AI, EVERYWHERE, ALL AT ONCE

A NEW POLICY AGENDA FOR AI SUCCESS THROUGH FASTER ADOPTION

Our findings and report following the AI Adoption Workshop in NYC on 20 November 2024

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1. EXECUTIVE SUMMARY

On November 20, 2024, over sixty leading experts from around the world met in New York to discuss ideas for a new policy agenda for encouraging faster and broader adoption of artificial intelligence (AI) technologies. Inspired in part by the work of Jeffrey Ding, the author of *'Technology and the Rise of Great Powers: How Diffusion Shapes Economic Competition'*, the workshop built on suggestions set out in the *'AI, Everywhere, All At Once: A New Policy Agenda for AI Success Through Faster Adoption'* paper.

As the workshop hosts, AWS and Minerva Technology Policy Advisors convened conversations on overcoming the obstacles to adoption, and what an adoption-focused national policy for AI may look like. Throughout the workshop, the group of experts identified current and emerging challenges, considered a variety of different sectoral approaches to AI adoption, made specific policy proposals for both private and public sector bodies, and posed questions for further investigation. This paper summarizes the ideas and insights surfaced by workshop participants and highlights questions for further study.

2. POLICY CHALLENGES POSED BY ADOPTION

2.1 Overview

An adoption-centric policy agenda needs to recognize that AI technologies are not monolithic, but instead break down into many different layers and applications, each with their own sectoral and domain specific nuance.

Policy must also distinguish "frontier" systems from those that support "out-of-the-box" uses; those that require other technical integrations from solutions that can be applied without technical expertise; and the many "traditional" AI applications that predate generative capabilities from large language models (LLMs). The development of more adoption-centric policies will involve paying specific attention to AI as a general-purpose technology that can reach all corners of the market and economy, everywhere, all at once.

Participants agreed that this shift will require rethinking the ways in which policy can promote and enable use; de-risking experimentation in enterprise, rather than just in 'laboratory' settings; and considering the different incentives at play for businesses of various scales, and from different geographies

2.2 Policy Ideas

- **Create a new venue for connectivity between business, academia and government:** creating adoption-centric venues in which academia, government bodies and private sector organizations can learn from one another, with an emphasis on promoting use of applications that do not necessarily require cutting-edge research capabilities or represent "frontier" systems.

- **Develop an enterprise sandbox, a secure environment for testing software without impacting live systems or data:** building experimental architectures that allow businesses to de-risk and reduce the financial costs of adoption of well-understood and proven tooling, to accelerate their adoption and use of AI while building industrial confidence. This could involve, for example, a similar model to the Malaysian government's Ministry of Science, Technology, and Innovation (MOSTI)'s AI Sandbox 2024 Pilot Programme that aims to create 900 AI startups by 2026.

2.3 Unresolved Questions

- What role can companies, or coalitions of companies, play in helping policy makers to distinguish between different applications as “frontier” systems versus “out-of-the-box” applications that are more robustly understood and predictable?

- What are the methods for educating policymakers about differential targeting of applications with appropriate, adoption-centric policy, especially throughout the full stack of capabilities that support different forms of AI?

- Can robust, adoption-centric policy translate from one national or economic context to another?

3. THE ROLE FOR PUBLIC POLICY IN ENCOURAGING FASTER ADOPTION

3.1 Overview

A number of market failures stand in the way of more rapid and robust adoption of artificial intelligence including bureaucratic inertia, institutional challenges, skill shortages, and coordination problems. Among the barriers are concerns about capacity for upskilling and talent retention, a lack of information about the specific skills required for adoption, and challenges accessing compute capabilities, software and data resources. Government policy can play a useful role in helping lower these barriers, particularly where these problems stem from market failures.

Participants agreed that there are clear areas across industries where public policy can play a useful role in adoption, particularly in enabling companies to identify sectors that could represent "low-hanging fruit" for adoption in identifying practitioners with relevant skills, and in making sector-specific data available in laggard industries, as has been done for public agencies by Analytics.gov (AG), built by the Government Technology Agency of Singapore, for example. There was general agreement that the credibility of governments going forward will be shaped by how well they address these market failures to encourage adoption of artificial intelligence.

3.2 Policy Ideas

- **Develop a framework of standardized skill taxonomies:** harmonizing a shared reference point for skills requirements, qualifications and indicative capabilities that align with adoption of artificial intelligence.

- **Encourage standardized tools for measuring AI adoption across jurisdictions and geographies:** to target adoption, organizations must be able to measure differential rates of use and penetration between countries more easily (e.g. adoption of the OECD Model ICT Usage Survey) to ensure sampling is representative (i.e. by national statistics agencies). Governments, through international forums such as the G7 and G20, should invest in developing adoption metrics that can be applied in both the private and public sectors to identify laggard industries and departments.

- **Promote the creation and accessibility of "AI-ready" data:** to correct failures stemming from a lack of data through policies that encourage responsible collection, management, and use of a wider array of data types and sources, with support for harmonizing, cleaning and annotating; including data sourced from government agencies.

3.3 Unresolved Questions

- Given the specific challenges of talent retention, how can companies be incentivized to invest in training practitioners?
- What role can stakeholders play in building a consensus taxonomy of "AI-ready" skills that are crucial to promoting adoption in different industries and across different types of economies?

4. WORKFORCE AND SKILLS REQUIREMENTS

4.1 Overview

AI adoption throughout the economy depends upon a broad base of skilled workers that can solve the challenges of integration, use, and continued iteration. By promoting a "build it and they will learn" approach to workforce and skills development, policymakers can encourage more rapid adoption of artificial intelligence. This could include ensuring that educational schemes are layered with connections to industry bodies, and increasing the level of free, flexible learning resources.

Participants at the workshop discussed the critical need for robust measurement of productivity gains from adoption of AI in pilot cases, to provide incentives for further use in industries, adjacent or otherwise. By demonstrating the value of initial cases, other companies and entire sectors can be encouraged to invest in training and hiring practitioners. The challenge of "brain drain" from economies that have historically faced out-migration of skilled workers, including AI specialists, could be mitigated by subsidies, deeper public-private sector partnerships and access to novel technical challenges and contexts like climate modelling, infrastructure, and new energy systems. Tax credits, grants, community colleges and other educational institutions could all be aligned with the promotion of broad-based skills acquisition relevant to adoption; in product management, operational analysis, modelling and statistics.

4.2 Policy Ideas

- **Incorporate training in adoption-centric skills taxonomies in education:** to ensure that more school-age students get an initial education in the "AI-ready" skill set that supports adoption, with the opportunity to deepen it through community college degrees and university programs.

- **Conduct an audit of existing "AI-readiness" training programs:** auditing at a national level to assess the need for additions that are enterprise-relevant and identify where more opportunities could be supported by grants, tax credits and other schemes. This audit should take into account the full roadmap for industry-specific skills, and map out supplementary measures related to occupations with high exposure to automation and public-private partnership programmes, like The Ministry of Electronics & Information Technology's FutureSkills Prime in India, for example.

- **Incentivize employers to participate in skills programmes:** by presenting the acquisition of adoption-centric skills as an "insurance policy" for businesses.

- **Incentivize AI Skills Training:** employers should incentivize employees to participate in AI skills training by framing it as an "insurance policy" for career growth and security. Additionally, firms should prioritize internal training programs that empower workers to use AI tools effectively in their roles.

4.3 Unresolved Questions

- How to measure the tipping point for AI adoption and its impact on the workforce? How do we create disaggregated measures at the firm level?
- How can stakeholders' de-risk the process of training practitioners for adoption, given the risk of "brain drain" and human capital flight?
- How to address the tension between creating general skills and complementary skills that are contextual and not cross-transferable?
- How to foster skills for faster adoption in sectors where industry-specific tacit knowledge plays an important role in innovation and business processes, such as manufacturing automation and semiconductors?
- Is AI skills training an extension of typical digital skills training or does it require a unique approach?
- Will widespread AI adoption drive skills development ("build it, and they will learn"), or must skills development precede adoption?

5. THE NEED FOR DATA AND FUNCTIONAL STANDARDS

5.1 Overview

The discussion on data and standards focused on how governments can target policies and standards towards adoption by small and mid-sized companies. There was consensus that governments should explore how national data strategies can be leveraged to convene stakeholders and define principles for data use. There also needs to be practical implementation of data legislation, with a particular focus on SMEs, and avoiding the benefits solely accruing to large companies. Considering the needs of smaller companies is also important when developing national AI standards strategies to promote interoperability and interaction across sectors. Another strand of the discussion focused on how to make use of the high-quality data that exists within governments, which is often untapped. The value of this data is in a sense being "left in the ground," and could be responsibly put to work in the public interest (for example Taiwan's National Health Insurance Integrated Circuit card).

5.2 Policy Ideas

- **Tap into latent, underutilized reserves of government data:** this can help generate significant public welfare by making the provision of government services more efficient.
- **Support the creation of "data lakes":** data lakes are centralized repositories that allow you to store all your structured and unstructured data at any scale. This would help improve access to high quality, sector-specific data.
- **Support a basic-level standard for AI management:** similar to the Cyber Essentials standard, this would make adoption more achievable for small and medium-sized enterprises.
- **Address the challenges of data sharing:** develop strategies to navigate tensions around privacy, consent, geopolitical agendas, and national security to unlock the benefits of responsible and secure data sharing.
- **Leverage national data strategies:** explore how national data strategies can convene stakeholders and establish principles for responsible and effective data use.
- **Identify innovative consent mechanisms:** identify alternative approaches to consent that enable data acquisition and use for public interest purposes while maintaining individual rights and trust.

5.3 Unresolved Questions

- How to balance concerns about data consent with the goal of unlocking public value in accessible data?
- How to develop standards to address public concerns around the responsible use of public data?

6. SECTOR CASE STUDIES

6.1 Overview

When addressing AI adoption challenges, different sectors may encounter unique obstacles, requiring tailored strategies to effectively navigate them. As such, the workshop included a panel discussion that unpacked how innovative organizations are deploying AI to transform their products and services and their business operations. The discussion covered sectors ranging from banking, to cybersecurity, to clean energy, with speakers highlighting obstacles in Latin America with legal frameworks and talent shortages, AI's dual role in cybersecurity, AI integration in education globally, and the financial services' AI use in fraud detection and regulatory challenges. Overall, the panel agreed on the need for government playbooks and public-private partnerships and the importance of tailored policies and effective regulation to foster AI adoption across sectors.

6.2 Policy Ideas

- **Create "playbooks" or "blueprints" to de-risk adoption for small and medium-sized companies:** these should be grounded in best practices, to guide SMEs in effectively adopting and integrating AI technologies, addressing challenges such as cost, workforce readiness, and data management.
- **Strengthen the role of sector regulators in influencing AI adoption:** this includes strategies to enhance regulatory capacity and that promote effective information sharing.
- **Prioritize ensuring legal certainty for companies to foster innovation:** where regulation of more applied uses of AI is needed, ensure it includes a clear and predictable legal framework that enables businesses to confidently invest in and adopt AI technologies. This approach should strike a balance, ensuring that regulations do not overburden companies, which could stifle innovation and delay the development of AI solutions. By providing legal clarity, regulators can reduce uncertainty and create an environment conducive to technological progress while protecting public interests.
- **Further development in public-private partnerships:** this can include approaches similar to the Veritas program in Singapore, a national cybersecurity initiative that focuses on developing and enhancing the capabilities of cybersecurity professionals through a combination of hands-on training, advanced tools, and real-world threat simulations. A similar approach and partnership between the public and private sectors can be taken to help spur responsible AI adoption in key sectors.
- **Establishment of clear and tailored metrics for assessing AI-related skills:** in order to accurately assess the success of AI adoption and impact, sector-specific metrics must be established to ensure relevance to the unique needs and challenges of each industry.

- **Identify and implement a balanced mix of sector-specific and cross-cutting policies to accelerate AI adoption effectively across diverse industries.**
- **Enhancing Public-Private Collaboration for AI Innovation:** establishing and maintaining robust communication channels between government entities and diverse industry sectors is essential for fostering trust, aligning priorities, and driving AI adoption.

6.3 Unresolved Questions

- What unique factors does each sector require to accelerate AI adoption, and are there overarching policies that governments could implement to broadly support AI adoption across most, if not all, sectors?
- How does the regulatory environment impact AI adoption, and what role do investment in talent and data architecture play in addressing these challenges?
- What types of communication channels between government bodies and various industry sectors are most effective?
- What are sector-specific interventions to address the unique challenges of each industry?
- How to effectively measure specific AI skills across different industries?

7. TRADE AND INVESTMENT

7.1 Overview

Despite headwinds to trade and investment, participants agreed that it is imperative to find ways to keep international flows of goods and services intact. There are limits to the idea of AI sovereignty when most countries will be unable to afford to rely on domestic compute and when no one country controls the supply chain. Trade fragmentation may also lead to standards fragmentation, which will drive up the cost of adoption. While participants recognized the importance of bilateral agreements, they agreed that countries must not lose sight of the opportunities that continue to exist for cooperation through more inclusive partnerships. There remains space for pragmatic deals to be made, and policymakers should not underestimate the potential for economic self-interest to overcome protectionist rhetoric. Countries should start small, show mutual agreement on issues of core concern, and build trust gradually.

7.2 Policy Ideas

- **Small-scale trade and AI agreements between like-minded countries:** piloting small-scale trade and AI agreements with countries that share common aims.
- **Convening informal discussions and summits:** in order to get around barriers to multilateral cooperation, informal convenings offer a pragmatic way to foster dialogue and trust in a less rigid, non-binding setting. By leveraging the informal convening power of summits, stakeholders can address complex issues and explore collaborative solutions outside formal diplomatic constraints.
- **Look for models in places where broad cooperation and representation is continuing:** for example, international standards organizations have a long track record of merit-based, consensus-driven collaboration on standards across highly technical fields (e.g. in ISO/IEC's JTC1/SC 42 workstream on AI standards) and could be a model for other types of engagement.
- **Bilateral research agreements and "sister city" partnerships:** establishing bilateral research agreements and leveraging the existing model of sister city partnerships to foster international collaboration on AI diffusion can enhance global cooperation on AI-driven solutions for shared challenges. These partnerships would facilitate joint research funding, knowledge exchange, and the creation of shared data repositories and AI governance frameworks. Through collaborative pilot programs in cities, these initiatives can build technical capacity, promote the responsible deployment of AI technologies, and harmonize global standards, contributing to equitable and sustainable AI development worldwide.

7.3 Unresolved Questions

- How can companies and governments work to build trust in common standards to prevent fragmentation?
- How will US government agencies resolve their conflicting roles in controlling technology outward flow and promoting foreign direct investment (FDI) inward?

8. LOWERING THE COST OF AI

8.1 Overview

Another significant barrier to AI adoption, particularly for SMEs, is the financial burden of investing in the technology and upskilling employees. The workshop discussion highlighted how governments can approach reducing AI adoption costs, particularly for SMEs. It also addressed the importance of overcoming information barriers, compliance costs, and opportunities for government intervention to lower costs through tax incentives, VAT exemptions for cloud and AI services, and regulatory support.

During the discussion, participants noted that effective AI policy focused on managing input costs is closely aligned with sound energy policy, as both contribute to reducing the cost of training and deploying AI applications. While current energy debates around AI largely center on demand management, the discussion underscored the critical importance of unlocking supply in complementary technologies (e.g. small modular reactors) and energy planning/market reforms (e.g. zonal pricing in the case of the UK as opposed to marginal cost pricing).

8.2 Policy Ideas

- **Offer tax incentives or credits to companies investing in fine-tuning and applying pre-existing AI models:** expand the scope of these financial supports beyond core AI research to accelerate innovation and encourage practical deployment in diverse industries.
- **"Sandboxes" for small and medium-sized enterprises (SMEs):** creating dedicated 'sandbox' environments for SMEs will allow them to pilot AI solutions in a controlled, low-risk setting with minimal upfront costs. This will enable SMEs to innovate and experiment with AI technologies, fostering growth and competitiveness while mitigating financial barriers and regulatory uncertainties.
- **Guidance to help SMEs adopt AI technologies effectively:** this can consist of accessible AI toolkits, clear implementation guidelines, and initiatives such as Singapore's "borrow a CTO" program which enables SMEs to access affordable AI expertise through partnerships with NGOs offering services like CTO-as-a-Service. This approach can help SMEs bridge the expertise gap, ensuring smoother AI integration and fostering innovation.
- **Support export finance guarantees to help SMEs take on the risk of AI adoption:** this can help facilitate international expansion and competitiveness, allowing SMEs to scale AI adoption while safeguarding their financial stability and encouraging global market participation.

- **Reduce VAT and other taxes on cloud services and software-as-a-service (SaaS):** this policy would enhance accessibility to essential digital tools, driving innovation and improving efficiency, especially for startups and SMEs that rely on these services to scale and compete in the global market.
- **Address the knowledge and awareness gaps that hinder SMEs from adopting AI technologies:** this can be done by providing targeted educational initiatives and accessible resources, helping to demystify AI, dispel misconceptions about high costs, and empower SMEs to harness AI's transformative potential, driving innovation and increasing their competitiveness in the market.

8.3 Unresolved Questions

- What are opportunities for the government to lead by example, using AI in its own operations and services to drive broader adoption?
- How can governments effectively address market failures and coordination challenges to accelerate progress, particularly in enabling small businesses to take risks and explore new opportunities?
- What are opportunities for public-private partnerships or centralized AI solutions that can be leveraged by multiple companies, especially in specific industry verticals?
- What are the overlaps between existing energy policy and potential AI adoption policies? What can we learn from government actions that clear out hurdles that bog down energy projects?
- What is the potential cost to governments if they don't intervene in lowering the costs of AI?

9. PUBLIC SECTOR ADOPTION

9.1 Overview

A final key highlight from the workshop was a discussion focused on public sector AI adoption, highlighting Estonia's digital nomad visa and Singapore's high public service wages and the potential for other governments to scale similar policies. The conversation emphasized the need for talent attraction, suggesting programs like the U.S. Department of Defense's Highly Qualified Experts initiative to help place high-skilled workers into public service. Participants highlighted the role of universities in AI education and public-private partnerships, with a call for government incentives to support these initiatives. Furthermore, participants debated whether governments should consider centralized or decentralized approaches to boost adoption within government, ultimately concluding that both approaches are needed. Lastly, the discussion emphasized the importance of procurement flexibility and regulatory innovation.

9.2 Policy Ideas

- **Establish a centralized "AI Success Database":** such a database should document and share positive case studies of AI adoption in the public sector.
- **Explore further opportunities for government adoption of AI:** review current procurement and authorization processes to identify opportunities for increased flexibility and scalability in applying AI solutions across government agencies.
- **Combine decentralized and centralized solutions:** governments should implement a balanced strategy that combines decentralized, user-centered solutions with centralized mechanisms. Central entities should focus on coordinating contract vehicles, licensing, and procurement pilots, while systematically observing and sharing successes from pilot programs. This approach should also identify and scale effective regulatory innovations to ensure adaptable and impactful policy outcomes.
- **Implement flexible hiring programs:** this includes initiatives such as digital nomad visa like those pioneered by Estonia and Singapore, alongside other tailored adjustments to personnel systems. These programs should be strategically designed to attract top-tier talent and highlight the public sector's unique mission-driven value to inspire long-term public service commitment.
- **Increased government engagement:** governments should improve and strengthen engagement with commercial talent by signaling openness to innovative private-sector solutions and streamlining procurement processes to attract top talent into public service.
- **Harmonize procurement mechanisms across allied nations:** this enables companies to collaborate seamlessly across borders without navigating redundant or conflicting requirements.

9.3 Unresolved Questions

- How can policies that generated success in smaller countries, such as the digital nomad visas in Estonia and Singapore, be scaled in larger markets?
- What other incentives, beyond financial, can governments use to encourage public-private partnerships between industry, academia, and the public sector?
- How can state actors most effectively organize their in-house capabilities for best impact?

10. ACKNOWLEDGEMENTS

Amazon Web Services and Minerva Technology Policy Advisors would like to thank the participants of the November 20th AI adoption workshop in New York City for their valuable contributions to the workshop:

Robert Asselin
Business Council of Canada

Jacqueline Barrett
The Bright Arc

Karim Bardeesy
Dais Institute

Gabe Batstone
Contextere

Martin Beyries
Amazon Web Services

Bridget Boakye
Tony Blair Institute for Global Change

Piero Boccardo
Politecnico di Torino

Austin Carson
SeedAI

Christophe Carugati
Digital Competition

Greg Cannon
Amazon Web Services

Silvana Castano
University of Milan

Pavan Chima
Amazon Web Services

Christophe Combemale
Carnegie Mellon University

César Contreras
Centro México Digital

Matt Cronin
Andreessen Horowitz

Marco Degli Esposti
Università degli Studi di Firenze

Jeffrey Ding
George Washington University

Daniel Dobrygowski
World Economic Forum

Ray Eitel-Porter
Accenture

Janet Egan
Center for a New American Security

Aliki Foinikopoulou
Salesforce

Max Fenkell
Scale AI

Sabine Gerdon
Amazon Web Services

Luke Gbedemah
Evident AI/Minerva

Melissa Griffith
Johns Hopkins University School of Advanced International Studies (SAIS)

Sarah Hammer
The Wharton School, UPENN

Stephanie Ifayemi
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U.S. Chamber of Commerce

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AmCham Israel

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Dais Institute

Ben Lyons
Darktrace

Mathieu Marcotte
Montreal International Center of Expertise in Artificial Intelligence (CEIMIA)

Brett Meeks
Health Innovation Alliance

Josh Meltzer
Brookings Institute

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Amazon Web Services

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Argia

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Kir Nuthi
The Startup Coalition

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Ingram Micro and Istinye University

Ceren Zeytinoglu
Başlangıç Noktası | Be Node