administration slashes basic science research while boosting space, AI and quantum tech funding," *TechCrunch*, February 10, 2020, https://techcrunch.com/2020/02/10/trump-administration-slashes-basic-science-research-while-boosting-space-ai-and-quantum-tech-funding.

partnerships to accelerate AI innovations, but the other Obama AI policy documents had largely endorsed that same strategy, too.

The primary difference between the two administrations was that the Trump administration placed more emphasis on a generally "permissionless" approach regulatory policy as well as a desire to tightly focus federal resources to promote AI relative to other R&D funding efforts.[30] Generally speaking, however, the governance stance toward AI that the Obama and Trump administrations adopted was largely a continuation of the approach that the Clinton and Bush administrations adopted for the internet and e-commerce.[31]

D. Comparison to EU & China AI Governance

While some analysts advocate the US continue with this approach and avoid adopting a more precautionary regulatory stance toward AI,[32] many other academics and policymakers propose expanding regulatory and industrial policy efforts for AI. To understand why, it is useful to provide a very brief sketch of recent policy developments in the European Union and China. Not only is global marketplace competition intensifying, but so too is competition among global lawmakers in terms of their expanding frameworks for AI supremacy.

In fact, AI, robotics, and quantum computing are increasingly viewed as important strategic goals in service of broader geopolitical objectives, both economic and militaristic. The EU and China have issued a wide variety of policy pronouncements about AI, machine-learning, robotics, quantum computing, and related sectors and technologies.

The US clearly has a different approach to AI governance than the EU and China. In all three instances, government officials are seeking to actively promote the development of home-grown AI talent and so-called "national champions." But on the spectrum of industrial policy efforts, China has taken the most aggressive steps to directly support the development of the nation's AI capabilities. It has done so with clear geopolitical objectives in mind.

Chinese interest in AI actually goes back to 1981 with the formation of the Chinese Association for Artificial Intelligence (CAAI), but after the 2015 release of its *Made in China 2025* strategic plan to make China a global leader in many manufacturing sections, state interest in advancing robotics and AI technologies accelerated considerably.

In 2017, China's State Council released *A New Generation Artificial Intelligence Development Plan* that claimed that by 2020 China would catch up with the US in terms of AI development and that by 2030, "China's AI theories,

technologies, and applications should achieve world-leading levels, making China the world's primary AI innovation center," in pursuit of becoming, "a leading innovation-style nation and an economic power."[33]

China has already adopted a similar governance stance toward other technological sectors including 5G mobile networks. "China is racing to be first with a whole-of-government approach encompassing resources and bureaucratic coordination not imaginable in the United States," says Carolyn Bartholomew, former chair of the congressionally chartered US-China Economic and Security Review Commission.[34] She describes the Chinese planning model as "techno-authoritarian."[35]

To be sure, China's industrial policy approach is holistic and highly centralized, with grandiose ambitions for global domination of key technological sectors, including AI and robotics. On the other hand, China's governance model is more nuanced because, although the government has taken a very active role in steering AI resources to further State ends, it has not adopted the same sort of precautionary regulatory oversight mechanisms as the EU. China allows firms room to experiment and be innovative within certain boundaries. China's approach clearly is not as "permissionless" as the US approach, which grants AI firms broad latitude to innovate mostly free of preemptive regulatory constraints. Nonetheless, Chinese firms do enjoy leeway to innovate and be entrepreneurial, so long as their efforts ultimately serve various state ends.

Meanwhile, the EU has established a more hands-on regulatory stance, consistent with previous European efforts to preemptively regulate digital platforms, internet services, and online data flows. Just as US policy for AI is informed by earlier regulatory (or forbearance) efforts for internet services, the same is true for the EU. Specifically, the EU now has a two-decade history of more aggressive regulatory oversight of data handling practices that culminated in the General Data Protection Regulation (GDPR), which went into effect in 2018. The GDPR is a comprehensive law with extraterritorial reach, and along with other EU data provisions, it serves as the basis of governance in many newer information technology sectors, including AI. Certain concepts embodied in the GDPR have a clear and direct influence on algorithmic systems, such as the right to erasure of data or right to explanation about how data is collected and used.

But the EU has moved beyond a simple extension of the GDPR by issuing a variety of ethical frameworks and specific guidelines for AI and algorithmic systems, some of which have already infused formal policy pronouncements. The European

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[30] Adam Thierer, "Trump's AI Framework & the Future of Emerging Tech Governance," *Medium*, January 8, 2020, https://medium.com/@AdamThierer/trumps-ai-framework-the-future-of-emerging-tech-governance-e504943e07d4.

[31] Adam Thierer & Connor Haaland, "The Clinton-Bush-Obama-Trump Innovation Vision," *The Bridge*, November 21, 2019, https://www.mercatus.org/bridge/commentary/clinton-bush-obama-trump-innovation-vision.

[32] Daniel Castro & Michael McLaughlin, "Ten Ways the Precautionary Principle Undermines Progress in Artificial Intelligence," Information Technology and Innovation Foundation, February 4, 2019,

https://itif.org/publications/2019/02/04/ten-ways-precautionary-principle-undermines-progress-artificial-intelligence.

[33] China's State Council, A New Generation Artificial Intelligence Development Plan, July 20, 2017, as translated by New America Foundation, "Full Translation: China's 'New Generation Artificial Intelligence Development Plan' (2017)," https://www.newamerica.org/cybersecurity-initiative/digichina/blog/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017.

[34] Carolyn Bartholomew, "China and 5G," Issues in Science and Technology, Vol. 36, No. 2 (Winter 2020): 50–57, https://issues.org/china-and-5g.

[35] Ibid.

Parliament promulgated the Civil Law on Robotics (CLR) in 2017,[36] which established new ethical and liability guidelines for the sector. The High-Level Expert Group on Artificial Intelligence (AI HLEG) was created the following year and tasked with supporting the implementation of AI policy in the EU. In 2019, the AI HLEG published *Ethics Guidelines for Trustworthy AI*[37] and a set of *Policy and Investment Recommendations*.[38] Most recently, 2020 saw the publication of the EU's *White Paper on Artificial Intelligence*[39] and a *Report on the Safety and Liability Implications of Artificial Intelligence, the Internet of Things, and Robotics*.[40] These policy statements again outlined a combination of comprehensive regulations as well as a variety of industrial policy steps aimed at boosting European AI investments and innovation.

The *AI White Paper* envisions a process of "prior conformity assessments" through which companies must be preauthorized to deploy even incremental changes to their technologies. The *Report on Safety and Liability* expands upon this by noting that if an ongoing AI software update, "modifies substantially the product in which it is downloaded the entire product might be considered as a new product and compliance with the relevant safety product legislation must be reassessed at the time the modification is performed."[41] Of course, by their very nature, algorithms and AI technologies are highly iterative. They are constantly being fine-tuned and, in some cases, they are improving themselves. These EU regulatory guidelines represent a fairly sweeping and ambitious attempt to guide such technological developments in real-time. It raises the question whether the EU model can address fast-moving day-to-day technological developments without undermining the very innovations they hope to foster.[42]

While these policy documents repeatedly stress the need for regulatory oversight to ensure "trustworthy" and "human-centric AI," they do not always fully explain what those terms will mean in practice. The *AI White Paper* proposed a risk-based approach to analyzing AI and its applications, taking a very precautionary approach overall. Some vaguely-defined "high-risk" technologies would require even greater regulatory scrutiny.

European governments also hope to promote their technological capabilities and domestic firms, but the splintered nature of EU membership means that the continent does not always seek to promote the same programs or entities (whether private or public). Differences still exist among member states and the many different companies headquartered in different nations. Recently, however, the EU has set forth a more unified

vision for state-led AI development. The AI HLEG proposed massive collaborative effort between the public sector, private sector, academia, and civil society in an attempt to spark the growth of more homegrown European AI innovations.

The *AI White Paper* also speaks of the need for fostering "ecosystems of excellence" and identified a variety of existing or new industrial planning efforts, including: Digital Innovation Hubs, Enterprise Resource Planning, the Digital Europe Programme, and the Key Digital Technology Joint Undertaking, among other programs. This is all part of an official "Coordinated Plan" prepared together with EU member states "to foster the development and use of AI in Europe" and "concentrate in sectors where Europe has the potential to become a global champion."

To reiterate, this has only been a brief summary of AI-related governance activities in China and the EU. From this summary, however, it is clear that the United States has charted a somewhat different governance framework in terms of both efforts to promote and regulate AI technologies.

Compared with Europe and China, US industrial policy is clearly the least aggressive, focusing on more broad-based "basic" support for R&D. Even though the Trump administration started channeling more support to AI and quantum computing research, the government was still not taking as active of a hand in directly supporting specific firms or outcomes, as is regularly the case in China and also sometimes true in the EU.

In terms of governance trends, there is also clear contrast between the US, EU, and China models. The US light-touch regulatory model, with its strong reliance on soft law mechanisms, has carried over from the early days of internet policy and is now generally being applied to AI, machine-learning, and robotics. While China's regulatory model allows more risk-taking by innovators than the EU's policy framework generally tolerates, they are both more actively guiding marketplace activities compared to the US, which has extended the relaxed regulatory environment seen throughout the internet era. All this could change in coming years, however.

III. POSSIBLE FUTURES FOR AI GOVERNANCE

In recent years, many academics and some public policymakers have called for expanded regulation of digital platform to address a wide variety of perceived problems. Privacy, cybersecurity, child safety, discrimination, and hate speech are a few of the commonly cited rationales for new laws, regulations, or new sector-specific agencies. Others call for stepped-up industrial policy efforts to channel resources into

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[36] European Parliament, "Civil Law Rules on Robotics," February 16, 2017, https://www.europarl.europa.eu/doceo/document/TA-8-2017-0051_EN.html.

[37] High-Level Expert Group on Artificial Intelligence, *Ethics Guidelines for Trustworthy AI*, June 2018, https://ec.europa.eu/futurium/en/ai-alliance-consultation/guidelines#Top.

[38] High-Level Expert Group on AI, *Policy and Investment Recommendations for Trustworthy Artificial Intelligence*, June 26, 2019, https://ec.europa.eu/digital-single-market/en/news/policy-and-investment-recommendations-trustworthy-artificial-intelligence.

[39] European Commission, *On Artificial Intelligence - A European Approach to Excellence and Trust*, February 19, 2020,

https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf.

[40] European Commission, *Report on the Safety and Liability Implications of Artificial Intelligence, the Internet of Things and Robotics*, February 19, 2020, https://ec.europa.eu/info/sites/info/files/report-safety-liability-artificial-intelligence-feb2020_en_1.pdf

[41] Ibid.

[42] Adam Thierer, "Europe's New AI Industrial Policy," *Medium*, February 8, 2020, https://medium.com/@AdamThierer/europes-new-ai-industrial-policy-c5d945c5579f.

various AI capabilities, priorities, or sectors. This concluding section briefly describes some of these proposals and the outlook for AI governance more generally in coming years.

A. Academic Proposals for Expanding AI Governance Efforts

Some scholars propose expanded regulation of the internet and digital systems through a Digital Platform Act[43] or an Internet Communications Act and Internet Protection Agency.[44] Most recently, a major report released by the Harvard University Kennedy School's Shorenstein Center proposed the creation of a new Digital Platform Agency that would possess broad authority to regulate information technology sectors.[45] Other proposals include expanding the statutory scope of powers of existing federal agencies like the FCC and the Federal Trade Commission (FTC) to allow them to use their respective "public interest" authority or "unfair and deceptive practices" authority to address these issues.

None of these proposals has gained any legislative traction, even though some lawmakers in both major US parties are increasingly calling for expanded oversight of digital technologies and platforms.[46] If any action was taken in this regard, it would likely cover many AI services and applications because they often rely upon Internet connections and digital capabilities.

Other proposals make it abundantly clear by name that AI would be regulated directly. Examples of targeted regulatory proposals include calls for an Artificial Intelligence Development Act,[47] a Federal Robotics Commission,[48] or a National Algorithmic Technology Safety administration.[49]

A unifying theme heard across these calls for expanded AI oversight is the need for *coordination* as well as *collaboration*. One of the major governance challenges for AI lies in its amorphous, rapidly-evolving nature. AI is notoriously difficult to define and has many different potential applications, with many more being devised each year. This means many different government actors could have a hand in regulating or promoting AI technologies. Accordingly, many governance proposals, both from academics as well as policymakers, stress the need to better coordinate these efforts, not only through collaboration across government bodies, but also through ongoing collaborations between public and private actors. Regardless of what shape it takes, proposals for better coordination and collaboration could expand the number and type of levers that governments have to pull in an attempt to influence the future course of private AI and robotics innovation.

B. Legislative Proposals for Expanding AI Governance Efforts

As of late 2020, most legislative activity in Congress has been bipartisan calls for expanded federal coordination among various agencies, mostly in pursuit of expanding promotional efforts, not regulatory. For example, in the most recent 116th session of Congress, bills such as the "Artificial Intelligence Initiative Act," and the "Future of Artificial Intelligence Act," proposed new interagency coordination mechanisms, while the "Advancing Artificial Intelligence Research Act" and the, "National AI Research Resource Task Force Act," proposed new standards and expanded resources for AI-related R&D efforts both within government and across private industries. Various other agency appropriations measures included proposed expansions of AI-related R&D efforts.

As noted, there have been fewer proposals to regulate AI systems directly. One notable exception was a proposed "Algorithmic Accountability Act," which looked to empower the FTC to take a more active role in policing "inaccurate, unfair, biased, or discriminatory decisions impacting consumers" that may have resulted from "automated decision systems."

Thus, it may again be the case that Democrat and Republican lawmakers and future administrations will generally continue agree upon a bipartisan governance framework for artificial intelligence, except that it could arrive in the form of slightly more hard law and expansive industrial policy efforts, as opposed to the soft law governance approaches and "industrial policy light" model seen in the early days of US governance for AI.

C. Alternative Futures

On the other hand, Congress continues to move slowly and highly technical legislation (like AI measures) tend to move even slower. The so-called pacing problem—the fact technological change often outpaces potential policy responses to it—is widely acknowledged as a growing problem.[50] The combination of the pacing problem and general dysfunctionalism in the legislative branch has meant that Congress has increasingly become a non-actor in technology

[43] Harold Feld, "The Case for the Digital Platform Act: Executive Summary," Public Knowledge, May 8, 2019, https://www.publicknowledge.org/documents/the-case-for-the-digital-platform-act-executive-summary/

[44] Chris Riley, "It's Time To Regulate The Internet... But Thoughtfully," *TechDirt*, September 3, 2020, https://www.techdirt.com/articles/20200902/15122245238/time-to-regulate-internet-thoughtfully.shtml.

[45] Tom Wheeler, Phil Verveer, and Gene Kimmelman, "New Digital Realities; New Oversight Solutions in the U.S.," Harvard University Kennedy School Shorenstein Center, August 20, 2020, https://shorensteincenter.org/new-digital-realities.

[46] Robert D. Atkinson, Doug Brake, Daniel Castro, Colin Cunliff, Joe Kennedy, Michael McLaughlin, Alan McQuinn, & Joshua New, "A Policymaker's Guide to the 'Techlash'—What It Is and Why It's a Threat to Growth and Progress," Information Technology & Innovation Foundation, October 28, 2019, https://itif.org/publications/2019/10/28/policymakers-guide-techlash.

[47] Matthew U. Scherer, "Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies," *Harvard Journal of Law and Technology* 29, no. 2 (2016): 393–97.

[48] Ryan Calo, "The Case for a Federal Robotics Commission," Brookings Institution, Washington, DC, September 2014.

[49] Andrew Tutt, "An FDA for Algorithms," *Administrative Law Review*, Vol. 69, No. 1 (2017).

[50] Gary E. Marchant, Braden R. Allenby, Joseph R. Herkert, (eds.), *The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem* (Dordrecht, NL: Springer, 2011). Adam Thierer, "The Pacing Problem and the Future of Technology Regulation," *The Bridge*, August 8, 2018, https://www.mercatus.org/bridge/commentary/pacing-problem-and-future-technology-regulation.

policymaking in recent years.[51]

If lawmakers are unable to craft new bright-line governance frameworks for AI technologies, then soft law mechanisms will likely fill the resulting policy vacuum, as has already been the case for some AI technologies like autonomous vehicles.

International regulatory frameworks might also come to influence AI developments by US innovators. This has already been the case with American multinationals adjusting some of their data handing practices to comply with the EU's increasingly stringent data protection regulations, including the GDPR.

More problematically, an even more federated policy approach to AI governance could develop that finds nations erecting more barriers to cross-border flows of knowledge, goods, and talent in an attempt to achieve various geopolitical objectives. This sort of splintered patchwork approach already threatens to undermine the continued growth the internet and global ecommerce.[52]

As 2020 ended, there were clear signs that these same global governance skirmishes were likely to play out for AI as global powers increasingly come to view the technology as an important component of achieving broader strategic objectives. If it follows that same script, the future of AI governance could end up resembling the history of aviation, aerospace, and energy markets. In that scenario, heavy-handed state regulatory activity and far-reaching industrial policy efforts become the norm for AI, as opposed to the somewhat more relaxed policy environment that the internet, computing, electronics, and digital services have thus far enjoyed in the United States over the past quarter century.

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[51] Adam Thierer, "Congress as a Non-Actor in Tech Policy," *Medium*, February 4, 2020, https://medium.com/@AdamThierer/congress-as-a-non-actor-in-tech-policy-5f3153313e11.

[52] Matthew Bey, "The Age of Splinternet: The Inevitable Fracturing of the Internet," *Stratfor Worldview*, April 25, 2019, https://worldview.stratfor.com/article/age-splinternet-inevitable-fracturing-internet-data-privacy-tech.