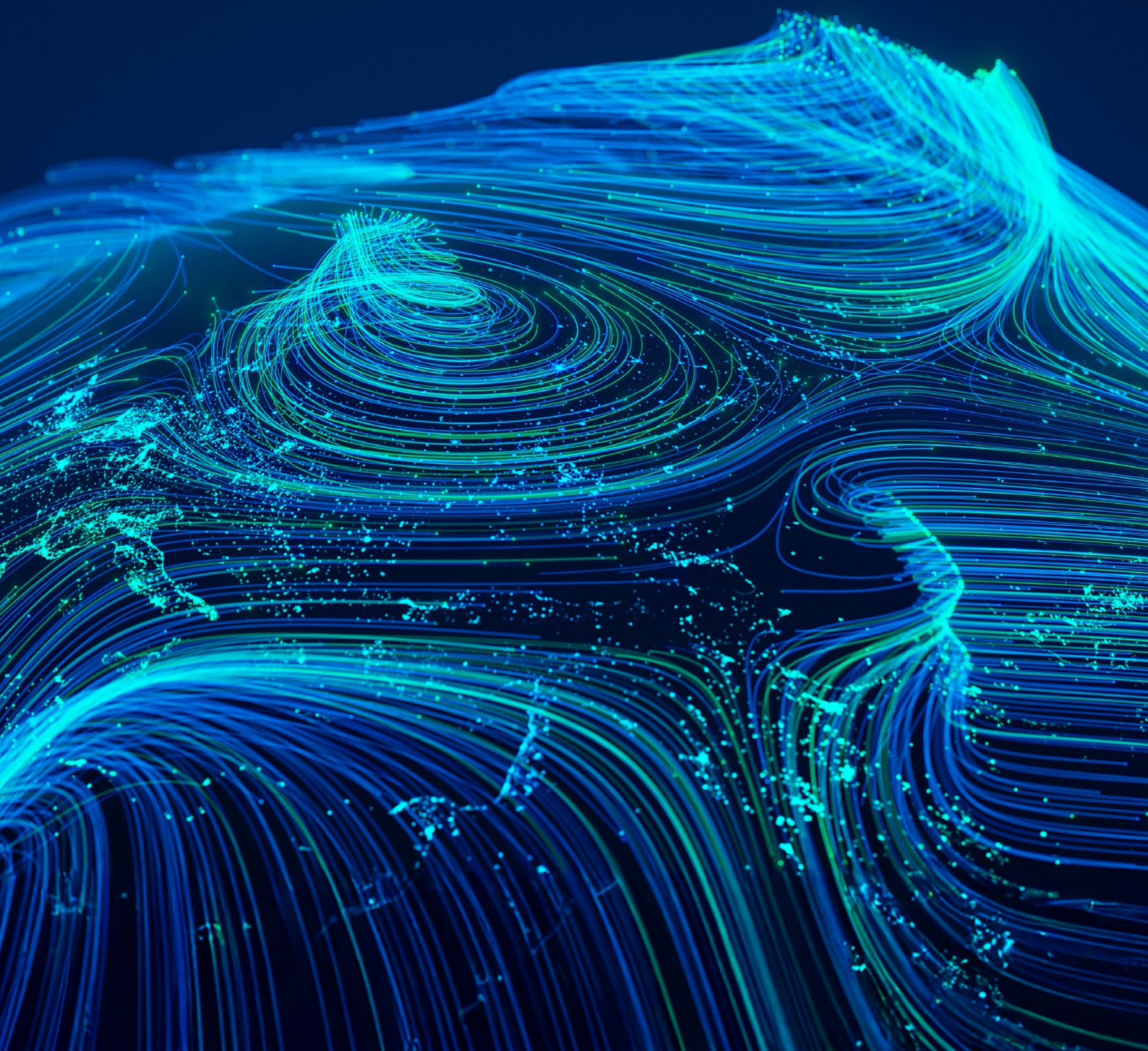


Global Future Council
on International Trade
and Investment



ChatWTO: An Analysis of Generative Artificial Intelligence and International Trade

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This white paper was drafted with the aide of several large language models, including Bard, ChatGPT and Cohere GAI.

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Executive summary

Generative AI needs global governance to avoid fragmented regulations and increased trade barriers.

The rapid advancement of generative artificial intelligence (GAI) has pushed AI to unprecedented levels of development and sophistication. Its swift adoption, driven by large language models (LLMs), requires international dialogue to address the ethical and political challenges in the domain of trade policy.

In recent years, international AI discussions have focused on shared values, ethical guidelines and safety, with governments rapidly implementing these principles into national regulations. However, these national efforts, driven by varying priorities, have led to fragmented and divergent requirements that are likely to create cross-border trade frictions and undermine governmental objectives, creating barriers to the use of GAI.

The World Trade Organization (WTO) is one of the few effective global platforms that can facilitate inter-governmental conversations on GAI and harmonize its regulation. While existing international trade laws provide some guidance, further evaluation is needed to address GAI's unique challenges and impacts.

Key findings

Global spread and ethical concerns: GAI is spreading rapidly worldwide, bringing issues such as intellectual property rights, privacy violations and cybersecurity to the fore. Examples include the unauthorized use of trademarked names and violations of national security laws due to cross-border data transfers.

Efficiency benefits and adoption: Businesses are adopting GAI for its efficiency, with studies showing significant reductions in task completion times and improvements in output quality. This adoption is accompanied by challenges related to the technical and energy costs of operating these models.

Regulatory efforts: International bodies like the Organisation for Economic Co-operation and Development (OECD), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the Group of Seven (G7), along with national governments, are developing principles and regulations to manage GAI's risks. These efforts aim

to balance innovation with public safety, privacy and ethical considerations.

International trade implications: GAI's cross-border nature necessitates the application of international trade rules. The WTO and other trade bodies should use existing frameworks to address GAI's unique characteristics, encouraging discussions on its impact on trade.

Transparency and bias: Ensuring robust transparency and cybersecurity standards is crucial for building trust in GAI. Mistrust due to misinformation is a significant risk, highlighting the need for clear guidelines and international cooperation.

Employment and environmental impact: GAI's impact on jobs is uncertain, with potential job displacement being a critical concern. Additionally, the substantial energy requirements for GAI operations pose environmental challenges.

Recommendations

- **Educational initiatives:** Host sessions to educate WTO members on GAI, its benefits and risks.
- **Legislative transparency:** Encourage members to present their GAI legislation for better global understanding and alignment.
- **Review and adaptation:** Assess current trade rules for GAI applicability, identifying gaps and developing new guidelines where necessary.
- **Bias and fairness:** Develop standards to tackle bias in GAI, ensuring equitable and responsible use.
- **Collaborative development:** Work with international bodies to create coherent guidelines promoting safe and secure GAI use.

Establishing common ground rules at the WTO is crucial to ensuring GAI is developed in a fair and safe manner that benefits individuals and communities globally.

Introduction

The advent and spread of generative AI have major implications for international trade; policy guardrails are needed.

“ Researchers at MIT found that using ChatGPT reduced task completion time for writing-focused workers by 40% and improved output quality by 18%.

The launch by Open AI of ChatGPT in November of 2022 demonstrated that generative artificial intelligence (GAI) had reached a new level of development and sophistication. AI can be defined as a computer performing human-like tasks,¹ while GAI is a relatively recent subfield within AI that focuses on developing algorithms to generate new content based on a set of training data.² GAI has leapt to the forefront of AI (and current culture) in large part due to the ability of large language models (LLMs) to respond to speech like a human being. These models operate by “guessing” the next word based on a set of training data.³ They often require tremendous computing power to operate because they must assess an entire training data set (which can be even larger than a copy of the entire World Wide Web) to respond to a particular request.⁴

Several examples highlight the critical need for international organizations like the World Trade Organization (WTO) to consider the intersection of AI and trade policy.

The first example is a young filmmaker in Australia who sits down to work on a draft of her latest script. She logs in to ChatGPT and enters the prompt, “Create a short fictional story about Nelson Mandela fighting climate change in 2023”. She loves the story ChatGPT creates and decides to include it in her upcoming surrealist film. However, the Nelson Mandela brand name is trademarked, and neither the GAI nor the filmmaker secured the rights to use that name before producing the film, violating intellectual property (IP) rules.

Alternatively, consider the board of a successful telecommunications company in Denmark that is reviewing proposals to make operations more efficient. The most interesting item for discussion involves an AI chatbot powered by Cohere (a Canadian LLM provider) to respond to customer service calls, which is estimated to reduce costs by 30%. The board approves the proposal and now the chief technology officer is tasked with purchasing

a computer capable of handling the tremendous amount of incoming and outgoing information the new chatbot will create. The chief technology officer reviews proposals from several providers and decides to purchase a computer from a Chinese provider. The computer and the new software improve efficiency at the company but also violate a new European Union (EU) law that bars the use of AI products from China due to national security concerns.

These examples demonstrate how the spread of GAI technology creates numerous ethical, trade law and policy issues. ChatGPT became the fastest-growing consumer application in history when it reached 100 million users just two months after its launch.⁵ Businesses are rapidly adopting generative AI for its efficiency benefits. Researchers at the Massachusetts Institute of Technology (MIT) found that using ChatGPT reduced task completion time for writing-focused workers by 40% and improved output quality by 18%.⁶

However, there are limitations to the growth and efficacy of GAI. First, there are large-scale technical and energy costs required to power the storage and computing requirements of these models.⁷ Another potential limitation on GAI's growth is access to large enough data sets for sufficient training. For example, nearly 20% of the top 1,000 websites in the world currently block GAI crawler bots, which results in GAI providers purchasing datasets from web publishers to feed and differentiate their offerings.⁸ These exclusive deals to access information raise concentration and competition risks.

There are also serious risks associated with GAI. Misinformation, disinformation, manipulation, bias, IP theft, personal privacy violations and cybersecurity issues are all foreseeable problems. The impact of GAI on jobs is uncertain, with estimates suggesting it could affect anywhere from zero to 300 million jobs worldwide.⁹ The idea that GAI might decide to “cut humans out of the loop” or engage in harmful actions is unlikely in the short term but may become a consideration in the longer term.¹⁰

1

Overview of global governance efforts

Efforts to govern AI globally focus on balancing innovation with managing risks like bias, privacy and cybersecurity.

While GAI creates benefits and opportunities, policy-makers around the world have focused on mitigating possible negative consequences of GAI such as public safety, bias, privacy and other human rights, and cybersecurity. Work has been ongoing in several forums and countries, beginning as a broader articulation of ethical or

value-based principles and moving into more detailed and prescriptive national regulation or legislation. Countries have followed internationally agreed principles but have regulated based on national priorities and local cultural norms, creating regulatory diversity that will lead to friction and cross-border challenges.

1.1 International efforts

The Organisation for Economic Co-operation and Development's (OECD) [AI Principles](#), created in 2019 and supported by 47 countries, were the first significant AI public policy recommendations. Designed to guide AI actors on the values and actions needed to develop trustworthy AI and effective AI policies, the principles include five values and five government policy recommendations. The AI Principles were updated in May 2024 to reflect recent developments and include more detailed guidance. The OECD also created the first set of common definitions and other standards that have been relied upon by the United Nations (UN) and national governments in subsequent work.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) released the *Recommendation on the Ethics of Artificial Intelligence* in November 2021 to address the ethical risks associated with AI.¹¹ With 193 countries as signatories, the report identifies 11 areas of focus to limit real-world biases and discrimination, lower divisions and conflicts, and prevent infringements on human rights. The report also includes recommendations for monitoring and enforcement of any potential ethical violations. In addition to the work at UNESCO, the UN Secretary-General has announced a 32-member High-Level Advisory Group on AI.¹² Other UN agencies are looking at sectoral ramifications, such as the World Health Organization (WHO) and International Telecommunications Union's (ITU) joint focus group on the intersection of AI and health.¹³

The UK government convened officials, scientists and other experts at an AI Safety Summit and released the *Bletchley Declaration for AI* to jumpstart international collaboration on the safety and regulation of "frontier" AI. The Bletchley policy paper explicitly recognized that many of the risks from AI are cross-border and international in nature, and global coordination is critical. Talks have continued with meetings in South Korea in May 2024 and future meetings planned in France in February 2025.

In December 2023, the Japan Group of Seven (G7) Presidency's *Hiroshima AI Process* detailed AI principles and a code of conduct (AIP&CoC), which builds upon the work of the OECD, UNESCO, Bletchley Park and several national efforts.¹⁴ These principles focus on the development of responsible AI using a risk-based approach and include provisions on the development and testing of new AI applications as well as robust security controls. While non-binding, the AIP&CoC outlines specific actions that can be undertaken to implement the principles. Areas for further research and development were also identified. G7 members pledged to implement the recommendations and to strongly encourage uptake in their private sectors. An open question remains on how governments will implement the recommendations while avoiding fragmentation or divergence that could undermine their objectives for responsible AI. Future work in the G7 will be ongoing, with continued work on various issues including definitions and secure information sharing on AI system vulnerabilities.

In May 2024, the Council of Europe adopted an international treaty on AI.¹⁵ The treaty includes 46 Council of Europe member states, the European Union and 11 non-member states. It focuses on the use of AI systems by both the public and

private sectors, and creates transparency and oversight requirements. The treaty also adopts measures related to the protection of democratic institutions and exempts national security-related issues from its coverage.

1.2 Domestic legislative and regulatory efforts

Several countries have begun the process or passed domestic legislation or regulation related to AI. Canada (2017)¹⁶ and Singapore (2019) were early movers in the space as well. China's *A Next Generation Artificial Intelligence Development Plan*, released in 2017, called for the establishment of laws, regulations and ethical frameworks to help govern AI, including through "international rules" and cooperation. Brazil is also close to completing its AI legislation.¹⁷

In the US, the National Artificial Intelligence Initiative Act of 2020 is the most tangible piece of legislation passed on AI, and much of its focus is on the use of AI in defence, national security and intelligence.¹⁸ In October 2023, the Biden Administration released the groundbreaking executive order (EO) *Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence*. The EO outlined principles that will guide AI governance in the US and required various US government agencies to develop additional work on specific topics such as impact on workers, civil rights, patents and more. There was no explicit inclusion of international trade or instructions to the US Trade Representative. The Biden Administration also secured voluntary commitments from seven major AI companies in July 2023.¹⁹ There have been several bills proposed in the US Congress on AI, but none have become law.²⁰ Moreover, 25 states have proposed legislation in 2023 related to AI.²¹

The European Parliament passed the most comprehensive legal framework related to AI, known as the AI Act, on 13 March 2024. The EU began work in 2019 and sought extensive input as they designed the legislative proposal.²² The EU AI Act is a comprehensive framework for AI that attempts to encourage AI innovation while upholding citizens' rights; it will be phased in starting in late 2024.²³ It was originally constructed around specific-use cases and rated their risks from minimal to high, but lawmakers revised it to include GAI, whose general-purpose capabilities did not fit within the previously defined risks. The final legislation included transparency requirements for GAI, as well as a thorough evaluation process for high-impact GAI that could pose systemic risks. The AI Act also includes several provisions that specific actions taken should be in line with the EU's international trade commitments.²⁴

Six bilateral trade agreements already include provisions on AI, including five agreements between Singapore and other parties and the Africa Free Trade Area.²⁵ The US-EU Trade and Technology Council (TTC) addressed several emerging technology issues including GAI,²⁶ creating a transatlantic AI roadmap and a code of conduct. The EU and India have created the Global Partnership on Artificial Intelligence, which aims to create a memorandum of understanding on the topic by September 2023.²⁷ Additional conversations are starting, with China pushing specifically for future AI governance talks with the US.

There is also a great deal of current regulatory action in the AI space with 600 regulatory developments targeting AI providers just since January 2023.²⁸ Many regulators have also used existing privacy and consumer protection laws to investigate AI applications. For example, ChatGPT was banned in Italy on privacy grounds in 2023.²⁹ China has applied its speech rules on objectionable GAI-generated content. In the US, the lack of comprehensive AI legislation is leading regulators to begin to act,³⁰ and the US Federal Trade Commission has opened an investigation into ChatGPT looking at security and consumer harm.³¹ Sectoral regulators have also taken direct action on GAI. In Singapore, through Project Veritas, the Monetary Authority of Singapore has sought to strengthen core principles in GAI applications. The UK has applied consumer duty and existing bank-model risk management rules to AI applications.

All this national activity – legislative, regulatory and bilateral – is important to protect citizens and societies from the risks of GAI. It also raises new questions about how different rules will impact the cross-border production, use and dissemination of GAI. Fragmentation will create and exacerbate vulnerabilities that may undercut countries' intended goals of safety and security while creating uneven playing fields. Reviewing these differences considering the existing international trade rules will help educate policy-makers on the current state of play, help identify areas where differences exist, and pinpoint additional needed work.

“ Fragmentation will create and exacerbate vulnerabilities that may undercut countries' intended goals of safety and security while creating uneven playing fields.

Overview of current international trade rules

Domestic legislation creates varied rules for GAI, causing regulatory fragmentation and potential trade barriers in international markets.

Discussion of the international trade implications for GAI is at a nascent stage. As reviewed in previous sections, domestic legislation and regulations have already created different rules that will impact the international trade of GAI, resulting in loopholes that undermine the management of GAI risks. While governments have come together to outline common principles and values, countries have prioritized different aspects of these principles when crafting local laws. Some countries are taking a market approach, encouraging innovation. Other countries are taking a state-driven approach, ensuring AI development is in accordance with public safety and other state priorities. A final approach is a rights-driven approach, where citizens' fundamental rights must be respected.

These three different approaches are creating fragmentation and friction for AI developers and users and may create trade-distorting or discriminatory regimes that undermine the rules of the WTO. International trade rules are based on a few core principles, including:

- Treating local and foreign firms and products as equals (non-discrimination)
- Progressive liberalizing based on a country's level of economic development
- Creating predictability and transparency
- Promoting fair competition

These general principles are applied via various provisions in bilateral, regional or global agreements and would also provide a level playing field for countries grappling with GAI.

There are, however, serious gaps when attempting to apply the existing rules in the trading system to the rapid innovations in GAI. Can GAI secure a copyright in one country that can be upheld internationally? If a country bans the use of its citizens' data to train GAI, are there trade laws that might be implicated? Did the General Agreement on Trade in Services (GATS) negotiators agree to allow unbridled trade in GAI when they committed to liberalizing computing services, which at the time was limited to business software applications?

Given the number of complex international trade and investment issues that apply to GAI, as well as the new, technical knowledge required by trade negotiators to understand the issues around GAI, the WTO should begin: 1) learning sessions to discuss GAI and its unique characteristics, 2) information on existing international and national rules on GAI, and 3) reviews of WTO rules that would apply to GAI. Once the WTO identifies how current rules cover GAI and potential gaps, the WTO should begin thinking about the next steps. Given the rapid development of advances in GAI, these efforts should take place at an accelerated pace.

The cross-cutting nature of GAI will impact many WTO provisions. Below we focus on specific trade provisions that officials should review and consider for their impact on GAI:

GATS

The nature of GAI makes it challenging to classify its use case (mode) or location (origin), which are technical, underlying questions that impact the treatment of GAI under the existing GATS rules. GATS schedules include a section on "computer and related services", but members could prove that they never envisioned GAI when they made those commitments.³² Moreover, if companies' operations or products include GAI, for example in the operations of a financial service company or a multimedia company, would the obligations of financial services or media services apply to the output? These are questions that do not have straightforward answers but have significant impacts with regard to the enforcement of international trade rules.

GAI could qualify under multiple "modes" of supply that may require future consideration of a new mode for AI services. Mode 1 is defined as the supply of a service from the territory of one WTO member into the territory of any other WTO member (cross-border or remote provision of services) However, in terms of consumer GAI products, typically the user logs on to a website operated by the GAI service provider and enters a query, which could arguably be a mode 2 service, i.e. the consumer travelled abroad to the "location" of the GAI service provider. This distinction is

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important as countries made different commitments in 1994 based on the type of mode, as well as the type of service provided.

As AI developers contemplate the structure of their operations, trade officials will need to consider how to define the origin of the service of the GAI. Will it be the location of servers and algorithms, the location of the headquarters, or the location of the user? If an energy company uses GAI and combines it with their own data to create novel use cases, is the origin the country where the energy company is located or where the GAI service comes from? Or should the LLM provider be responsible for downstream use cases?

Finally, if the GATS were to apply to a particular GAI service provision, there are exceptions that countries may claim to limit the application of the GATS, such as the national security exception. GAI is a dual-use technology, and companies may challenge national security exceptions as overly broad and discriminatory.³³ In the case of bans or limitations on GAI use based on data protection concerns, governments may claim an exception to protect privacy. Countries could also raise public morals or cultural exceptions to justify restrictions on GAI use in the production of certain images or speech.

Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)

Since 2022, several lawsuits have highlighted the challenges associated with GAI and IP. In November of 2022, a group of software programmers filed a US class action lawsuit against Microsoft, OpenAI and GitHub, arguing that the GitHub CoPilot product (which can generate code) violated copyright law by scraping copyrighted code.³⁴ Getty Images filed a lawsuit against Stability GAI in the UK alleging unlawful copying of millions of copyrighted images.³⁵ If and how companies can train GAI on

copyrighted or trademarked materials is important as the breadth and diversity of data are essential to creating responsible GAI.

Meanwhile in the US, copyright protection has been in place for GAI works since 1988, with the copyright owned by whoever created the GAI system. In August 2023, a US district court judge ruled that GAI-generated artwork is not protected under copyright law,³⁶ raising questions about the future protection of GAI-created work.

The TRIPS agreement outlines the scope of copyright protection, specifying the types of content it covers, including provisions for computer programs and data compilations.³⁷ Article 10 states, “Compilations of data or other material, whether in machine-readable or other form, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected as such”.³⁸ This language would seem to cover GAI-created material, but under the Berne Convention authorship is only attributable to a human. An update to TRIPS could help to clarify if GAI-generated materials are copyrightable, how GAI could use already copyrighted materials, in which cases GAI-generated material deserves copyright protection, and how that protection might differ from traditional protections.³⁹

Patents are another area where updates to international trade law will need to take GAI into account. GAI can help in developing new drugs, ways of manufacturing and software. All of these are subject to patent protection; however, patent law assumes that inventors are human.⁴⁰ GAI is likely to accelerate the creation of new patentable ideas without specific human intervention, raising questions about the legal framework for patentable ideas developed by GAI. Would the copyright belong to the creator of the AI model or the company using the model to create new content?



“ Future WTO discussions should include more focus on the cross-border spread of this technology, incorporating capacity building and development assistance.

Trade in goods

The application of GATS to GAI involves specific hardware reliant on complex supply chains that need to move across borders.

Semiconductors are particularly important in the processing needed for GAI. A semiconductor includes base elements like silicon that enable the conduction of electricity, which can facilitate computing operations.⁴¹ Semiconductors are the underlying architecture powering the GAI revolution. Over the past 10 years, global sales of semiconductor chips doubled from \$300 billion to over \$600 billion,⁴² with no single country responsible for more than 25% of global chip manufacturing.⁴³ Moreover, even if a US manufacturer produces a semiconductor, there are several phases of the semiconductor ecosystem that can be conducted in other countries.⁴⁴

The US has taken an active approach to the development and expansion of the domestic semiconductors industry, passing new incentives under the CHIPS Act. Alongside incentives to increase domestic production, the Biden Administration plans to raise tariff rates on Chinese legacy semiconductors from 25% to 50% in 2025, reflecting concerns that China's industrial policies have been trade-distorting and risk damaging the US industry. At the same time, the US Department of Commerce is restricting the export of certain innovative chips to China and other hostile foreign powers including semiconductors designed for GAI applications.⁴⁵ China filed a lawsuit with the WTO in late 2022 to challenge these restrictions. The EU has also passed legislation and incentives to boost its semiconductor industry.

In addition to semiconductors, various hardware components like computer servers – powered by central processing units (CPUs) – graphics processing units (GPUs), and edge AI hardware and sensors are used to train AI, process queries and deliver outputs for numerous AI applications.

Development

As large countries use industrial policies to accelerate domestic efforts around the production of hardware that powers GAI, the rest of the world cannot provide similar incentives for their domestic industries nor potentially access the needed technology. While the previously discussed international forums focus on how to ensure that the benefits of this technology reach all countries, there is concern that if left unchecked, certain actors may flout international cooperation for their own national agenda.

At the recent Global Review of Aid for Trade events at the WTO in June 2024, countries discussed how to ensure that the benefits of AI and GAI contribute to development and poverty reduction and create a

“race to the top”. The risk of expanding the digital divide further highlights the urgency of this work, as developing countries may not have the people or resources needed to provide meaningful input to the development of rules governing GAI. Additionally, much of GAI development is concentrated in a few countries, with data for training predominantly sourced from these regions, resulting in biases and distortions.⁴⁶ Future WTO discussions should include more focus on the cross-border spread of this technology, incorporating capacity building and development assistance.

Non-tariff barriers in goods and services

The WTO Technical Barriers to Trade (TBT) committee looks at trade barriers in goods that result from domestic regulation or other “behind the border” requirements. The new Joint Statement Initiative (JSI) on domestic regulation looks at similar issues for services but only for a subset of WTO members. As members continue to develop legislation and regulations on GAI, differences and variations may restrict the operation or breadth of services that can be performed by GAI, distorting cross-border trade. The TBT committee has already held meetings focused on GAI, and the WTO's 2018 *World Trade Report* included an extensive preview of the opportunities and issues that will result from GAI.

The TBT committee encourages transparency, as member countries can share information on their domestic efforts and help build a common foundation of global developments. The WTO could encourage members to present their GAI legislation or regulations so that others can understand the models being developed and assess them for potential trade issues. The WTO can also call on external standard-setting bodies to review specific issues or create common global guidelines, creating a more coherent international regulatory environment that promotes a safe, secure and responsible GAI.

The sanitary and phytosanitary (SPS) agreement provides an example of how transparency and verification of GAI systems across borders could be facilitated through work in a setting like the TBT committee.⁴⁷ With regard to food safety, the SPS agreement seeks to ensure that food can be safely traded across borders by providing guidance as well as requesting expert standard-setting bodies create global rules. This prevents multiple, conflicting standards and instead encourages international trade. A similar process could play out with regard to GAI, where WTO committees work with external, international standard-setting bodies to ensure the safety of GAI systems being deployed across borders, while also encouraging trade in the technology.

Finally, the work in the TBT and SPS committees could help boost conversations about transparency around GAI and its outputs. Human beings need

clarity about when an image is real versus GAI-generated. Additionally, GAI must be able to identify when it is learning from synthetic data to prevent model collapse.⁴⁸ The technological resolutions to this risk are available; Google has been pioneering a watermarking service for GAI-generated content.⁴⁹ Twilio has stated that it will place “nutrition labels” on GAI services it offers businesses to clarify information about privacy, features and data.⁵⁰ Despite this, the need for policy and internationalization for these standards is crucial.

Subsidies

The WTO subsidy rules cover government benefits to assist producers, with the type of subsidy, its specificity, and if it causes injury determining if it is illegal or permissible. The current WTO subsidy rules do not cover services, such as GAI, but do cover the goods used in the production of AI (i.e. semiconductors). As such, the current subsidy rules may cover the hardware needed to produce GAI but using those rules to restrain specific subsidies given to GAI companies for the software, source code or algorithms used to produce GAI would be challenging. New rules on acceptable and non-acceptable subsidies for GAI development may be needed to ensure a level playing field.

Preferential trade agreements on digital trade and cross-border data flows

Cross-border data rules, data localization and protections for source code and algorithms are all important elements of digital trade agreements that could provide clarity and lower regulatory risks for GAI developers. Establishing rules around GAI, which could build upon digital agreements, would benefit users, developers and regulators. A 2023 academic study of digital trade rules found that establishing digital trade rules was significant in promoting the export of those services and reducing trade costs.⁵¹ The most interesting finding in the study was that digital trade rules had the greatest benefits for low- and middle-income countries.⁵²

Specific cross-border data rules are important for GAI,⁵³ as they both govern the inputs needed to create GAI as well as the potential outputs from GAI models and algorithms. While six bilateral and regional trade agreements include GAI provisions, they do not currently exist in WTO law. Negotiations on the WTO JSI on e-commerce include cross-border data flows and data localization, which are needed to feed GAI. However, those provisions are

currently unresolved, leaving a patchwork of preferential global rules governing cross-border data flows. The Digital Economy Partnership Agreements (DEPA), US-Mexico-Canada (USMCA) and Comprehensive Progressive Trade Pacific Partnership (CPTPP) provide the most comprehensive and up-to-date examples of rules on data. There are also potentially important cross-border data rules from a law enforcement perspective that would apply to GAI, but those go beyond the remit of this paper.

Labour and environmental provisions

GAI will have a transformative impact on the future of work and education. While WTO agreements do not normally include specific labour provisions, the WTO should think through the employment ramifications of international trade in GAI, as GAI may amplify other impacts of trade agreements.

Labour unions are concerned that GAI will lead to dramatic impacts on employment in certain industries. Several recent strikes, such as the US Screenwriters Guild strike, included demands to limit the use of GAI. The US hospitality workers union UNITE HERE Local 11 filed a regulatory complaint against a GAI service offered by the app Instawork (which was being used by a hotel), claiming that it unfairly penalized a hotel worker who was exercising his right to strike.⁵⁴ The labour implications of GAI are also a critical component that the WTO should consider. GAI's use in traditional industries, as well as new industries such as the gig economy, may have novel, cross-border implications that officials should consider and discuss. McKinsey estimates that nearly 30% of the hours currently worked across the US economy could be automated by 2030.⁵⁵ A Gallup poll of over 100 human resources leaders found that 72% believed GAI would replace jobs at their organization in the coming three years.⁵⁶

Finally, as GAI requires substantial amounts of computing power, it also requires substantial amounts of energy. The International Energy Agency is projecting global electricity demand from AI, data centres and crypto to rise to 800 terawatt hours (TWh) in 2026, a 75% increase from 460 TWh in 2022.⁵⁷ The current trade rules do not address the environmental or climate impacts of this, but the issue is being discussed in other forums. Again, this may be an issue that the WTO could consider addressing due to the impact of trade agreements that facilitate GAI, which may also cause an increase in energy consumption.

3

Urgent work is needed on trade policy and GAI

The WTO should explore using existing committees to address GAI issues, host educational sessions, and develop transparency and IP standards.

As shown above, GAI intersects with many aspects of the current WTO rules, and work should begin within the WTO on how the membership will address GAI. Aspects of GAI are novel and would benefit from the launch of discussions at the WTO. The current impasses at the WTO on plurilateral or multilateral negotiations make it unlikely that members would launch new negotiations on AI in the near term, and the speed at which the WTO could address these issues would be slower than the pace of innovation. However, the WTO could create a new committee as they have on climate, micro, small- and medium-sized enterprises (MSMEs) and gender, and/or use its existing committees, such as the TBT committee, the Council for Trade in Services and the Council for TRIPS, to focus on some of the issues associated with GAI.

Below are specific areas of work that the committees could support:

- **Host educational sessions for WTO members** on GAI, the various aspects of the technology,

and what makes it unique, and how other organizations (including those mentioned previously) are reviewing and considering rules on GAI.

- Ask the WTO Secretariat to conduct a **comprehensive assessment of how the current trading system** applies to GAI technology to flesh out any specific issues, identify gaps in current rules to address in the future and catalogue emerging trade barriers.
- Encourage members to **present and notify their GAI legislation or regulations** so that other members can understand the rules that they are developing, how they consider the cross-border aspects of their development and use and assess them for any potential trade issues. This would allow the WTO to provide constructive input on how companies and governments can include international trade and investment risks in their ongoing assessments to prevent trade barriers and future disputes.



“ Currently, the private sector is grappling with whether, and how, to provide consumers with transparency around GAI-created content.

- **Review IP rules** for implications and develop suggestions for improvements needed to protect copyrighted materials while allowing use to prevent bias and build responsible GAI capabilities.
- **Develop rules or best practices around transparency and disclosure around GAI use and cybersecurity validation standards** in the WTO TBT committee or Services Council to improve trust in cross-border GAI.⁵⁸ The reduction of trust in human engagement due to misinformation is the most immediate and significant risk associated with GAI. Ensuring robust transparency and security standards is essential to addressing this issue. A Europol study estimates that by 2026, 90% of online content could be generated by GAI.⁵⁹ Moreover, GAI image generation is becoming overwhelmingly convincing; in a German study, only 8% of respondents could correctly identify a photo of a real human face when lined up against three GAI-generated images.⁶⁰ Currently, the private sector is grappling with whether, and how, to provide consumers with transparency around GAI-created content.⁶¹
- **Develop guidance on how to facilitate transparency and verification of GAI systems across borders.** Transparency is key, not only because it helps human beings identify GAI generated content, but it also helps GAI to understand if the content transmitted over the internet is GAI-generated (synthetic data) as it can cause GAI models to collapse.⁶²
- Collaborate with members on practices to **tackle bias** and, if appropriate, develop standards that address these challenges through the work in the TBT committee.
- **Discuss the development of AI technical standards** for AI generally as well as in technical applications such as autonomous vehicles in the relevant WTO committee. Members and technical staff can review such standards to ensure that they do not favour specific types of AI and become barriers to trade.

The WTO has faced challenges in establishing comprehensive rules to effectively protect and facilitate the internet economy. Many analysts contend that GAI is at a similar developmental stage as the internet in 1994, coinciding with the signing of the Agreement Establishing the WTO (Marrakesh Agreement).⁶³ The WTO and its committees serve as a valuable platform for educating policy-makers, especially those from non-OECD or G7 countries, and for developing useful suggestions, standards, rules and regulatory guidance on GAI.⁶⁴ The WTO should seek to pool expertise with policy-makers at the OECD, the G7 and the UN, and ensure that the development of GAI can be disseminated globally and provide sustainable development and benefits to all countries. Given the rapid development of GAI, it is unlikely that an international trade agreement would be feasible or beneficial at this time. However, negotiators of specific agreements, such as the JSI for e-commerce, may need to consider including provisions related to GAI in their discussions.

Conclusion

Governments are regulating safety, governance and commercialization of GAI, but need to coordinate to ensure that the patchwork of rules is aligned and will not create inefficiencies, loopholes or trade restrictions that impede the efficient dissemination of GAI or fail to properly control its risks. Global work on common GAI principles or a potential agreement is taking place in international forums such as the UN, OECD and G7, and the WTO should begin work to catalogue how trade laws intersect. The cross-border nature of GAI means international trade rules inherently apply. Governments and the WTO should use existing trade rules and institutions/committees to create a forum for discussing GAI-related issues in international trade.

The WTO should consider creating a new committee that spans its existing committees to comprehensively examine the impact of international trade rules on

GAI, and vice versa, in a cross-cutting manner. Hosting educational sessions on GAI and its characteristics, benefits and risks would be an important first step. Additional or specialized work could be completed in existing WTO committees, such as the TBT committee and the GATS and TRIPS councils. GAI is already crossing borders, and ensuring its alignment with global goals and values set by the OECD, UN and G7 is a critical contribution the WTO could facilitate.

Establishing common ground rules at the WTO is crucial to ensure that GAI is developed in a fair, safe manner that benefits individuals and communities globally. The WTO offers a unique platform for its members to enhance transparency regarding their national initiatives, seek technical assistance and negotiate critical issues. This role is particularly urgent in addressing the rapidly evolving challenges associated with GAI.

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Endnotes

1. Joiner, I. (2018). Artificial Intelligence: AI is Nearby. In *Chandos Information Professional Series*. Edited by I. Joiner (pp. 1-22). Chandos Publishing. <https://www.sciencedirect.com/science/article/abs/pii/B9780081022535000022>.
2. Hartmann, J. et al. (2023). *Generative AI*. ResearchGate. https://www.researchgate.net/publication/370653602_Generative_GAI.
3. The Economist. (2023). *Large, creative AI models will transform lives and labour markets*. <https://www.economist.com/interactive/science-and-technology/2023/04/22/large-creative-ai-models-will-transform-how-we-live-and-work>.
4. Ibid.
5. Hu, K. (2023). Chat GPT sets record for fastest-growing user base – analyst note. *Reuters*. <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/>.
6. Winn, Z. (2023). Study finds ChatGPT boosts worker productivity for some writing tasks. *MIT News*. <https://news.mit.edu/2023/study-finds-chatgpt-boosts-worker-productivity-writing-0714>.
7. Turow, J. Ummat, I. Porter, T. & Goel, P. (2022). Foundation Models: The future isn't happening fast enough — Better tooling will make it happen faster. *Madrone*. <https://www.madrone.com/foundation-models-create-opportunity-tooling-layer/#:~:text=While%20creating%20these%20new%20large,industry%20to%20push%20further%20ahead.&text=It's%20not%20clear%20how%20big%20these%20models%20are%20going%20to%20get>.
8. Fischer, S. (2023). Major websites are blocking AI crawlers from accessing their content. *Axios*. <https://www.axios.com/2023/08/31/major-websites-are-blocking-ai-crawlers-from-accessing-their-content>.
9. Goldman Sachs. (2023). *Generative AI could raise global GDP by 7%*. <https://www.goldmansachs.com/intelligence/pages/generative-ai-could-raise-global-gdp-by-7-percent.html>.
10. Vallance, C. (2023). Technology minister urges caution on AI 'Terminator' warnings. *BBC News*. <https://www.bbc.com/news/technology-65822884>; Green, A. (n.d.). *Artificial intelligence and jobs: No signs of slowing labour (yet)*. https://www.oecd-ilibrary.org/sites/08785bba-en/1/3/3/index.html?itemId=/content/publication/08785bba-en&csp_9f4368ffe3fc59de4786c462d2cdc236&itemGO=oecd&itemContentType=book.
11. United Nations Educational, Science and Cultural Organization. (2022). *Recommendations on the Ethics of Artificial Intelligence*. <https://unesdoc.unesco.org/ark:/48223/pf0000381137>.
12. *United Nations Office of the Secretary-General's Envoy on Technology*. (n.d.). *High-Level Advisory Body on Artificial Intelligence*. <https://www.un.org/techenvoy/ai-advisory-body>.
13. Pujari, S., Reis, A., Zhao, Y., Alsalamah, S., Serhan, F., Reeder, J. C., & Labrique, A. B. (2023). Artificial intelligence for global health: Cautious optimism with safeguards. *World Health Organization, Bulletin of the World Health Organization*, 101(6), 364-364,364A. doi: <https://doi.org/10.2471/BLT.23.290215>.
14. The White House. (30 October 2023). *G7 Leaders' Statement on the Hiroshima AI Process* [Press release]. <https://www.whitehouse.gov/briefing-room/statements-releases/2023/10/30/g7-leaders-statement-on-the-hiroshima-ai-process/>.
15. *Council of Europe*. (2024). *Council of Europe adopts first international treaty on artificial intelligence*. <https://www.coe.int/en/web/portal/-/council-of-europe-adopts-first-international-treaty-on-artificial-intelligence>.
16. *Government of Canada*. (n.d.). *Pan-Canadian Artificial Intelligence Strategy*. <https://ised-isde.canada.ca/site/ai-strategy/en>.
17. European Bedding Industries' Association. (2021). Summary of the Brazilian Artificial Intelligence Strategy. www.gov.br/mcti/pt-br/acompanhe-o-mcti/transformacaodigital/arquivos/inteligenciaartificial/ebia-summary_brazilian_4-979_2021.pdf.
18. Congressional Research Service. (2023). *Artificial Intelligence: Overview, Recent Advances, and Considerations for the 118th Congress*. <https://crsreports.congress.gov/product/pdf/R/R47644>.
19. Ibid.
20. Lenhart, A. (2023). Roundup of Federal Legislative Proposals that Pertain to Generative AI: Part II. <https://techpolicy.press/roundup-of-federal-legislative-proposals-that-pertain-to-generative-ai-part-ii/>.
21. *National Conference of State Legislatures*. (2024). *Artificial Intelligence 2023 Legislation*. <https://www.ncsl.org/technology-and-communication/artificial-intelligence-2023-legislation>.
22. Justo-Hanani, R. (2022). The politics of artificial intelligence regulation and governance reform in the European Union. *Policy Sciences*, vol. 55, no. 1, pp. 137-159. <https://doi.org/10.1007/s11077-022-09452-8>.
23. Engler, A. (2022). *The EU AI Act will have global impact, but a limited Brussels Effect*. Brookings. <https://www.brookings.edu/articles/the-eu-ai-act-will-have-global-impact-but-a-limited-brussels-effect/>.
24. European Parliament. (2024). *Regulation (EU) 2024/... of the European Parliament and of the Council of laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act)*. pp. 6. https://www.europarl.europa.eu/doceo/document/TA-9-2024-0138-FNL-COR01_EN.pdf.

25. Six PTAs have provisions on AI: Australia - Singapore Digital Economy Agreement; Digital Economy Partnership Agreement (“DEPA”) Between Singapore, Chile, New Zealand, South Korea; Digital Economy Agreement between the United Kingdom of Great Britain and Northern Ireland and the Republic of Singapore; Free Trade Agreement between the United Kingdom of Great Britain and Northern Ireland and New Zealand; Digital Partnership Agreement Between The Government of the Republic of Korea and the Government of the Republic of Singapore; AfCFTA Digital Trade Protocol (not yet coded): *University of Lucerne Faculty of Law. (n.d.). TAPED A Dataset on Digital Trade Provisions.* <https://www.unilu.ch/en/faculties/faculty-of-law/professorships/burri-mira/research/taped/>.
26. Halpert, M. (2021). Eyeing more U.S.-EU cooperation on climate, tech, WTO reform in 2022. *Inside US Trade Daily Report.* <https://www.proquest.com/trade-journals/eyeing-more-u-s-eu-cooperation-on-climate-tech/docview/2615267383/se-2>.
27. *Asian News International.* (2023). India, EU to coordinate within global partnership on artificial intelligence. <https://www.proquest.com/newspapers/india-eu-coordinate-within-global-partnership-on/docview/2814125430/se-2>.
28. Giardini, T. & Fritz, J. (2024). *The Anatomy of AI Rules.* Digital Policy Alert. <https://digitalpolicyalert.org/ai-rules/the-anatomy-of-ai-rules#:~:text=We%20find%20that%20AI%20rules,requirements%2C%20creating%20a%20regulatory%20patchwork>.
29. McCallum, S. (2023). ChatGPT banned in Italy over privacy concerns. *BBC News.* <https://www.bbc.com/news/technology-65139406>.
30. Kang, C. (2023). In the U.S., Regulating A.I. Is in Its ‘Early Days’. *The New York Times.* <https://www.nytimes.com/2023/07/21/technology/ai-united-states-regulation.html>.
31. Kang, C. and Metz, C. (2023). F.T.C. Opens Investigation Into ChatGPT Maker Over Technology’s Potential Harms. *The New York Times.* <https://www.nytimes.com/2023/07/13/technology/chatgpt-investigation-ftc-openai.html>.
32. World Trade Organization (WTO). (n.d.). *Computer and related services.* https://www.wto.org/english/tratop_e/serv_e/computer_e/computer_e.htm
33. Ambrus, É. (2020). Artificial intelligence as a dual-use technology. *Academic and Applied Research in Military and Public Management Science*, vol. 19, no. 2, pp. 19-28. <https://doi.org/10.32565/aarms.2020.2.2>.
34. Vincent, J. (2022). The lawsuit that could rewrite the rules of AI copyright. *The Verge.* <https://www.theverge.com/2022/11/8/23446821/microsoft-openai-github-copilot-class-action-lawsuit-ai-copyright-violation-training-data>.
35. Vincent, J. (2023). Getty Images is suing the creators of AI art tool Stable Diffusion for scraping its content. *The Verge.* <https://www.theverge.com/2023/1/17/23558516/ai-art-copyright-stable-diffusion-getty-images-lawsuit>.
36. Small, Z. (2023). As Fight Over A.I. Artwork Unfolds, Judge Rejects Copyright Claim. *The New York Times.* <https://www.nytimes.com/2023/08/21/arts/design/copyright-ai-artwork.html>.
37. *World Trade Organization.* (n.d.). *Part II – Standards concerning the availability, scope and use of Intellectual Property Rights.* https://www.wto.org/english/docs_e/legal_e/31bis_trips_04_e.htm#1.
38. Rallabhandi, K. (2023). THE COPYRIGHT AUTHORSHIP CONUNDRUM FOR WORKS GENERATED BY ARTIFICIAL INTELLIGENCE: A PROPOSAL FOR STANDARDIZED INTERNATIONAL GUIDELINES IN THE WIPO COPYRIGHT TREATY. *The George Washington International Law Review*, vol. 54, no. 2, pp. 311-347. <https://www.proquest.com/scholarly-journals/copyright-authorship-conundrum-works-generated/docview/2807414035/se-2>.
39. Ibid.
40. George, A. and Walsh, T. (2022). Artificial intelligence is breaking patent law. *Nature.* <https://doi.org/10.1038/d41586-022-01391-x>.
41. Moris, F. (n.d.). *Semiconductors: the building blocks of the information revolution.* Computers and Semiconductors. <https://www.bls.gov/mlr/1996/08/art2full.pdf>.
42. Congressional Research Service. (2023). *Semiconductors and the Semiconductor Industry.* <https://crsreports.congress.gov/product/pdf/r/r47508>.
43. Ibid.
44. Ibid.
45. Lin Feng, L. S. (2022). *China launches WTO dispute over US chip export controls.* Washington: Federal Information & News Dispatch. <https://www.proquest.com/reports/china-launches-wto-dispute-over-us-chip-export/docview/2759970186/se-2>.
46. Boukherouaa, E. et al. (2021). *Powering the Digital Economy: Opportunities and Risks of Artificial Intelligence in Finance.* International Monetary Fund. <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2021/10/21/Powering-the-Digital-Economy-Opportunities-and-Risks-of-Artificial-Intelligence-in-Finance-494717>.
47. Chander, A. and Schwartz, P. (2023). Privacy and/or trade. *The University of Chicago Law Review*, vol. 90, no. 1, pp. 49-135. <https://www.proquest.com/scholarly-journals/privacy-trade/docview/2780450282/se-2>.
48. Shumailov, I. et al. (2023). The Curse of Recursion: Training on Generated Data Makes Models Forget. *Ariv.* https://arxiv.org/abs/2305.17493?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosam&stream=top.
49. De Vynck, G. (2023). AI images are getting harder to spot. Google thinks it has a solution. *The Washington Post.* <https://www.washingtonpost.com/technology/2023/08/29/google-wants-watermark-ai-generated-images-stop-deepfakes/>.
50. Fried, I. (2023). “Nutrition labels” aim to boost trust in AI. *Axios.* <https://www.axios.com/2023/08/23/ai-nutrition-labels-trust>.

51. Jiang, T., Hu, Y., Haleem, F., & Zeng, S. (2023). Do digital trade rules matter? empirical evidence from TAPED. *Sustainability*, vol. 15, no. 11. <https://doi.org/10.3390/su15119074>.
52. Ibid.
53. Ferencz, J., López-González, J., & García, I. (2022). *Artificial intelligence and international trade: Some preliminary implications*. Organisation for Economic Cooperation and Development (OECD). <https://www.proquest.com/reports/artificial-intelligence-international-trade-some/docview/2658291484/se-2>.
54. Asher-Schapiro, A. (2023). FEATURE-California hotel workers strike back over 'union busting' app. *Reuters*. <https://www.reuters.com/article/usa-tech-workers/feature-california-hotel-workers-strike-back-over-union-busting-app-idINL8N3920JO>.
55. Ellingrud, K. (2023). *Generative AI and the future of work in America*. McKinsey Global Institute. <https://www.mckinsey.com/mgi/our-research/generative-ai-and-the-future-of-work-in-america>.
56. Barrett, H. & Pendell, R. (2023). 72% of Top CHROs See AI Replacing Jobs — And Workers Aren't Ready. *Gallup*. https://www.gallup.com/workplace/509540/top-chros-replacing-jobs.aspx?utm_source=news&utm_medium=email&utm_campaign=front_page_email_5_august_08292023&utm_term=newsletter&utm_content=read_article_textlink_4.
57. Kindig, B. (2024). AI Power Consumption: Rapidly Becoming Mission-Critical. *Forbes*. <https://www.forbes.com/sites/bethkindig/2024/06/20/ai-power-consumption-rapidly-becoming-mission-critical/#:~:text=The%20EA%20is%20projecting%20global,than%20double%20to%201%20C050%20TWh>.
58. Congressional Research Service. (2023). *Artificial Intelligence: Overview, Recent Advances, and Considerations for the 118th Congress*. <https://crsreports.congress.gov/product/pdf/R/R47644>.
59. Europol. (2022). *Facing reality? Law enforcement and the challenge of deepfakes*. https://www.europol.europa.eu/cms/sites/default/files/documents/Europol_Innovation_Lab_Facing_Reality_Law_Enforcement_And_The_Challenge_Of_Deepfakes.pdf?utm_source=Triggermail&utm_medium=email&utm_campaign=C%26T%20Briefing%20082923&utm_term=Connectivity%20%26%20Tech%20Briefing%20Active.
60. Thornhill, J. (2023). What happens when AI passes through the 'uncanny valley'? *Financial Times*. <https://www.ft.com/content/61f22acc-d359-441e-8c3d-875fcc4f95b2>.
61. Bousquette. (2023). Companies Will Use Generative AI. But Will They Tell You About It? *The Wall Street Journal*. <https://www.wsj.com/articles/companies-will-use-generative-ai-but-will-they-tell-you-about-it-a4cab6b9>.
62. Shumailov, I., Z. Shumaylov, Y. Zhao, Y. Gal, et al. (2023). The Curse of Recursion: Training on Generated Data Makes Models Forget. *arXiv*. https://arxiv.org/abs/2305.17493?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosam&stream=top.
63. Lohr, S. (2023). The A.I. Revolution Is Coming. But Not as Fast as Some People Think. <https://www.nytimes.com/2023/08/29/technology/ai-revolution-time.html>.
64. Burri, M. (2023). The impact of digitalization on global trade law. *German Law Journal*, vol. 24, no. 3, pp. 551-573. <https://doi.org/10.1017/glj.2023.2>.



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