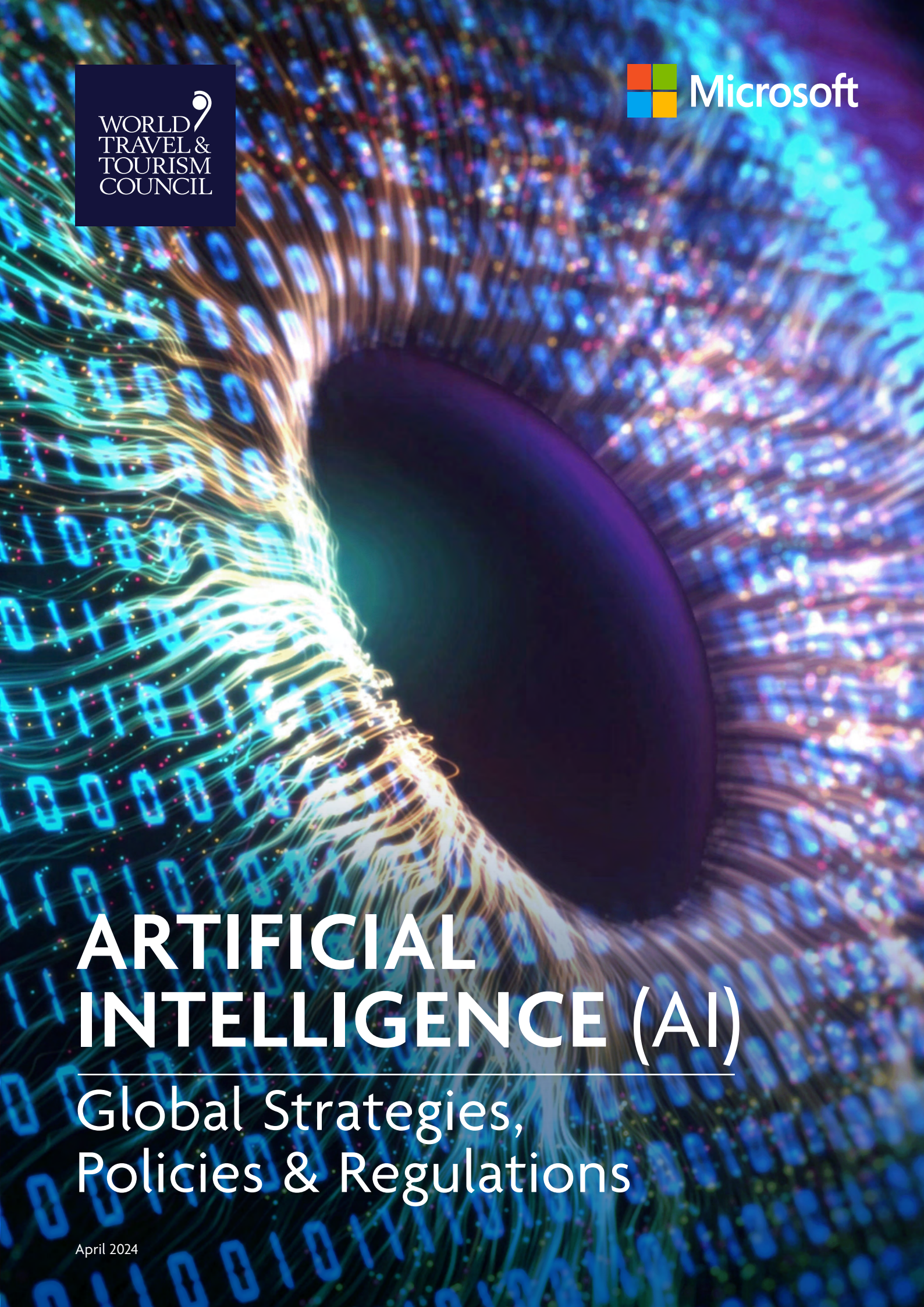
WORLD TRAVEL & TOURISM COUNCIL

Microsoft



ARTIFICIAL INTELLIGENCE (AI)

Global Strategies, Policies & Regulations

April 2024

CONTENTS

EXECUTIVE SUMMARY

The future of AI will depend on the future regulation of AI. Many governments and organisations around the world are issuing 'AI guidance', developing 'AI strategies' and discussing what AI regulation should involve. Some countries are moving towards nation-wide AI regulation, whilst others are considering regulations for specific AI applications. WTTC will continue to monitor key developments in the regulation of AI, particularly as leading nations and intergovernmental bodies such as the UN, EU, China and the U.S develops their approaches to AI governance and WTTC will continue to call for international alignment and harmonisation of regulatory practices.

This report provides an overview of AI strategies, policies and regulations for several countries up to the time of publication of this report, with a high level summary of each below. More countries and details will be added in future editions of this report as the global AI landscape evolves and changes.

This report accompanies the WTTC report **"Introduction to Artificial Intelligence: A Guide for Travel & Tourism Leaders"**

International (UN, OECD, G20 & G7)

Several international organisations are working on the global co-ordination of AI governance, including policies, strategies and regulations for the safe and trustworthy development and use of AI. These aim to promotes the innovative adoption of AI, with careful management of its risks.

The **United Nations (UN**) and over 40 UN entities (such as UNESCO) are actively working on AI. The UN has therefore established an **Interagency Working Group on AI (IAWG-AI)** to co-ordinate a framework for the safe and ethical use of AI across the UN system, that can also accelerate the achievement of the 17 UN Sustainable Development Goals (SDGs). The **UN Security Council (UNSC)** and **UN General Assembly (UNGA)** have also considered AI, with a UNSC holding a debate on AI risks to world peace and security in 2023 and a UNGA resolution on safe and trustworthy AI for sustainable development adopted in 2024. To address the internationally co-ordinated governance of AI, the UN Secretary General has established a **High Level Advisory Board on AI**, which has issued interim advice in late 2023 and will provide its final recommendations at the UN Summit of the Future in September 2024.

The **Organisation for Economic Co-operation & Development (OECD)** is actively involved in helping countries to identify good practices and public policy in AI. It runs several AI initiatives including an **AI Policy Observatory**, an **AI Incident Monitor** and developed the words first intergovernmental **Principles for AI** in 2019. OECD has also collaborated with its Member States and partners to define an 'AI System', which is important for governments when regulating AI to achieve interoperability across countries.

The **G20** endorsed the OECD Principles in 2019 as the **G20 AI Principles** and are pursuing pro-innovation regulatory and governance approaches to maximise the benefits of AI, whilst the **G7** has adopted **Guiding Principles** and a **Code of Conduct** for organisations developing advanced AI systems. The G7 countries are also working together to support AI adoption and collaborating for the safe use of AI in public sector services.

European Union (EU)

The European Union (EU) has taken a strategic approach to AI since 2017. Key actions since then have included a **Declaration of Cooperation on AI** by 25 EU Member States, an **EU Coordinated Plan for AI**, and the formation of a **High-Level Expert Group on AI** to develop ethical guidelines. The EU's AI strategy involves increasing investment in AI, preparing Europe for social and economic changes, and an ethical and legal framework for AI.

In 2021, the EU proposed the **Artificial Intelligence Act (AIA)** to regulate AI across Europe, which is expected to be adopted by the end of 2024 and fully enforced 24 months later, with some parts applicable sooner. The Act focusses on issues such as data quality, transparency, human oversight, and accountability. The **EU AIA categorises AI systems into four risk levels** and imposes strict obligations on high-risk AI systems, as well as banning specific unacceptable risk applications. The **European Aviation Safety Agency (EASA)** has also published an **AI Roadmap** which outlines their vision for the safety and ethical areas that must be considered for the use of AI in European aviation.

The EU has produced several AI guidance reports and thought leadership documents and plans to invest **€1 billion (EUR) annually in AI** and raise **€20 billion (EUR) for AI development by 2030**. The EU also plans to modernise its liability framework to include digital products and introduce a new AI Liability Directive to address potential damages caused by AI systems.

United Kingdom (UK)

The **UK's technology industry has reached a market value of £1 trillion (GBP)**, making it only the third country in the world to achieve this milestone, after the USA and China. As the UK emerged from the COVID-19 pandemic, the UK government's '**Build Back Better**' plan emphasised the importance of innovation and committed to doubling **R&D investment in AI to £22 billion (GBP) by 2024-2025**

The UK government has chosen not to establish a single, dedicated AI law (such as being developed in the EU), but rather empower their existing regulators to manage AI governance on a sector-by-sector basis, leveraging existing laws and agencies to address emerging risks efficiently.

The **UK National AI Strategy** aims to make the UK an attractive hub for AI development and a 2022 review showed good progress on the short, medium, and long-term goals of the strategy, with substantial investments in AI projects and scholarships.

The UK is also taking a global leadership role in **'AI Safety'** and in 2023, hosted the world's first **AI Safety Summit** and introduced a **Pro-Innovation Approach to AI white paper**, outlining principles for the safe and innovative development and use of AI. The white paper committed the UK's existing regulators to providing guidance, along with risk assessment templates to the sectors they oversee. The UK also allocated **£100 million (GBP) to a new AI Foundation Model Task Force**, which evolved into a new permanent and dedicated **AI Safety Institute** and the country actively contributes to international AI standards development, aiming to be a "global standards maker."

France

In 2018 France launched a **National Strategy for AI (SNIA)**. The first phase ran from 2018 to 2022 and created a network of AI laboratories, doctoral research programmes and AI projects across France, with a second phase running from 2022 to 2025, aimed at positioning France as a global leader in AI.

The French **National Institute for Research in Digital Science & Technology (INRIA)** co-ordinates an extensive national AI research programme and signed a partnership agreement with the UK to collaborate on **AI safety research.**

In March 2024, the French **Artificial Intelligence Commission**, submitted a report to the French government featuring **25 recommendations** to make France a major player in the field of AI and the **National Pilot Committee for Digital Ethics (CNPEN)** has produced **22 recommendations** to address the ethical issues of generative AI.

Germany

Germany first published a **National AI Strategy** in 2018, which was updated in 2020 and aims to make Germany a leading centre for AI, with commitments from the government to promote **digital skills**, strengthen **AI research and development** and support **AI innovation initiatives.**

The **Federal Ministry of Education & Research (BMBF)** promotes research and development, with its annual budget for AI related projects increasing more than 20-fold between 2017 and 2023. The BMBF published an **AI Action Plan** in November 2023, with the **German Research Centre for Artificial Intelligence (DFKI)** leading the way as the world's largest independent research centre. It is currently involved in over **500 AI research projects.**

The **Federal Ministry for Economic Affairs & Climate Action (BMWK)** has also launched a **Regulatory Sandbox Strategy** which aims to foster digital innovation through tests of AI systems in real-life environments and the **German AI Association,** has launched an **'AI Seal of Quality'** for AI solutions that meet high quality standards for ethics, impartiality, transparency, security and data protection.

The German **'FAIR Forward – AI for All'** initiative by the **Federal Ministry for Economic Co-operation & Development** aims to support the use of AI in Africa and Asia and currently has active AI projects in **Ghana, Rwanda, Kenya, South Africa, Uganda, Indonesia,** and **India.**

Italy

Italy has been at the forefront of innovation for centuries and is home to the **Leonardo supercomputer** (the 4th fastest computer in the world in 2022) and the Vatican **Rome Call for AI Ethics,** which introduced the concept of "algor-ethics". This is a voluntary pledge to develop AI algorithms aligned with ethical standards.

Italy has also played a prominent role in AI research for many years and in 2021 established the national **Artificial Intelligence PhD Programme (PhD-AI.it)** which is one of the largest and most ambitious PhD programmes in AI anywhere in the world.

In 2021, Italy also published its national **Strategic Programme on Artificial Intelligence 2022-2024** which outlines **24 policies** to be implemented over three years. To help achieve these objectives several Italian research bodies, universities and companies joined forces to form the non-profit **FAIR Foundation** for **Future Artificial Intelligence Research,** which aims to put the AI strategy's objectives into action.

In 2024, Italy holds the Presidency of the G7 and has committed **AI to be a key strand of the official 2024 G7 programme.**

United States of America (USA)

Silicon Valley in the U.S is home to some of the world's greatest AI companies, but the **U.S does not yet have comprehensive national level AI legislation**. Instead, many US government agencies have issued AI best practices, advice and guidance covering the use of AI in areas ranging from medical devices to national security.

In 2022, a voluntary non-binding **'Blueprint for an AI Bill of Rights'** was introduced by the White House, which proposed organisations adopt five strategic actions for the safe use of AI and several U.S. States and cities have started to propose, or enact, local AI legislation, focussed on the use of AI in both the public and private sectors.

AI is a vibrant sector in the U.S. and multiple efforts are underway to guide the innovative and ethical development of AI technology. This includes an **AI Risk Management Framework** from the U.S National Institute of Standards & Technology (NIST) and a **National AI R&D Strategic Plan** which aims for continued U.S. leadership in the development of trustworthy AI and to ensure that AI delivers its full potential for the American population, with its risks appropriate managed.

In October 2023, the U.S Government issued an **Executive Order on the Safe, Secure & Trustworthy Development and Use of AI.** This establishes a government wide effort to guide the development of responsible AI through U.S Federal agency leadership, regulation of industry and engagement with international partners. **The Executive Order directs over 50 Federal entities to implement more than 100 AI related actions across 8 policy areas.**

The U.S also announced the creation of the **U.S AI Safety Institute** in November 2023 to develop guidelines, tools, benchmarks and best practices for evaluating and mitigating the safety risks of advanced AI systems. The Institute is supported by the **U.S. AI Safety Institute Consortium (AISIC)** which brings together over 200 organisations from industry, academia and State/Local government to collaboratively drive forward the development and deployment of safe and trustworthy AI.

Canada

Canada is a leading nation in the field of artificial intelligence and was the **first country in the world to issue a National AI Strategy in 2017 (updated in 2022)**. The country hosts major AI research hubs in Edmonton, Montreal, and Toronto, with Toronto University recognised as a global centre for AI research.

The Canadian government acknowledges the potential benefits and risks of AI and introduced Bill C-27 in 2022, which includes the **Artificial Intelligence and Data Act (AIDA)**. The AIDA aims to regulate the design, development, and use of AI across Canada, drawing on approaches from the EU, UK, and USA.

The **AIDA focuses on high-impact AI systems** and introduces obligations for developers and operators to mitigate biased outputs and other risks. A new office, headed by an **AI & Data Commissioner**, would administer the Act and the Canadian government plans to allow ample time for the AI community to adjust to the new framework, with potential adoption of the Act in 2025 after further consultation.

Additionally, Canada is undertaking privacy law reforms at both the Federal and Provincial levels, with the national **Consumer Privacy Protection Act (CPPA)** and **Québec's Bill 64** both addressing automated decision making and consumer rights regarding personal data use.

China

China is a dominant force in Artificial Intelligence, with ambitious goals for the Chinese AI industry to generate one trillion (RMB) annually by 2030 and to develop a 10 trillion (RMB) AI industry. China has issued regulations for specific AI applications, including **recommendation algorithms** and **synthetically generated content** such as 'deepfakes', with a mandatory **algorithm registry** for transparency and auditing of AI systems. China has also issued various AI governance documents, including **codes of ethics** and **principles for responsible AI development**.

In response to the enormous growth of AI chatbots in 2023, **interim measures for managing 'generative AI' services** have been introduced, with AI legislation also extending to the provincial and city level, with **Shanghai** and **Shenzhen** enacting their own AI development regulations.

In June 2023, China announced it is preparing a **national Artificial Intelligence Law**, which could become a very significant global legislation, influencing the use of AI in various industries and technologies worldwide.

Japan

In 2016, Japan introduced **Society 5.0** which envisions a sustainable and economically successful future, powered by advanced technologies, such as **AI, big data and robotics**. Japan's AI regulatory policy aims to realise their Society 5.0 vision and is based on 7 social principles for human centric AI.

Japan published its first **National AI Strategy** in 2019, with updates in 2021 and 2022, to focus on AI's ability to tackle pandemics, natural disasters, and climate change. The country has also issued several AI guidance documents targeting different sectors and aspects of AI development, including privacy and quality management. Japan is also considering the future of generative AI tools and has addressed copyright protection and governance issues related to generative AI art.

In 2023, Japan chaired the G7 group of nations and the G7 Digital & Technology Ministers endorsed a **G7 AI Action Plan to enhance global interoperability of Trustworthy AI**, whilst leading Japanese companies including **Fujitsu, Sony**, and **NEC** are taking a proactive approach to AI safety, publishing their own AI ethics guidelines and implementing principles to ensure responsible AI use.

Singapore

Singapore has emerged as a leading nation in technology driven innovation. The country launched its **Smart Nation** initiative in 2014, aimed at leveraging technology to enhance the lives of its citizens. Since then, Singapore has made significant investments in AI research and development, surpassing many other countries in AI spending as a percentage of GDP.

The country's AI development is driven by various agencies, including **AI Singapore (AISG)**, which fosters collaboration between research institutions, startups, and companies to build national AI capabilities. AISG's flagship initiative, '**100 Experiments**' helps organisations to solve AI related challenges by building custom AI solutions.

The **National AI Office** oversees the delivery of the **National AI Strategy** and is focussed on partnerships, talent development and international collaboration, with the National AI Strategy promoting the **deployment of AI in seven key specific sectors**.

Regulatory agencies in Singapore have also issued legislation, guidance, and self-assessment tools to promote ethical and responsible AI usage. Initiatives such as the **AI Verify** framework and toolkit enable companies to measure and demonstrate their responsible AI practices, ensuring transparency, fairness, and accountability in AI systems. Singapore has also entered into **Digital Economy Agreements (DEAs)** with several countries to facilitate international digital trade and cross-border cooperation on AI and data flows.

Australia

The **Australian Government aims to position Australia as a leader in the global digital economy,** including a focus on AI, Quantum Computing and Robotics. The **Australian AI Action Plan** published in 2021 (prior to a national election) was archived by the new government, and a new consultation on **Safe & Responsible AI** was issued in 2023, with a government interim response published in January 2024 that committed to reviewing laws and safeguards for the development and use of AI in Australia.

Concerns about potential AI misuse have also led to a voluntary **AI Ethics Framework,** which aims to build public trust, drive consumer loyalty, and ensure all Australians benefit from AI, with several publications from the **Australian Human Rights Commission (AHRC)** focussed on good AI governance and leadership.

A **Responsible AI Network** has also been established, along with a **National AI Centre,** and a **Critical Technologies Statement** which are all contributing to Australia's progress in AI innovation, risk management and adoption.

At the state level, **New South Wales (NSW)**, which contains the cities of Syndey and Melbourne, has also been actively considering AI and has published an AI strategy, established an AI advisory committee, launched public campaigns and implemented an AI assurance framework for state government agencies.

1. INTERNATIONAL (UN, OECD, G20 & G7)

International organisations and forums including the United Nations (UN), Organisation for Economic Co-operation & Development, (OECD), G20 and G7 are addressing global efforts to co-ordinate the development of AI policies, strategies and regulations.

United Nations (UN)

"If we are to harness the benefits of AI and address the risks, we must all work together - governments, industry, academia and civil society - to develop the frameworks and systems that enable responsible innovation"

-UN Secretary General, Antonio Guterres (AI for Good Summit, Geneva 2019)

The United Nations has been active in the field of Artificial Intelligence (AI) since 2017 when the UN Chief Executives Board for Coordination (CEB) examined several "frontier topics" to provide informed support and advice to Member States in a world of rapidly evolving technologies.

By May 2019, the UN had completed work on three frontier areas (Artificial Intelligence, the Future of Work and Innovative Education) and in 2020 established a **UN Interagency Working Group of AI (IAWG-AI)**[1], co-chaired by the International Telecommunications Union (ITU), the UN agency responsible for digital technology and the UN Educational, Scientific and Cultural Organisation (UNESCO).

In 2022 the UN CEB endorsed the **Principles for the Ethical Use of AI in the UN System**, based on **Recommendations on the Ethics of AI**[2] adopted by UNESCO in 2021.

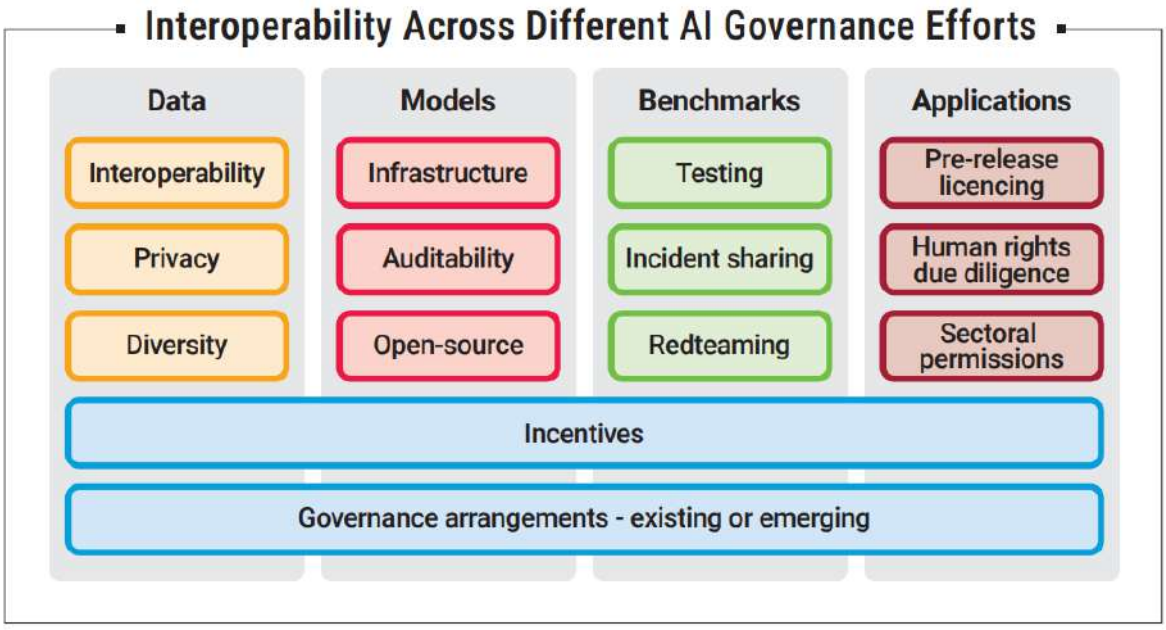
Also in 2022, the ITU compiled an **interactive directory and report on the use of AI across the UN**[3], in partnership with over 40 UN entities and identified 281 UN AI projects. These ranged from smart agriculture and food systems to transportation, financial services, healthcare and AI systems to combat COVID-19. Many of these were directly helping to accelerate the delivery of the 17 UN Sustainable Development Goals (SGDs).

Following the extensive use of AI across the UN, the UN High Level Committee on Programmes (HLCP) established a **Task Force to develop an Operational Framework for the use of AI in the UN System**[4] in October 2023, which would develop guidance and policy for the use of AI in the UN and promote mechanisms for sharing technical capacity and knowledge on AI.

In response to the worldwide and rapid development and use of AI and the need for co-ordinated governance, the UN Secretary General convened a multi-stakeholder **High Level Advisory Board on AI**[5] in October 2023 to undertake analysis of the situation and provide recommendations for the international governance of AI. This includes whether a new AI dedicated UN entity should be established, which has been suggested by some UN Member State and leading AI stakeholders.

The UN High Level Advisory Board on AI has 32 experts from around the world and published its **Interim Report on Governing AI for Humanity**[6] in late 2023, with its final report to be published at the **UN Summit of the Future** in September 2024.

The Interim Report identified the below simplified schema for interoperability across four key AI governance areas – Data, AI Models, Benchmarks and AI Applications – and would develop this further during its work in 2024.



UN Governing AI for Humanity : Interim Report (December 2023)

The Interim Report also identified five preliminary guiding principles for the governance of AI:

1. AI should be governed inclusively, by and for the benefit of all
2. AI must be governed in the public interest
3. AI governance should be built in step with data governance and the promotion of data commons
4. AI governance must be universal, networked and rooted in adaptive multi-stakeholder collaboration
5. AI governance should be anchored in the UN Charter, International Human Rights Law, and other agreed international commitments such as the UN Sustainable Development Goals (SDG)

Through other mechanisms of the UN, in July 2023 the **UN Security Council (UNSC) convened a debate on the opportunities and risks of AI to world peace and security**[7], under the UNSC Presidency of the UK.

During the debate the UN Security Council Member States acknowledged the urgency of addressing AI, including the need for meaningful human control of AI powered autonomous weapons and actions to prevent malicious cyberoperations, disinformation and hate speech.

In his opening remarks[8], the UN Secretary General recalled his speech to the UN General Assembly in 2017 where he said that *"AI would have a dramatic impact on sustainable development, the world of work and the social fabric"*. He also pointed out that AI could have huge social and economic benefits, highlighting the finance industry estimates that AI could contribute up to $15 trillion (USD) to the global economy by 2030, but also concern that the UN High Commissioner for Human Rights has expressed alarm over evidence that AI could amplify bias, reinforce discrimination and enable new levels of authoritarian surveillance. He therefore urged the Security Council to address existing challenges, while also creating the capacity to monitor and respond to future AI risks. He also welcomed calls from some Member States to create a new UN entity that would support collective international action to govern AI.

The debate concluded with agreement that many of the issues raised would be further considered at the world's first **AI Safety Summit** hosted by the UK in November 2023.

At the UK AI Safety Summit (covered in the UK chapter of this report), **UN Secretary General Antonio Guterres** stated in his opening remarks that *"the speed and reach of today's AI technology is unprecedented"* and that *"AI associated risks are many and varied and that like AI itself, they are still emerging and demand new solutions. But let's be clear - they do not demand new principles. The principles for AI governance should be based on the United Nations Charter and the Universal Declaration of Human Rights and we urgently need to incorporate these principles into AI Safety."*

"The principles for AI governance should be based on the UN Charter and the Universal Declaration of Human Rights"

-Antonio Guterres, UK AI Safety Summit (November 2023)

He went on to say that *"we need a united, sustained, global strategy, based on multilateralism and the participation of all stakeholders"* to make AI safe and called for three areas of activity during the first international AI Safety Summit in the UK:

- A framework to deal with AI risks, so that developers and the public are safe and can have confidence in AI
- A framework to monitor and analyse AI trends to prevent AI assisted misinformation, manipulation and dangerous AI enabled weapons
- Every country and every community to have access to AI and the digital and data infrastructure it requires, so that AI's huge potential can be realised, especially in areas such as climate change, healthcare, education and the acceleration of the 17 UN Sustainable Development Goals (SDG)

To further enhance the effective use and governance of AI, the **UN General Assembly** adopted a resolution to **'Seize the opportunities of safe, secure and trustworthy AI systems for sustainable development"**[9] in March 2024.

The resolution was proposed by the United States and supported by more than 120 UN Member States. It was the first time the UN General Assembly had adopted a resolution on regulating AI and called on countries to *"refrain from, or cease the use of, AI systems that are impossible to operate in compliance with international human rights law, or that pose undue risks to the enjoyment of human rights"*. It also added that *"the same rights that people have offline must also be protected online, including throughout the life cycle of AI"*.

The General Assembly also recognised the *"varying levels of technological development between and within countries"* and that developing nations face unique challenges in keeping up with the rapid pace of innovation. The resolution therefore urged Member States and stakeholders to cooperate to close the 'digital divide' and support all countries so that everyone can benefit from inclusive and equitable access to technology and AI.

U.S National Security Advisor, Jake Sullivan said that *"Developed in consultation with civil society and private sector experts, this resolution squarely addresses the priorities of many developing countries, such as encouraging AI capacity building and harnessing the technology to advance sustainable development. Critically, the resolution makes clear that protecting human rights and fundamental freedoms must be central to the development and use of AI systems"* [10]

US Ambassador & Permanent Representative to the UN, Linda Thomas-Greenfield added *"Let us commit to closing the digital gap within and between nations and using this technology to advance shared priorities around sustainable development" and that "We intend for this resolution to complement future UN initiatives, including negotiations toward a global digital compact and the work of the Secretary General's High Level Advisory Body on AI"*[11]

Organisation for Economic Cooperation & Development (OECD)

The Organisation for Economic Cooperation and Development (OECD) is an international organisation of 38 Member States that work together to shape policies that foster prosperity, equality, opportunity and well-being for all.

In the field of Artificial Intelligence, OECD supports governments by measuring and analysing the economic and social impacts of AI technologies and engaging with all stakeholders to identify good practices and public policy.

OECD AI activities include:

- **AI System Definition** : If governments are to legislate and regulate AI, a common definition allows for interoperability across jurisdictions.
- **OECD AI Principles** : Concrete recommendations for public policy and strategy that can be applied to AI developments around the world. These were the world's first intergovernmental standards for AI adopted in May 2019.
- **Classification of AI Systems** : A user friendly tool that helps policy makers and regulators to assess the opportunities and risks that different types of AI systems present.
- **AI Policy Observatory** : International collection of AI policies, data and analysis to share information and help shape the development of trustworthy AI.
- **AI Incidents Monitor (AIM)** : A database of AI incidents that will establish a collective understanding of AI risks and negative outcomes.
- **AI Publications & Events** : Documentation and events to help policymakers, practitioners and all AI stakeholders in the development and use of trustworthy AI.
- **OECD Working Party on AI Governance (AIGO), Expert Groups and AI Network of Experts** : The AIGO is a working party of representatives from OECD Member States. They oversee the OECD work programme on AI policy and governance and are supported by an OECD AI Network of Experts who are an informal group of over 250 AI experts from governments, businesses, academia and civil society around the world. Dedicated Expert Groups are also established to address specific topics such as the 'OECD AI Expert Group on Compute & Climate' which is creating a framework for understanding, measuring and benchmarking AI computing capacity by country and region.

In November 2023, OECD Member States approved a revision to their **definition of an AI system**[12] to:

An AI system is a machine based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment

A commonly agreed definition of an AI system is important to act as a foundation for legislation, regulation and interoperability across countries.

The **OECD AI Policy Observatory**[13] is a very useful resource for all readers of this report and combines resources from across OECD Member States, partners and the OECD AI Network of Experts to provide an extensive country dashboard for over 70 countries. The dashboard includes an active AI blog, as well as AI documents published by each country (such as national AI strategies and guidance), as well as data trends, such as the amount of investment in AI and the volume of AI research publications by country (where data is available).

In late 2023, OECD published the following documents to support further AI policy makers and stakeholders:

- The State of Implementation of the OECD AI Principles - 4 Years On (2019-2023)[14]
- Initial Policy Considerations for Generative AI[15]

Moving forward OECD will continue to create a platform for long-term international and multi-stakeholder collaboration, knowledge sharing and dialogue, that will allow all AI stakeholders to engage in collaborative discussions on AI policy and governance, and to measure collective progress around the world.

G20

In 2019 Japan held the presidency of the G20 group of the world's largest economies. The G20 recognised the importance of developing public trust and confidence in AI technologies and that a framework was required to manage the risks of AI and to fully realise its potential.

In June 2019 the G20 Trade & Digital Economy Ministers met and agreed that innovative digital technologies can create challenges, but also bring immense economic opportunities. At this meeting they endorsed the OECD Principles developed earlier in 2019 as non-binding **G20 AI Principles**[16].

These include principles such as 'transparency & explainability', 'robustness, security & safety' and 'accountability' for the trustworthy development and use of AI.

These G20 AI Principles were further supported under the presidencies of Saudi Arabia (2020), Italy (2021), Indonesia (2022) and India (2023), with the G20 New Delhi Leaders Declaration[17] in September 2023 noting that the G20 leaders:

- Reaffirm our commitment to the G20 AI Principles (2019) and endeavour to share information on approaches to using AI to support solutions in the digital economy
- Will pursue a pro-innovation regulatory/governance approach that maximises the benefits and considers the risks associated with the use of AI
- Will promote responsible AI for achieving the UN Sustainable Development Goals (SDGs)

In 2024, Brazil chairs the G20 where the Digital Economy Working Group will focus on "AI for Sustainable Development & Reduction of Inequality". This will discuss the challenges arising from the uneven global distribution of AI technology and infrastructure, with potential solutions to equip governments, the private sector and civil society, with the capabilities and tools necessary to address this challenge.

G7

In May 2023, one of the most prominent international AI governance dialogues took place at the **G7 Hiroshima Summit**, where the leaders of the G7 nations (USA, Canada, Japan, UK, France, Germany, Italy,) launched the **Hiroshima AI Process** and issued a **G7 Leaders Statement on AI**[18].

The opening paragraph of the G7 Leaders Statement noted that *"We, the Leaders of the Group of Seven (G7), stress the innovative opportunities and transformative potential of advanced AI systems...and we also recognise the need to manage risks and to protect individuals, society, and our shared principles including the rule of law and democratic values, keeping humankind at the centre"*. The statement continued that *"we instruct relevant ministers to accelerate the process toward developing the **Hiroshima AI Process Comprehensive Policy Framework**"*.

G7 Hiroshima Summit (May 2023) : Leaders agree to establish the Hiroshima AI Process[19]

After further Ministerial level meetings and a multi-stakeholder high level meeting in Kyoto in October 2023, the **Hiroshima AI Process Comprehensive Policy Framework** was agreed and endorsed by the G7 Digital & Technology Ministers in December 2023. This policy framework included:

- **International 'Guiding Principles' for Organisations Developing Advanced AI Systems**[20]
- **International 'Code of Conduct' for Organisations Developing Advanced AI Systems**[21]

The **Guiding Principles** and **Code of Conduct** consist of voluntary guidance for organisations developing advanced AI systems and aim to *"promote safe, secure and trustworthy AI worldwide"*. They build on the OECD AI Principles and recommend that organisations developing advanced AI systems:

1. Take appropriate measures throughout the development of advanced AI systems, including prior to and throughout their deployment and placement on the market, to identify, evaluate, and mitigate risks across the AI lifecycle.
2. Identify and mitigate vulnerabilities, and, where appropriate, incidents and patterns of misuse, after deployment including placement on the market.
3. Publicly report advanced AI systems capabilities, limitations and domains of appropriate and inappropriate use, to support ensuring sufficient transparency, thereby contributing to increase accountability.
4. Work towards responsible information sharing and reporting of incidents among organisations developing advanced AI systems including with industry, governments, civil society, and academia
5. Develop, implement and disclose AI governance and risk management policies, grounded in a risk-based approach, including privacy policies, and mitigation measures.
6. Invest in and implement robust security controls, including physical security, cybersecurity and insider threat safeguards across the AI lifecycle.
7. Develop and deploy reliable content authentication and provenance mechanisms, where technically feasible, such as watermarking or other techniques to enable users to identify AI-generated content
8. Prioritise research to mitigate societal, safety and security risks and prioritise investment in effective mitigation measures.
9. Prioritise the development of advanced AI systems to address the world's greatest challenges, notably, but not limited to, the climate crisis, global health and education
10. Advance the development of and, where appropriate, adoption of international technical standards
11. Implement appropriate data input measures and protections for personal data and intellectual property

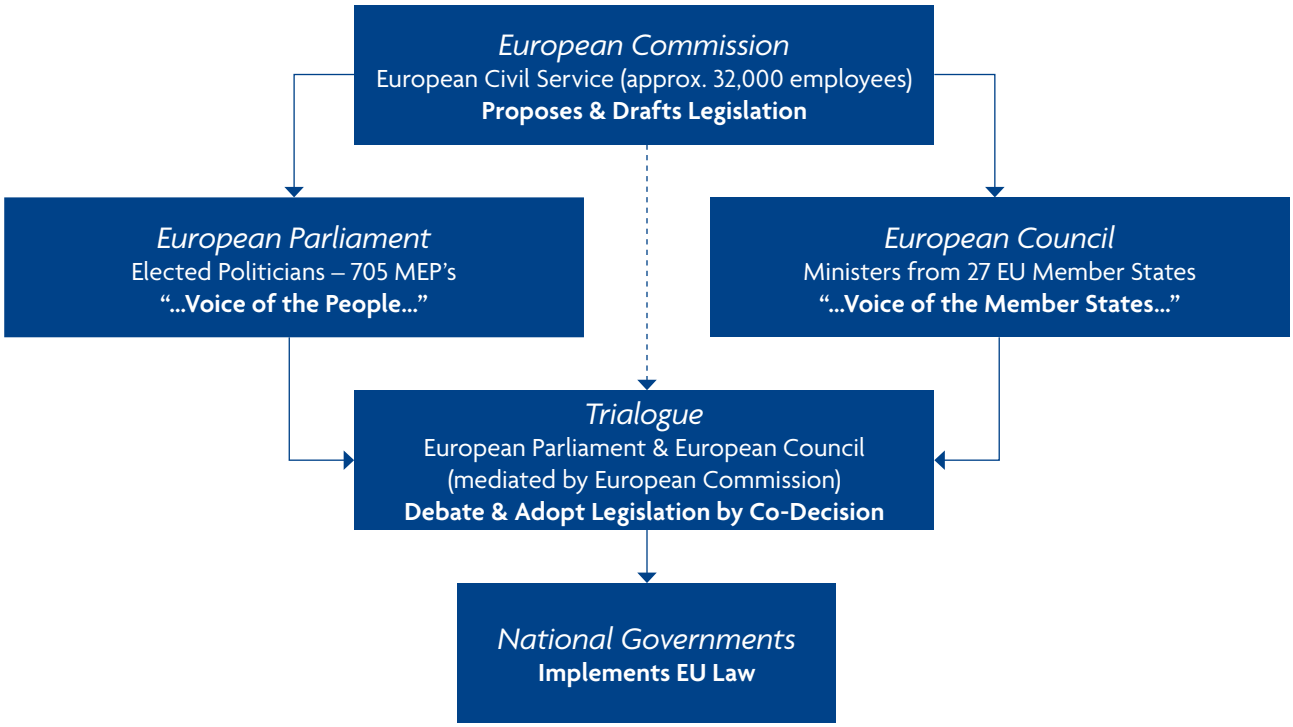
Moving forward the G7 plans to continue working on AI under Italy's G7 Presidency (in 2024) and engage with other governments to broaden international support for the 'Hiroshima AI Process Comprehensive Policy Framework' and to intensify coordination and cooperation with other multilateral forums, including the UN, OECD and G20.

In March 2024, a **Ministerial Declaration**[22] was signed under the Italian Presidency at the Industry, Technology & Digital Ministers meeting to unite and harness the innovative potential of AI. The G7 countries agreed to:

- Work together on a new report exploring how to ramp up AI adoption
- Establish a new semiconductor group to deepen collaboration on AI R&D priorities
- Develop an AI Toolkit and Compendium of Digital Public Services to support the safe and trustworthy deployment of AI across the public sector
- Develop mechanisms to monitor the voluntary adoption of the Hiroshima International Code of Conduct for Organisations Developing Advanced AI Systems

2. EUROPEAN UNION

European Process for Reviewing & Approving Legislation:



Work on a strategic approach to artificial intelligence in Europe started in 2017, with several wide ranging calls for action:

- The European Commission highlighted the importance of the EU being a world leader in *'AI technologies, platforms and applications'*, in its **Mid Term Review of the EU Digital Single Market Strategy** [23]
- The European Parliament and European Council called on the European Commission to urgently put forward an **Approach to AI in Europe** [24]
- The European Parliament issued **Recommendations on Civil Law Rules for Robotics** [25] (which led to the adoption of a **Comprehensive European Industrial Policy on AI & Robotics** in 2019 [26])
- The European Economic & Social Committee (EESC) issued an official opinion on the **Consequences of AI on the EU Single Market, Production, Consumption, Employment & Society** [27]

This led to more formal positions in 2018 with:

- A **Declaration of Cooperation on AI** [28] signed by 25 (of then 28) EU Member States : The countries agreed to *'work together on the most important issues raised by AI, from ensuring Europe's competitiveness in the research and deployment of AI, to dealing with social, economic, ethical and legal questions'*

- A **Coordinated Plan for AI** [29] from the European Commission : This aimed at coordinating the EU Member States' approaches to AI, including their national AI strategy objectives, their AI skills development programmes, their financing mechanisms available for AI development and their existing legislation and ethical guidance
- A **Communication on AI for Europe** [30] from the European Commission : This proposed a three pillar approach to 1) Increase public and private investment in AI, 2) Prepare Europe for the social and economic changes that will be introduced by AI, and 3) Ensure an appropriate ethical and legal framework is in place for AI development and use
- A **High Level Expert Group on Artificial Intelligence (AI HLEG)** : The European Commission appointed 52 experts to the AI HLEG who published the **1st EU AI Ethical Guidelines** [31] and **Policy & Investment Recommendations for Trustworthy AI** [32]
- A **European AI Alliance** [33] formed by the European Commission. This facilitates an open dialogue on AI with all interested European stakeholders. Today the Alliance overseas an **EU Assessment List for Trustworthy AI (ALTAI)** [34], which is a practical online tool that **helps businesses self-assess the trustworthiness of their AI systems** and measures alignment with the AI HLEG Ethical and Trustworthy AI Guidelines

This work all contributed to the European Commission publishing an **AI White Paper** [35] and **consultation** in 2020, which received over 1000 responses (and nearly 400 position papers on AI from organisations in the EU AI Alliance). Following a series of meetings and round tables discussions to consider all the societal, economic and scientific viewpoints, the European Commission presented a **Proposal for Harmonising AI Rules in Europe** [36] , an **AI Regulation Impact Assessment** [37] and an **Updated Coordinated Plan for AI** in 2021 [38].

The updated Coordinated Action Plan set 4 new policy objectives, which are supported by concrete actions, a timeline and potential funding mechanisms.

They are:

1. **Set enabling conditions for AI development and uptake in the EU** [39]
2. **Make the EU the place where excellence thrives from the lab, to the market** [40]
3. **Ensure that AI technologies work for people** [41]
4. **Build strategic AI leadership in high impact sectors** [42] (which are initially Environment, Health, Robotics, Public Sector, Home Affairs, Agriculture and Transport)

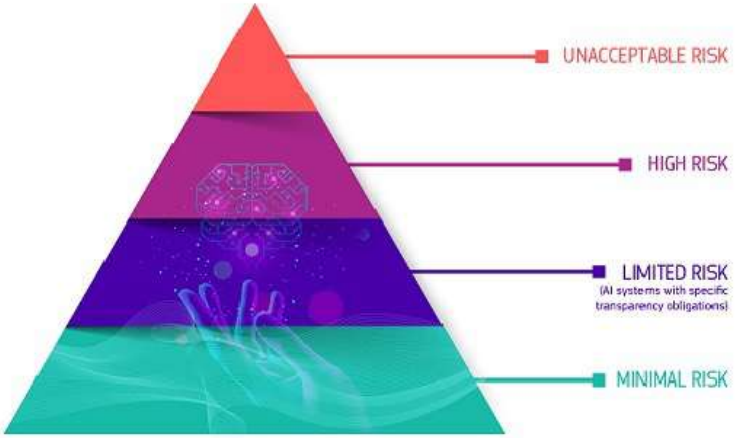
The updated Coordinated Action Plan also invited the EU Member States to review and update their national AI strategies in line with the Action Plan recommendations. The below table **summarises the status of national AI strategies in EU Member States (plus Norway and Switzerland)**[43],[44] in August 2023.

Country	Strategy Status	Date	Strategy Documents
Belgium	In Progress	TBC	AI 4 Belgium : Strategic Report [45]
Croatia	In Progress	TBC	
Greece	In Progress	TBC	
Romania	In Progress	TBC	Draft National Strategy [46]
Finland	Published	2017	AI 4.0 : First Progress Report (2021) [47]
France	Published	2018	National AI Strategy (French) [48]
Germany	Published	2018	National AI Strategy Update (2020) [49] National Data Strategy [50]
Sweden	Published	2018	National Approach to AI [51]
Czech Republic	Published	2019	National AI Strategy [52]
Denmark	Published	2019	Digital Growth Strategy [53] National AI Strategy [54]
Estonia	Published	2019	AI Taskforce Report [55] National AI Strategy [56]
Lithuania	Published	2019	National AI Strategy [57]
Luxembourg	Published	2019	AI : Strategy Vision for Luxembourg [58]
Malta	Published	2019	Malta : Ultimate AI Launchpad [59] Ethical AI Framework [60]
Netherlands	Published	2019	Strategic Action Plan for AI [61]
Portugal	Published	2019	AI Portugal (2019-2030) [62]
Slovakia	Published	2019	Action Plan for Digital Transformation [63]
Switzerland	Published	2019	Digital Switzerland Strategy [64]
Austria	Published	2020	AI Mission Austria [65]
Bulgaria	Published	2020	Concept for AI in Bulgaria till 2030 [66]
Cyprus	Published	2020	National AI Strategy (Greek) [67]
Hungary	Published	2020	National AI Strategy (Hungarian) [68]
Italy	Published	2020	AI Strategic Programme (2022-2024) [69]
Latvia	Published	2020	National AI Strategy (Latvian) [70]
Norway	Published	2020	National AI Strategy [71]
Poland	Published	2020	Policy for AI Development from 2020 [72]
Spain	Published	2020	National AI Strategy (Spanish) [73]
Ireland	Published	2021	AI Here for Good : National AI Strategy [74]
Slovenia	Published	2021	National Programme on AI [75]

Following the European Commission proposal to harmonise AI rules across Europe and as part of the **EU Digital Strategy**[76], the European Union intends to regulate artificial intelligence (AI) and is currently progressing an **Artificial Intelligence Act (AIA)**[77], which was first published as a proposal in 2021 and is expected to be adopted in 2024, with a transitional implementation period that could see it fully enforced 24 months later, with some parts applicable sooner.

As AI is a fast evolving area, the Act aims to be as technology neutral and futureproof as possible. It is therefore intentionally broad and defines an AI system as a "*machine-based system designed to operate with varying levels of autonomy, that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments*".

The EU AI Act is the world's first comprehensive legal framework on AI and primarily focusses on strengthening rules around data quality, transparency, human oversight and accountability and proposes a risk-based approach to governing the use of AI (in both the public and private sectors) and defines four AI risk categories: **unacceptable risk, high-risk, limited risk and minimal risk**.



EU AI Act: Risk Management Framework

Examples of systems that would be categorised as **unacceptable risk** are AI systems considered a threat to the safety, livelihoods, or rights of people and will be banned. This includes social scoring by governments and toys using voice assistance that encourages dangerous behaviour

An AI system will be categorised as **high risk** if it used in a medical, safety or critical infrastructure area (such as transport), if it impacts EU fundamental rights (such as in the use of essential public services), if it is used for employment decisions (such as in recruitment), or if it is used in education, border control, or the administration of justice and democratic processes, amongst other areas.

High risk AI systems will need to meet strict legal obligations, such as:

- High quality data feeding the AI system to minimise the risk of discrimination
- Detailed documentation and record keeping
- Clear and adequate information to users
- Human oversight to minimise risks
- High levels of system accuracy and security

Limited risk systems will be less regulated, but include transparency requirements that the user must be made aware that they are interacting with AI for example with AI chatbots and AI generated creative content, whilst **minimal risks** applications (such as AI enabled email spam filters) will not fall within the scope of the Act and will therefore have no regulatory requirements.

Additionally the EU has existing rules regarding the use of computers to make automated decisions under **Article 22** of their **General Date Protection Regulation (GDPR)**[78]. This includes the rights of citizens "not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her"

The Act will be enforced through a new **'EU AI Office'** established in February 2024 that would have a wide range of powers to monitor implementation, provide guidance and co-ordinate cross border issues.

The AI Act also proposes setting up **AI 'Regulatory Sandboxes'** to foster innovation in AI across the EU (A regulatory sandbox is a tool that allows businesses to experiment with new and innovative products, or services, under a regulator's supervision). Sandboxes provide innovators with incentives to test their AI systems in a controlled environment, whilst also allowing regulators the opportunity to better understand the technology and its impacts. However the European Parliament and some stakeholders have expressed concern about the lack of liability protection for sandbox participants and for more clarity on the relationship between an AI sandbox and EU data protection rules [79].

In June 2023 Members of the **European Parliament** (MEPs) adopted a negotiating position on the AI Act so that *"AI systems in the EU are safe, transparent, traceable, non-discriminatory and environmentally friendly"* and proposed strengthening some of the regulatory provisions[80]. This was partly informed by an EU study of what **37 Think Tanks from Around the World are Thinking**[81] and an EU paper on **General Purpose AI**[82], which the EU Parliament considers to be powerful foundation models with broad AI enabled capabilities.

A final agreement on the terms of the AI Act was reached between the **European Parliament** (containing elected officials) and **European Council** (representing EU Member States) in December 2023 and approved by the European Parliament in March 2024. The Act is expected to be fully adopted before the end of the 2024 legislative cycle. The final text also includes transparency requirements for **General Purpose AI (GPAI)** systems, which includes compliance with EU copyright law and the publishing of detailed summaries of the material used for training GPAI systems. The most powerful GPAI systems, considered as those that could pose significant risks, will also have additional requirements including AI model evaluations, assessing and mitigating systemic risks and reporting on incidents.

In March 2024, the European Commission in partnership with EU Research Area countries and stakeholders published **Guidelines on the Responsible Use of Generative AI in Research**[83] to support the European research community in the responsible use of generative AI system, which can sometimes be considered as GPAI systems.

To facilitate the transition to the new regulatory framework, the European Commission also launched an **AI Pact**[84], which is seeking voluntary commitments from industry to start implementing the requirements of the AI Act before the legal deadline. This involves requesting voluntary pledges from industry to work towards compliance with the upcoming AI Act, accompanied by concrete actions that address specific requirements of the Act. These pledges will be published by the European Commission to provide visibility, increase credibility and build public trust in the technologies.

However in response to the new rules and obligations proposed by the European Parliament, more than 150 executives from some of Europe's leading companies sent an **open letter to the EU**[85] prior to the final agreement of the text to "express our serious concerns about the proposed EU Act" stating that "the draft legislation would jeopardise Europe's competitiveness and technological sovereignty, without effectively tackling the challenges we are and will be facing".

The signatories of the letter included many large and well-known companies such as **Airbus, Renault, Peugeot, Heineken** and **Siemens**, and outlined particular concerns about the rules proposed by the European Parliament for generative AI systems. The letter signatories expressed that companies developing and implementing generative AI systems would face disproportionate compliance costs and liability risks and that these obligations could lead to *"highly innovative companies moving their activities abroad and investors withdrawing their capital" stating that "we must be clear on the consequences".*

The letter closed by requesting agile processes that continuously adapt to AI technological development and emerging risks. It also states that *"building a transatlantic framework is a priority" and "it is a prerequisite to ensuring the credibility of the safeguards we put in place."*

Aside from the EU AI Act, the European Parliament has also been active in the field of AI for several years. In 2020 (prior to the publication of the EU AI Act proposal), the EU Parliament adopted 3 reports outlining how the EU could boost AI innovation, ethical standards and trust.

1. **Framework of ethical aspects of AI, robotics & related technologies** [86]: Focussed on how to ensure safety and accountability, prevent bias and discrimination, foster social and environmental responsibility, and ensure respect for fundamental rights
2. **Civil liability regime for AI** [87]: Focussed on how to protect Europeans, whilst providing businesses with the legal certainty necessary to encourage innovation
3. **Intellectual property rights (IPR) for the development of AI technologies** [88]: Focussed on the importance of an intellectual property system for effective AI development, including the issue of copyright and patents. Among the issues noted was the intellectual property ownership of something developed entirely by AI

In 2021, the European Parliament published 3 further documents focused on the use of AI in various sectors. **Guidelines on the Military Use of AI** [89] stressed the necessity of human oversight of AI systems used in defence and reiterated the EU Parliament's call to ban AI enabled autonomous lethal weapons. A report on the **Use of AI in the Education, Cultural and Audiovisual Sectors** [90] called for AI technologies to be designed so that they prevent gender, social or cultural biases and protect diversity, whilst a report on **AI used by the Police & Judicial Authorities** [91] called for a ban on AI enabled automated recognition of people in public spaces.

These all contributed to the EU Parliament establishing a Special Committee to analyse the **Impact of AI in the Digital Age (AIDA)** [92], with the EU Parliament adopting the committee's report in 2022. This included a proposal for an **EU Roadmap for AI** [93], which would create an EU wide, long-term plan for AI, that includes the EU's key values and objectives for AI. The report warns that the EU needs to act fast to set clear standards for AI based on EU values, otherwise the standards will be set elsewhere and notes the importance of:

- **Data Sharing** : As AI technologies depend on the availability of data, sharing data across the EU needs to be revised and extended. The report further notes that full integration and harmonisation of the EU Digital Single Market will help cross border data exchanges and innovation
- **Digital Infrastructure** : Digital infrastructure should be strengthened whilst ensuring access to services for everyone. The deployment of high speed broadband and 5G should be supported and key emerging technologies, such as quantum computing, set as a priority.
- **Development of AI Skills** : The EU should support the development of AI skills so that people have the right capabilities they need for life and work with AI. This will also help create trust in the technology, foster innovation and by supporting skills excellence centres prevent a 'brain drain' from the EU caused by people talking their valuable AI skills abroad.
- **Military & Security Aspects** : The defence aspects of AI should be tackled by the EU cooperating internationally with like-minded partners to promote a human centric, EU value based vision for AI in the military and security domains.

"For the EU to be a global power, means to be a leader in AI"

EU Parliament Report (2022) : AI in the Digital Age

In 2021 the **Special Committee on AI in the Digital Age (AIDA)** also explored AI diplomacy and **AI as a new European Union External Policy Tool** [94]. The study reviewed the way AI may change the international balance of power, the impacts of AI on the EU's geopolitical influence, and therefore the EU's strategic relationship with other countries. The report discussed 6 ways that AI might influence the global order and Europe's standing within it and emphasised that the EU and its Member States must take on these challenges. The report concluded that *"it is high time for Europe to invest more time, effort, and ultimately money in AI".*

The AIDA Special Committee has also produced 4 other papers on the impacts of AI that are:

- **Role of AI in the EU Green Deal** [95] : This report describes the environmental potential, characteristics and causes of environmental risks from AI and recommends regulatory action to align the design and deployment of AI, with the goals of the European Green Deal.
- **Challenges of an Open Source Approach to AI** [96] : This report examines the advantages and disadvantages of open source AI and proposes 7 recommendations. Example advantages include better transparency for AI auditing and enhancing citizen trust, whilst example disadvantages include legal, technical, data, and ethical challenges.
- **Improving Working Conditions with AI** [97] : This report considers evidence on the expected impact of AI on jobs, discusses the potential of AI to create new jobs and explores the extent to which AI presents opportunities and risks to working conditions.
- **AI in Smart Cities & Urban Mobility** [98] : This report recommends EU wide support for smart infrastructure and more R&D into 'AI in urban settings' within EU research programmes. AI enabled smart urban solutions can bring multiple benefits, including increased energy efficiency, improved waste and water management and reduced pollution, noise and traffic congestion.

Access to data and financial investment will be critical for the success of AI in Europe and the **European Commission plans to invest €1 billion (EUR) a year in AI** through the **Horizon Europe** [99] and **Digital Europe** [100] programmes and work in collaboration with EU Member States and the private sector to reach an **overall investment of €20 billion (EUR) on AI in Europe between 2020-2030** (the EU Digital Decade [101]).

The **EU Recovery & Resilience Facility** [102], which was established as a temporary financial instrument to support the economic recovery of Europe from the COVID19 pandemic raises funds by borrowing on the capital markets (issuing bonds on behalf of the EU), which are then available to EU Member States and plans to make **€134 billion (EUR) available for digital projects, including supporting Europe's ambition to be a global leader in trustworthy AI**.

For access to data, initiatives such as the **EU Cyber Security Strategy** [103], **Digital Services Act** [104], **Digital Markets Act** [105] and **Data Governance Act** [106] are all providing the right infrastructure for the safe, secure and appropriate use of data with AI systems.

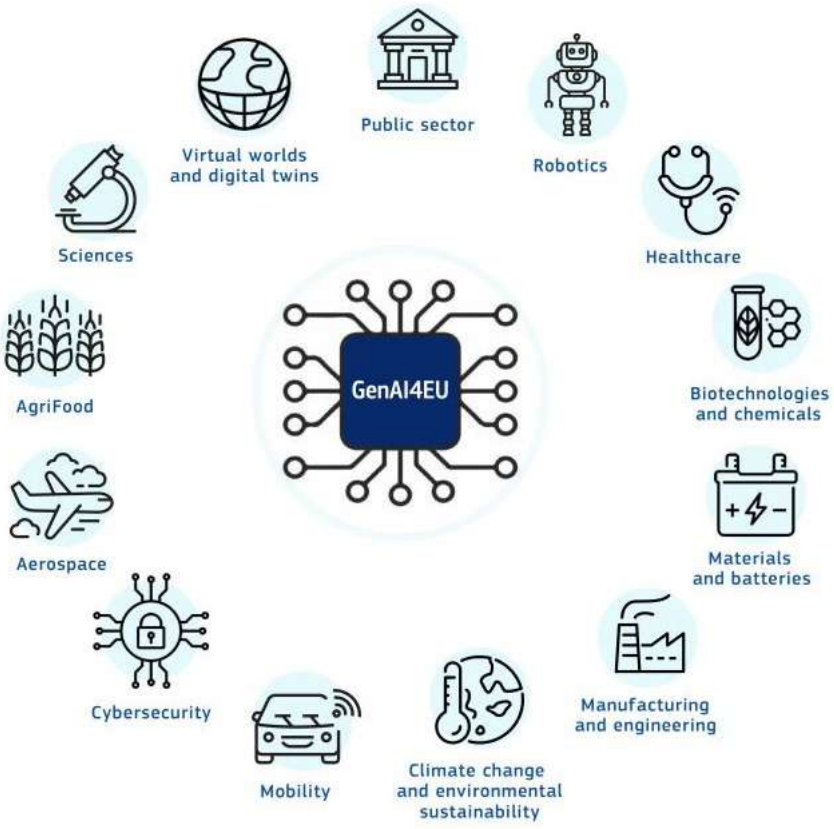
In late 2022, the European Commission also introduced plans to modernise the EU liability framework through an update to the **Product Liability Directive**[107] (to include digital products) and have proposed a new **AI Liability Directive**[108], with rules specific to damages caused by AI systems. The new rules intend to ensure that anyone harmed by an AI system, enjoys the same level of protection as persons harmed by other means in the EU. The AI Liability Directive would ease the burden of proof for victims to establish damage caused by an AI system and would give national courts in EU Member States the power to order the disclosure of evidence about high-risk AI systems suspected of having caused the damage. In February 2023 the European Parliament issued a **Briefing Paper on the EU AI Liability Directive**[109] to inform debate amongst MEPs and examined its coherence with the EU AI Act and its relationship with other EU and national rules.

In September 2023, **European Commission President Ursula von der Leyen** announced that *"Europe has become the global pioneer of citizens' rights in the digital world"* in her **2023 State of the Union**[110] address adding that *"Europe should lead the way on a new global framework for AI built on three pillars (1)* **guardrails**, *(2)* **governance** *and (3)* **guiding innovation.**" – the 3 G's.

This was followed by the launch of the **European Large AI Grand Challenge**[111] in November 2023 which awarded financial support and supercomputer access to EU AI startups and the **AI Innovation Package**[112] announced in January 2024, which includes a broad range of measures to support AI startups and SMEs in Europe, including access to EU supercomputers, through a new process called **AI Factories**[113].

European Commissioner for the Internal Market, Thierry Bretton said "*Today, we announce the launch of AI Factories, bringing together the raw materials for AI: computing power, data, algorithms and talent. They will serve as a one-stop shop for Europe's AI startups, enabling them to develop the most advanced AI models and industrial applications. We are making Europe the best place in the world for trustworthy AI"*

Other measures included in the AI Innovation Package included the **GenAI4EU** initiative which aims to support the development of novel use cases and emerging applications of AI in Europe's public sector and its 14 industrial ecosystems.

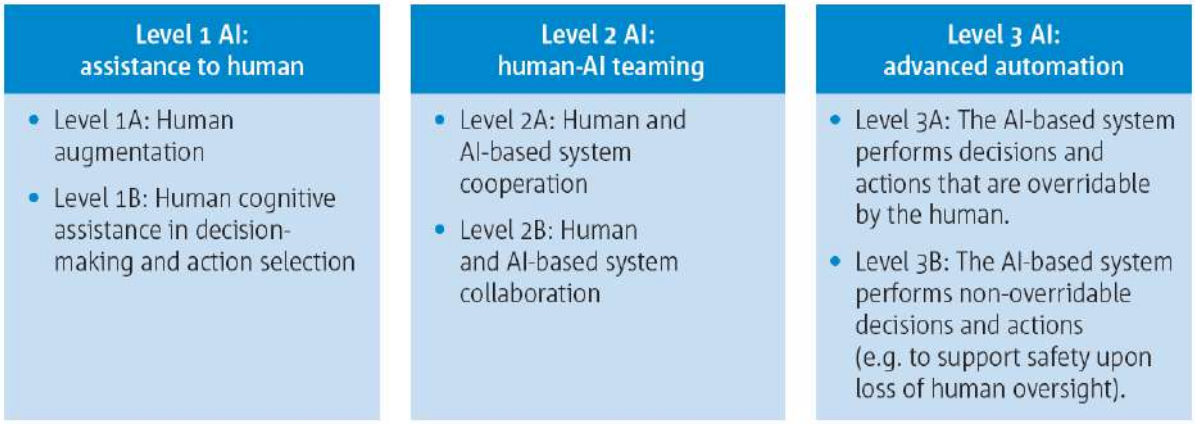


Another measure is the creation of two new **EU Digital Infrastructure Consortiums (EDICs)**[114]. The **Alliance for Language Technologies (ALT-EDIC)**[115] aims to address the shortage of European languages data for the training of AI systems (to uphold Europe's linguistic diversity and cultural richness) and a **CitiVERSE EDIC**[116] which will apply state of the art AI tools to develop 'digital twins' which will help cities simulate and optimise processes, from traffic to waste management.

In January 2024, the European Commission also published a new strategic vision (**called AI@EC**[117]) for the use of AI in Europe. It includes concrete actions about how the European Commission will build institutional and operational capacity to ensure the development and use of trustworthy, safe and ethical AI. The AI@EC vision also includes information on how the European Commission is preparing to support public administrations around Europe in their own adoption and use of AI.

Within the specific field of aviation, the **European Aviation Safety Agency (EASA)** published its **AI Roadmap v2**[118] in May 2023, which outlines a comprehensive plan for the safe and trustworthy integration of AI within EU aviation, with a focus on safety, security, AI assurance, human factors and ethical considerations.

In this updated version of the roadmap (v2), **EASA has classified the use of AI in EU aviation into 3 levels and 6 sub-levels**. However EASA notes that *"a further split of level 3 will probably be necessary to account for the likely emergence of autonomous products in the longer term, which may require an update to the EU AI Act Article 14 before being enabled"*



EASA Classification of AI Applications

3. UNITED KINGDOM

The UK is regarded as an international centre of expertise in technology research, development and application. In 2022 the UK technology industry reached a combined market value of **£1 trillion (GBP)**[119] and is only the 3rd country in the world to reach that milestone (after the USA and China) and employs more than 3 million people in technology jobs.

As the world emerged from the COVID19 pandemic, the **UK Build Back Better** [120] plan, unveiled in 2021, identified innovation as a core pillar for UK growth and the UK government committed to increasing the level of investment in AI R&D from **£11.4 billion (GBP) in 2021 to £22 billion by 2024-2025** (e.g. doubling investment in 3 years), combined with an additional **£800 million (GBP)** investment in a new **Advanced Research & Invention Agency (ARIA)** which aims to advance high risk, high return research.

Also in 2021, the UK National Security & Investment Act [121] introduced a UK statutory definition of AI which is "*technology enabling the programming or training of a device or software to – (i) perceive environments through the use of data; (ii) interpret data using automated processing designed to approximate cognitive abilities; (iii) make recommendations, predictions or decisions; with a view to achieving a specific objective*"

Unlike the EU, the UK has taken a different approach to AI governance and plans to use, or expand existing powers, in existing government departments, rather generate a new and separate AI law. **Instead of giving responsibility for AI governance to a new single regulator, the UK government will empower existing regulators** (such as the UK Health & Safety Executive, the UK Equality & Human Rights Commission and the UK Competition and Markets Authority) to come up with tailored, context specific approaches to AI governance that best suit the ways that AI can being used in their sectors. The UK also highlights that its existing laws, regulators and courts already address several of the emerging risks posed by AI, such as discrimination, product safety and consumer rights.

The UK government points out that some of its existing regulators and agencies have already issued guidance, such as:

- **Requirements for AI in UK Medical Devices** from the UK Medicines and Healthcare Products Regulatory Agency (MHRA)
- **Pricing Algorithms Guidance** [122] [123] from the UK Competition & Markets Authority (CMA)
- **Data Ethics Framework** [124] from the UK Department for Digital, Culture, Media and Sport (DCMS)
- **Policy Paper on the use of Generative AI in Education** [125] from the UK Department for Education (DfE)
- **Guidance on using Digital Security Products with AI** [126] from the UK National Cyber Security Centre (NCSC)
- **How Organisations Can Explain Their Use of AI to Individuals** [127], **Guidance on AI & Data Protection** [128] and an **AI & Data Protection Risk Toolkit** [129] from the UK Information Commissioner's Office (ICO)

Like the EU, the UK's General Data Protection Regulation (GDPR) also has existing rules around **automated decision making** with computers [130].

To coordinate national policy on AI, the UK has established two key organisations:

- **AI Council** [131] : Set up in 2019 for an initial 3 year term, the AI Council was an independent committee of experts that provided advice to the UK government on AI. Following the formation of a new government Department for Science, Innovation & Technology (DSIT) in early 2023 and the AI Council terms of reference coming to an end, the UK announced that a **new technology council with a broader remit (but still including AI)** would be set up to advise the DSIT department across all its of its technical areas of responsibility [132].
- **Office for AI** [133]: A unit with the Department for Science, Innovation & Technology (DSIT) that drives the responsible and innovative uptake of AI technologies in the UK and for the benefit of everyone in the UK

In 2021 the UK Government published a 10 year **National AI Strategy** [134] which presented a vision for making the UK an attractive place to develop and deploy AI technologies, whilst keeping regulation to a minimum and ensuring the "*ethical, safe and trustworthy development of responsible AI*". The AI Strategy has 3 aims to:

1. Invest in the long term needs of a UK AI ecosystem
2. Support the transition to an AI enabled UK economy
3. Focus on the UK and international governance of AI

The National AI Strategy outlined steps for how the UK will begin its transition to an AI enabled economy, the role of R&D in AI growth and the governance structures that will be required.

A review of the strategy one year on, in 2022, found that the UK had made steady progress on the short, medium, and long term objectives across the 3 aims, completing all the short term objectives and almost all of the medium term objectives. **The review also showed that the UK had invested :**

- **£117 million** (GBP) in **1000 new PhD's in AI**
- **£17 million** (GBP) in **scholarships** to encourage more women, black and disabled students to study AI at Universities and Colleges
- **£1.5 million** (GBP) in **'AI for Decarbonisation'**
- ... amongst several other AI projects and investments.

In 2023, the UK Government published an update to the National AI Strategy with a **'Pro-Innovation Approach to AI' white paper and consultation**[135] which included 5 principles to guide the safe and innovate use of AI in the UK (safety, transparency, fairness, accountability and redress) and directed that within 12 months of the white papers publication, all of the UK's existing regulators should issue practical guidance to their sectors of the economy on how organisations can implement these principles for safe AI use and innovation.

To support UK regulators with this action the UK published **Initial Guidance for Regulators on Implementing the UK's AI Principles**[136] in February 2024, with a commitment to issue further guidance in summer 2024 and a third phase that would explore opportunities for joint solutions, such as multi-regulator guidance.

The UK also committed to issuing additional tools and resources, such as **risk assessment templates** and committed to establishing a **central risk function** that will identify and monitor the risks that emerge from AI. The white paper notes that by addressing these risks effectively and in a timely manner, the UK (and world) we will be better placed to fully utilise the advantages of AI.

The 'Pro-Innovation Approach to AI' white paper also committed the government to run **sandboxes for AI developers**, which would help organisations work with regulators to understand how their AI products interact with different regulatory regimes. The UK government therefore announced a new **advisory service for businesses** would launch in 2024, where organisations could receive tailored advice on how to meet regulatory requirements for digital technology and AI[137]. The pilot scheme will run for one year and assess industry take up, service feasibility and how innovators interact with it. The aim is to help UK AI businesses bring their innovations to market quickly and responsibly.

UK Prime Minister, Rishi Sunak (12th June 2023)

In June 2023, the UK announced £100 million (GBP) in initial funding for an **AI Foundation Model Task Force**[138] (later renamed the Frontier AI Task Force) to develop research into **safe AI and sovereign UK capability in AI infrastructure**[139]. Foundation models are AI systems that are trained on huge data sets, which can be used for a wide variety of tasks across the economy. This AI task force was modelled on the successful 'UK COVID-19 Vaccine Task Force', and was given the same level of agility and delegated authority to make decisions at pace and rapidly take forward work on AI.

To create an early understanding of the global market for foundation models, the **UK Competition and Markets Authority (CMA)** undertook an initial review in 2023 of how foundation models could evolve and both the opportunities and risks these could present to competition and consumer protection. The goal was to help this rapidly scaling technology to develop in ways that results in open, competitive markets that bring benefits to people, businesses and the UK economy.

The scope of the CMA initial review focussed on three themes:

1. **Competition and barriers to entry in the development of foundation models:** This included examining potential barriers to entry, such as accessing data, computing resources, people talent, funding, and ways in which foundation models could disrupt, or reinforce, the position of the largest firms.

2. **The impact foundation models may have on competition in other markets:** Recent developments have shown that foundation models may become an input to other markets, such as search and productivity software. This theme therefore explored if the market could potentially develop in ways which may give rise to competition concerns.

3. **Consumer protection:** This theme explored the extent to which current practices and incentives in the market are leading to accurate and safe foundation models, that are consistent with business obligations under UK consumer protection law.

The CMA published its initial findings in September 2023[140], with a detailed international engagement plan to seek feedback and input from governments, academia, civil society and AI developers around the world, with their full findings and recommendations for regulating AI foundation models to be published in 2024.

The UK has also taken a leading global role in the development of AI standards, with the British Standards Institution (BSI) saying that it aims to make the UK a "*global standards maker, not a standards taker in AI*" and is actively contributing to international standards bodies such as the UN International Telecommunications Union (ITU) and the International Organisation for Standardisation (ISO) to develop globally aligned and agreed standards for AI. A 2018 survey by the BSI found that AI standards could:

- Help to meet AI regulatory compliance (63% agreed)
- Reduce unintentional bias (62% agreed)
- Improve privacy protection (62% agreed)
- Strengthen AI governance (60% agreed)

In 2022, the **Alan Turing Institute** (the UK's national institute for AI) launched the **AI Standards Hub** [141], in partnership with the BSI and UK National Physical Laboratory (NPL). Since its launch, the Standards Hub has formed a database of over 300 AI related standards that are being developed, or have been published, by a range of prominent Standards Development Organisations around the world. For example, existing process and management standards are being adapted for AI in the areas of risk management and transparency reporting.

In November 2023, the UK hosted the worlds first **AI Safety Summit**[142,143,144], at Bletchley Park with world leaders, eminent scientists and the heads of many leading AI companies. Bletchley Park was where the world's first electronic computer was used and was the home of the famous Second World War code breakers during the 1940's, which included Alan Turing prior to his later pioneering work on AI in the 1950's.

UK AI Safety Summit : Bletchley Park (1-2 November 2023)[145]

The AI Safety Summit focussed on managing the most significant **AI frontier risks** to global safety and security, which included risks from unpredictable advances, loss of control and social harms from the integration of AI within societies. **Frontier AI** systems are highly capable AI models that can perform a wide variety of tasks and match, or exceed, the capabilities present in todays most advanced models.

The aims of the Summit were to develop:

1. A shared understanding of frontier AI and specific risks of concern
2. A process for international collaboration on frontier AI safety, including how best to support national and international frameworks
3. Appropriate measures which individual organisations should take to increase frontier AI safety
4. Areas for collaboration on AI safety research, including evaluating model capabilities and the development of new standards to support governance
5. Showcase how ensuring the safe development of AI will enable AI to be used for good globally

Prior to the Summit, leading AI companies attending the event published their AI safety policies on the summit website at the request of the UK government. This was to enable sharing of best practices and allow public and government scrutiny of industry approaches to AI safety. The companies that voluntarily shared their policies were **Amazon, Anthropic, Google DeepMind, Inflection, Meta, Microsoft and OpenAI**[146].

The AI Safety Summit was opened by **King Charles III**, he described the world as *"witnessing one of the greatest technological leaps in the history of human endeavour"* and **UK Prime Minister Rishi Sunak** said at the opening of the Summit that *"I truly believe there is nothing in the foreseeable future that will be more transformative to our economies, our societies and all our lives that the development of technologies like Artificial Intelligence"* adding that the Summit would *"show we have the political will and the capability to control this technology and secure it benefits for the long term" and that the Summit outcome would "bequeath an extraordinary legacy of hope and opportunity for our children and the generations to come."*[147]

"We are witnessing one of the greatest technological leaps in the history of human endeavour"

King Charles III, AI Safety Summit (1st November 2023)

The Summit concluded with the signing of the **'Bletchley Declaration'**[148], the world's first international agreement on frontier AI and its risks. The Declaration also committed all countries who attended the Summit (28 countries + the EU) to work collaboratively and in an inclusive manner to share scientific and evidence based understandings of AI safety risks.

The Summit also included international agreement to the development of an independent '**State of AI Science'** report on the capabilities and risks of AI, with the first report led by Professor Yoshua Bengio, a renowned Turing Award winning academic and member of the UN's Scientific Advisory Board. This report was inspired by the way the International Panel on Climate Change (IPCC) reaches international consensus on climate science and will summarise a science based understanding of the risks associated with frontier AI models and identify areas for priority research. It will not make policy, or regulatory recommendations, but instead help to inform international and domestic AI policy making and will be published at the next AI Safety Summit, which was agreed to be held in **South Korea,** then **France**.

At the end of the UK Summit, the UK government also announced the Frontier AI Task Force would evolve to become a permanent body as the **UK AI Safety Institute (UK AISI)**[149,150] [the U.S also announced a new U.S AI Safety Institute which is covered in the U.S chapter of this report]. This new UK Institute will carefully test new types of frontier AI models, before and after, they are released to address any potentially harmful capabilities, from social harms such as bias and misinformation, to the most extreme risks such as humanity losing control of AI. Seven leading AI labs based in the UK, U.S and France committed to pre-deployment testing of their next generation AI models at the UK AISI.

During the launch of the new UK AI Safety Institute, it also announced partnerships with the **Government of Singapore** to collaborate on AI safety testing and with the also newly formed US AI Safety Institute. In March 2024, the UK and U.S. formalised this partnership in an **MOU between the two AI safety institutions**[151] which was designed to allow both organisations to work seamlessly with one another.

At the signing of the agreement **UK Secretary of State for Science, Innovation and Technology, Michelle Donelan** said *"only by working together can we address the technology's risks head on and harness its enormous potential to help us all live easier and healthier lives"* while **U.S Secretary of Commerce, Gina Raimondo** said *"AI is the defining technology of our generation....and our partnership makes clear that we aren't running away from AI concerns – we're running at them."*[152]

To support the UK AI Safety Institute and UK academic researchers studying AI, the UK government has also committed £900 million (GBP) towards the development of advanced computing, including the building of two new supercomputers which will make UK computing power 30x more powerful[153]. One supercomputer called **'Isambard AI'** (after the famous 19th Century British Engineer Isambard Kingdom Brunel) will be at the university of Bristol, whilst another supercomputer called **'Dawn'** will be at the University of Cambridge. The two computers will be connected and form the UK governments **'AI Research Resource'.**

Following the publication of the UK 'Pro Innovation Approach to AI' white paper and consultation in March 2023 which outlined five cross-sectoral principles for AI regulation, the **UK government published its response in February 2024**[154]. The consultation received over 400 responses, which the government has considered to determine that the five cross-sectoral principles, with industry or context specific frameworks, guidance and regulation (rather than national AI regulation applying to all industries), with voluntary measures on AI developers and international collaboration, is right for the UK at this time, to provide balance between promoting innovation and managing risks. However the UK government does note in their interim response that the *"challenges posed by AI technologies will ultimately require legislative action in every country once a global understanding of AI risks has matured"*.

The consultation response also included several new areas of UK government funding for AI, including £100 million (GBP) to *'help realise new AI innovations and support regulators technical capabilities'*, as well as £80 million (GBP) to launch *'nine new AI research hubs across the UK' and £9 million (GBP) to further partnerships with the U.S on 'safe, responsible and trustworthy AI'*.

Following the UK industry specific approach to AI governance, the UK Civil Aviation Authority (CAA), issued a public survey for feedback on an **AI Strategy for UK aviation** in early 2024[155]. The aim of the survey was to understand the perspectives of multiple stakeholders on what AI could mean for the regulation of UK aviation and the way CAA works with AI.

AI is already used in aviation in various exciting ways. Examples include enhancing safety and efficiency through predictive maintenance, aiding air traffic management, and refining pilot training with advanced insights and simulations, amongst several other areas. The UK CAA has therefore also published two documents to support the UK aviation industry with AI:

- **Terminology Framework for AI**[156] : This document focusses on three central terms that are essential for all aviation stakeholders to understanding when regulating AI in aviation. These three terms are: **Automation, Autonomy** and **Artificial Intelligence.**
- **Building Trust in AI**[157] : If automation, autonomy and AI are to be accepted within aviation, the public need to be able to trust it. This document therefore describes how the five UK principles for AI would apply to UK aviation. The five principles are:
    - Safety Security & Robustness
    - Transparency & Explainability
    - Fairness & Bias
    - Contestability & Redress
    - Accountability & Governance

4. FRANCE

France is home to some of the world's most exciting AI companies and technology entrepreneurs and in 2018 launched a **National Strategy for AI (SNIA)**[158] which is a critical part of the French government's **France 2030**[159] plan to transform key sectors of the French economy through innovation and investment.

In the first phase of the AI strategy from 2018 to 2022, €1.85 billion (EUR) was provided to finance the creation and development of a network of interdisciplinary AI institutes and establish chairs of excellence and doctoral research programs. By 2021, France already had 81 AI laboratories – well above the European average – and around 13,500 people working in AI start-ups across France, which was 35% higher than the previous year. The launch of the **Jean Zay supercomputer** in 2019 also enabled a large expansion in the number of AI projects.

In the **second phase (2022-2025) of the national strategy**[160], a further €1.5 billion (EUR) of funding is being allocated to disseminate AI technologies within the economy and support development and innovation in priority areas such as **distributed AI** (AI spread across lots of areas), trusted AI (AI with good levels of safety, privacy, robustness and explainability), **frugal AI** (AI that minimises its energy consumption) and **generative AI** (AI that is able to generate creative content). This is structured around three strategic pillars:

1. An objective to capture 10-15% of the global embedded AI market share by 2025 and make France a world leader in the field ('embedded AI' is AI integrated into resource limited devices such as wearables, smartphones and smart home devices)
2. Raising the nation's skills through training and attraction of talent
3. Bringing together the supply and demand for AI solutions, with the aim of tripling the number of new start-ups by the end of 2023 and supporting SMEs in the adoption of AI solutions to increase their competitiveness

With 45% of the SNIA budget devoted to research, France launched its **National AI Research Programme**[161] in 2018, co-ordinated by the French **National Institute for Research in Digital Science & Technology (INRIA).** In 2021, INRIA, supported by the government, founded **LaborIA**[162], a research laboratory aimed at better understanding AI, particularly regarding its effects on employment and skills.

INRIA is also co-leading an **Artificial Intelligence Research Program (PEPR)**[163] which launched In March 2024. Its objectives are *'to strengthen the French research and innovation ecosystem, to remove the obstacles to the deployment of AI and to bring about disruptive technologies to help position France and Europe as leaders on strategic themes'.*

€80 million (EUR) of this research funding went towards the **'Confiance.ai'**[164] technological research programme, launched in 2019 which brought together more than 50 partners in industrial, academic, AI start-up and research laboratories with the common mission of promoting the integration of trusted, ethical and fair AI into products and services. Its paper **'Towards the engineering of trustworthy AI applications for critical systems'**[165] in October 2022, detailed the actions that are needed for AI systems to be robust and trustworthy. Then in March 2024, it unveiled its **'digital common good'**[166] tooled methodology and catalogue of technological components, which were developed to increase the level of confidence in AI systems and with the aim to *'maintain the technological leadership of French companies by promoting the design of critical industrial applications integrating trusted AI components, in complete security'.*

In 2023, France's court of auditors (**Court des Comptes**[167]) conducted an interim evaluation of the SNIA (National Strategy for AI). It focused on 'Research' and 'Higher Education', which were the main areas of the strategy's funding, and included an analysis of whether the strategy has improved consideration of ethical issues. One of its key recommendations was to *'develop a charter and a catalogue of good practices aimed at defining and monitoring the environmental impact of AI research, and promoting the development of responsible AI'.*

In June 2023, **President of France Emmanuel Macron** announced a further plan, named the **'IA-cluster' system**[168]. Backed by €500 million (EUR), its goal is to increase the number of AI specialists in France by 2030 and to ensure that the world's top 50 universities in the field of AI contain at least three French establishments.

French SMEs and mid-sized companies are also being supported in driving their innovation by integrating AI solutions, and in strengthening their international competitiveness through the **IA Booster France 2030 programme**[169]. Operated by **Bpifrance**[170] and backed by €25 million (EUR) from the government, the programme provides companies with training modules and individual advice. Companies with between 10 and 2,000 employees and with an annual turnover of more than €250,000 (EUR) have priority and may benefit from coverage of up to 80% of their costs.

In February 2024, France deepened its technical collaboration with the UK[171], which has previously led to pioneering innovations such as the Concorde aircraft and Channel Tunnel rail link. French **Minister for Higher Education & Research, Sylvie Retailleau** and **UK Secretary of State for Science, Innovation & Technology, Michelle Donelan** announced €1million (EUR) joint funding to support more **France-UK research** including a new **French-British Joint Committee of Science, Technology & Innovation** and a **France-UK AI partnership** ahead of France hosting the next AI Safety Summit, after the 2023 Summit was held in the UK. The AI partnership also included a new relationship between France's INRIA (National Institute for Research in Digital Science & Technology) and the UK AI Safety Institute, to jointly support the safe and responsible development of AI technology.

In March 2024, the French Artificial Intelligence Commission, comprised of various AI experts from the private and public sector, submitted a report to the French government featuring **25 recommendations to make France a major player in the technological revolution of AI**[172]. These included:

- Creating the conditions for collective ownership of AI and its challenges by launching a national awareness and training plan.
- Transforming the approach to personal data. Continue to protect it while facilitating innovation to meet French needs.
- Ensuring the influence of French culture, by allowing access to French cultural content while respecting intellectual property rights.

For the use of AI in public services by the French government, the 2016 **Digital Republic Law** mandates there is transparency of any government used algorithms. French government agencies are required to publicly list any algorithmic tools they use and to publish their rules. **Etalab**, a department of the I**nter-ministerial Digital Direction (DINUM),** has produced implementation guidance for government departments and in France there is also a requirement that there must be prior agreement with workers' representatives, when the monitoring of workers involves digital technologies.

The **National Pilot Committee for Digital Ethics (CNPEN)**[173] was set up at the end of 2019 by the government as part of its national AI strategy and included academic and industrial experts in the fields of digital technology, law, economics and philosophy. In June 2023 it published a paper on **'7 Opinions of Generative AI Systems: Ethical Issues'**[174]. CNPEN examined the ethical questions related to the design, research, use and impacts on society of generative AI systems. Its **22 recommendations** included:

- Generative models can produce potentially harmful outputs taking different forms, for example hate speech. Before a foundation model is released, its designers must conduct studies and research on its emerging behaviours.
- Designers must implement a quantitative evaluation to characterise biases in language and avoid the effects of discrimination.
- It is necessary to build an ecosystem capable of identifying good and bad practices in the use of generative AI systems in different types of applications, and to create a sharing platform and a control agency with the results made available to all members of the generative AI community.
- Making foundation models freely accessible must be conditional on their designers becoming aware of the issues of openness and the risks of misuse. Transparency and evaluation criteria must be clarified and applied.

Adherence to human rights is as an important guiding principle of AI ethical guidelines and France has worked with the **World Economic Forum (WEF)** to jointly develop guidance for **"Addressing human rights concerns arising from facial recognition technology**[175]**".** This policy framework establishes a set of principles for the responsible use AI with facial biometric technology. It also contains an audit framework to ensure compliance with the framework principles.

For AI regulation in France, the **EU's new Artificial Intelligence Act** applies (see the EU chapter of this report for more information). However, in 2021, the French government entrusted **AFNOR,** which acts as the coordinator of the French standardisation system, with laying the foundations for trusted AI, based on voluntary standards. In December 2023, AFNOR announced a **new voluntary ISO/IEC 42001 standard on AI management systems**[176] which *'lays down general principles concerning data protection, the specification of the information used to 'feed' an AI, its robustness, as well as its transparency and explicability'.*

The AI management standard[177], is intended to help all organisations using AI systems. It guides organisations how to develop and use AI responsibly and specifies the requirements for establishing, implementing, maintaining and continually improving an AI management system within an organisation.

5. GERMANY

German engineering is famous around the world, with German car maker Audi's famous mission statement of *"Vorsprung durch Technik"* meaning *"Leading through Technology"* and in 2018, **former German Chanceller Angela Merkel** stated she wanted Germany to be a *"leading international location for AI"*[178].

Launched in 2018 and updated in 2020, the **German Federal Government National AI Strategy**[179] therefore has three overarching goals:

1. To make Germany and Europe a leading centre for AI and thus help safeguard Germany's competitiveness in the future.
2. To ensure a responsible development and use of AI which serves the good of society.
3. To integrate AI in society in ethical, legal, cultural and institutional terms in the context of a broad societal dialogue and active political measures.

Within the AI strategy, the government pledges to carry out a series of measures. These include funding and promoting **digital skills,** strengthening **AI research, development and training programmes** and supporting **AI innovation initiatives** – such as innovative mobility concepts based on AI that focus on urban mobility and connect rural areas with public acceptance.

German universities already produce high quality graduates and developing AI talent (students and teachers) is a key part of the National AI Strategy. The strategy aims to train **100 new university Professors in AI** as part of a Federal STEM (Science, Technology, Engineering & Mathematics) action plan. It will also open new centres of excellence and establish a programme for international **Master's and PhD students studying AI** through the **German Academic Exchange Service.**

In the area of AI regulation, the government's pledges include:

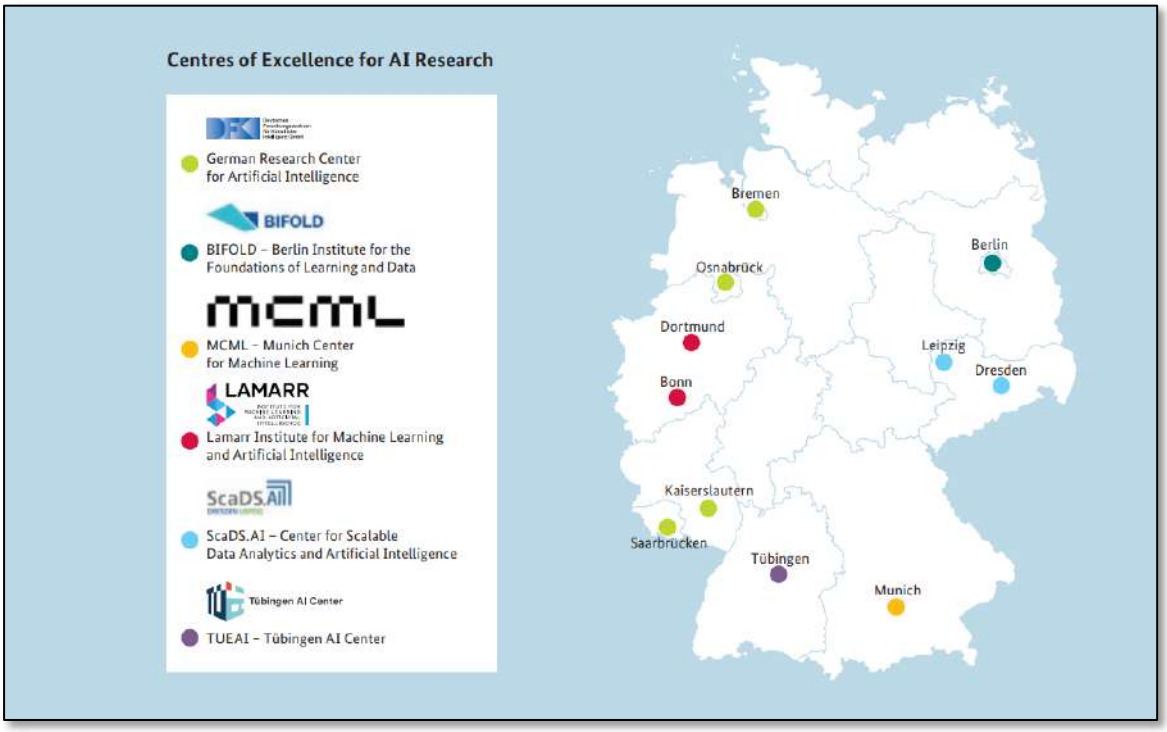
- Creating a legally certain regulatory framework for AI actors in science and research, at businesses and start-ups, as well as for the general public and public administration
- Mapping where changes are needed in labour and social law and other areas of law (for instance, environmental law) triggered by AI and reviewing possible proposals in response to this
- Establishing a network of think tanks and international standardisation and regulatory forums and technical standard-setting bodies relevant to global AI governance.

The National AI Strategy followed the publication of a report by the German **Study Commission on Artificial Intelligence**[180] which outlined several recommendations for actions, including a call for sector-specific regulatory regimes for AI, while ensuring principles of proportionality and liability. As a result, the government launched initiatives to tackle issues related to information management, data ownership, the free flow of data, and standardisation. These were recognised as important initial steps towards a legislative framework for AI[181].

The **Federal Ministry of Education and Research (BMBF)** promotes research, development and the application of AI through 50 ongoing measures. The Ministry's annual budget for AI increased more than 20-fold between 2017 and 2023, and is currently investing more than €1.6 billion (EUR) into AI. This includes the **International Future Labs**[182] project, where research teams from different German cities collaborate on current AI research and development questions.

In November 2023, the BMBF published its **AI Action Plan**[183], setting out new ways to implement the National AI Strategy. One of the 11 areas of action was *'adopting adaptable, agile and innovation-friendly regulation'*. It states that any regulation must:

- Continue to enable research and innovation, in particular by small and medium-sized companies, start-ups and tech-based social start-ups
- Regulate not AI research but AI use in a balanced manner, and to create special rules for research
- Consider technological possibilities when drawing up requirements for AI systems
- Develop norms and standards based on research with close involvement of researchers in this process and in the inspection and certification bodies



German Centres of Excellence for AI Research (BMBF AI Action Plan)

Germany is one of the world leaders in AI research, with **6 Centres of Excellence for AI research**, in **11 locations** across Germany.

The **German Research Centre for Artificial Intelligence (DFKI)**[184] is the world's largest independent research centre. It is focussed on scientific excellence and socially important topics, such as how AI can help to address climate change, social injustices and dangerous diseases. The DFKI conducts research and develops solutions across 26 research departments, 10 competence centres and 8 living labs. To date, over 100 spin-off companies, generating more than 2500 jobs have emerged from the DFKI and more than 160 former staff have been appointed as Professors in universities around the world. **The DFKI is currently involved in over 500 AI research projects.**

In other regulatory developments, the German government introduced the **Competition and Digitalisation Act**[185] in 2020 which provides stricter rules for market-dominant digital platforms while increasing the opportunities for innovation and data access for competitors. Other effects of the Act include:

- Platforms should be obliged to refrain from impeding access to data and make it easier for users to switch to other platforms
- The Federal Cartel Office should be able to intervene more quickly to protect competition at an early stage
- Companies will get greater legal certainty for intended collaborations – for example when sharing data or setting up platforms

Germany's **Federal Ministry for Economic Affairs & Climate Action (BMWK)** also launched a **Regulatory Sandbox Strategy** in 2019[186]. This aims to foster digital innovation and further develop the regulatory framework for AI and other digital technologies through tests of AI in real-life environments and scenarios that allow legislators to gain the knowledge they need for creating regulation in the future.

The benefits and risks of AI were also intensively assessed and debated before the passing of the **Act on Autonomous Driving**[187] in 2021, which established the regulatory framework for autonomous motor vehicles powered by AI. The Act allows these vehicles to operate with regular public road transport, but only in specifically determined operational areas across Germany.

In December 2023, the government also introduced the **German Digital Services Act**[188] which applies the EU-wide legal framework requiring digital service providers to act against illegal content. The Act also bans the use of certain personal data for advertising purposes.

Various government-backed initiatives have been brought in to assess and improve the ethics and standards around the use of AI. The **Data Ethics Commission**[189] was tasked by the government 'to develop ethical benchmarks and guidelines as well as specific recommendations for action, aiming at protecting the individual, preserving social cohesion, and safeguarding and promoting prosperity in the information age'. In 2019, it therefore published the paper **Opinion of the Data Ethics Commission**[190], outlining general principles to ensure the ethical design and use of data and algorithmic systems, in areas such as improving controlled access to personal data and adopting a risk-based regulatory approach to AI systems.

The **German Standardisation Roadmap on AI**[191], published in November 2020, was developed by the national standards organisations **DIN** and **DKE**, in cooperation with the German Federal Government, and more than 300 experts from industry, science and the public sector. The roadmap identifies existing standards and specifications relevant to the field of AI, and outlines further standardisation needs. It presents recommendations for action which are primarily aimed at industry, but also at stakeholders in quality, infrastructure, research and policy. The five overarching recommendations are to:

1. Implement data reference models so that various AI systems can exchange data securely, reliably, flexibly and compatibly.
2. Create a basic 'umbrella' AI standard that bundles existing standards and test procedures for IT systems to enable a uniform approach to the IT security of AI applications.
3. Design an initial criticality test to check whether an AI system could endanger individual fundamental rights or democratic values.
4. Initiate and implement a national programme to develop reproducible and standardised test procedures for AI system reliability, robustness, performance and functional safety. This will enable assessments to be made on AI trustworthiness.
5. Analyse and evaluate use cases to further develop standardisation.

In 2019, the **German AI Association**, the **KI Bundesverband**, launched an **'AI Seal of Quality'**[192]. This aims to promote and recognise AI that meets quality measures developed by the members of the German AI Association for **ethics, impartiality, transparency, security** and **data protection**. Private sector companies that have implemented the measures and met the quality criteria can sign the 'Associations Declaration of Commitment' and use the quality seal.

German AI Association, the KI Bundesverband, AI Quality Seal

Other initiatives by the German AI Association include, **AI Village,** an innovation and business campus for the development of AI solutions, the **Large European AI Models (LEAM)** project, which gathers and evaluates data sets, provides infrastructure and develops AI models according to European standards, **OpenGPT-X** a European response to large language models, **aiSpace** of quarterly meetings with AI innovators from different industries and **Unlikely Allies** which brings together AI and environmental entrepreneurs to address climate change.

The **Federal Ministry of Labor and Social Affairs (BMAS)** has also established an **AI Observatory**[193] which analyses the spread and effects of AI in work and society. It examines if there are any requirements for action in labour and social law and works in collaboration with standardisation bodies for the safe and responsible development and use of AI.

Launched in 2019, Germany's **'FAIR Forward – AI for All'** policy initiative by the **Federal Ministry for Economic Co-operation & Development** aims to support the open and sustainable use of **AI in Africa and Asia,** by enhancing local technical skills, improve access to training data, develop local policy frameworks for ethical AI, data protection, and privacy and facilitate access to AI technologies for local innovation. To date, **FAIR Forward is active in Ghana, Rwanda, Kenya, South Africa, Uganda, Indonesia,** and **India.**

FAIR Forward – AI for All

6. ITALY

Throughout the centuries, from the Roman era, to the Renaissance, to today, Italy has advanced the worlds knowledge in science and technology, with significant inventions and discoveries in physics, chemistry, mathematics, astronomy and many other disciplines. Today **Italy continues to be at the forefront of innovation,** with a strategic interest in AI and is home to the **Leonardo supercomputer** (the 4th fastest computer in the world in 2022)[194].

Throughout 2024, Italy holds the Presidency of the G7, and has committed AI to be a key strand of its presidency[195], stating in the official 2024 G7 programme that *"AI technology can generate great opportunities but also enormous risks, affecting geopolitical balances. It is necessary to develop governance mechanisms and ensure that AI remains human-centered and human-controlled, giving concrete applications to the concept of algor-ethics"*[196].

In 2020, the Vatican published the **Rome Call for AI Ethics,** which introduced the concept of "algor-ethics". This is a voluntary pledge to develop AI algorithms aligned with ethical standards. More information on the Rome Call can be found in the **WTTC accompany AI report on "Responsible AI".**

Italy has also played a prominent role in AI research for many years. Italian universities offer more than 200 AI courses spread over more than 50 universities. In 2021, the national **Artificial Intelligence PhD Programme (PhD-AI.it)**[197] was launched. It is one of the largest and most ambitious PhD programmes on AI anywhere in the world. Organised into five courses and involving over 60 universities, three public research bodies and three research organisations it aims to train the next generation of researchers, innovators and professionals.

PhD-AI.it : Five PhD Courses

In October 2020, the Italian Ministry of Economic Development released a draft **National AI Strategy** for public consultation and in November 2021 the Italian government launched the **Strategic Programme on Artificial Intelligence 2022-2024**[198]. This is in line with the EU's AI strategy and outlines 24 policies to be implemented over three years to *'strengthen the AI system in Italy, through the creation and enhancement of skills, research, development programmes and applications of AI'.*

The strategic programme includes:

- **6 Objectives:** the 'goals' of the Italian AI strategy
- **11 Priority Sectors:** 'where' Italy intends to focus investments
- **3 Areas of Intervention:** strategic groups for 'how' Italy aims to achieve the 24 policy priorities

The three key areas of strategic intervention are:

1. **Strengthening and attracting the talents and skills that will enable the AI-driven economy.** Policies include expanding programming courses and featuring applied AI courses and internships in all curricula at ITS ('Istituti Tecnici Superiori').
2. **Expanding funding of advanced research in AI.** Policies include launching an Italian AI research data and software platform that connects existing and new platforms with data devoted to AI and open-source libraries, and promoting initiatives devoted to fundamental, curiosity-driven AI research and trustworthy AI.
3. **Stimulating the adoption of AI and its applications both within the public sector and for enterprises in the wider Italian economy.** Policies include supporting the growth of innovative spinoffs and startups by fostering collaboration within start-up ecosystems and offering public procurement to start-ups for purchasing goods and services.

One of the **strategy's guiding principles is the responsible development of AI,** stating that *'Italy's AI will be human-centred, trustworthy and sustainable. AI development must be centred around economic and social inclusion, human rights as well as environmental sustainability. AI must be designed and implemented in a responsible and transparent manner, based on trust and robustness so that it can be safely adopted in every sector and be capable of responding to societal challenges'.*

To meet this aim, Italy adheres to the **"Ethics Guidelines for Trustworthy AI"**[199] defined by the EU's High Level Expert Group on AI.

To help achieve the 24 policy objectives, research bodies, universities and companies have joined forces to form the non-profit **FAIR Foundation**[200] for **Future Artificial Intelligence Research,** with the aim to be a centre point for putting the strategy's objectives into action.

The 'Strategic Program on AI' also includes an extract of research from the School of Management of Politecnico di Milano, which found that in 2020 only **8% of medium-to-large Italian travel companies had at least one fully operational AI project,** with the manufacturing and finance sectors being the most active in AI. There is therefore a fantastic opportunity for many Italian travel and tourism companies to more fully embrace AI.

Category	Value
Manufacturing	22%
Banking/Finance	16%
Insurance	10%
Utility	9%
Travel	8%
Public Administration	5%
Transport/Logistics	5%
Telco	4%

Italy Strategic Programme on AI (2022-2024) : Private Sector Use of AI

To further develop responsible AI in Italy, the 2020 **Strategy for Technological Innovation & Digitalisation**[201] by the Italian **Ministry for Technological Innovation & Digitalisation** foresees the creation of an **'Alliance for Sustainable Artificial Intelligence'** which aims to provide guiding principles for the development of trustworthy AI solutions. This strategy encompasses the following initiatives on legislation and related issues[202]:

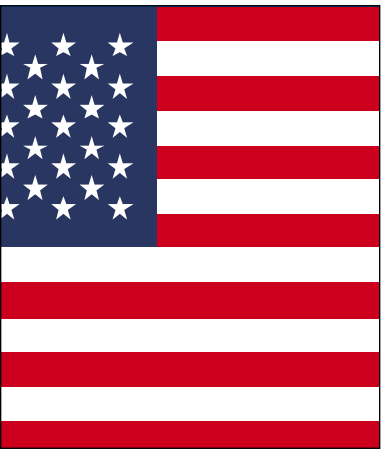
- Adapting the consumer protection framework to AI consumers and the new market reality of AI technologies
- Introducing a compulsory insurance to cover liabilities and damages from the use of AI technologies
- Encouraging out-of-court dispute resolution mechanisms based on the rules of unfair commercial practices.

The Italian **Data Protection Authority**[203] (also known as the Garante) has also been very active around AI. In March 2023, Italy became the first Western country to block OpenAI's ChatGPT model when it imposed a **temporary ban on ChatGPT**[204] from being able to process Italian users' data. The Italian Galante cited *"no legal basis underpinning the massive collection and processing of personal data in order to 'train' the algorithms on which the platform relies" and the lack of an age verification mechanism "exposes children to receiving responses that are absolutely inappropriate to their age and awareness"*. The temporary ban was lifted in April 2023 after OpenAI (the makers of ChatGPT) introduced an **age verification system** in Italy, made its **privacy policy accessible before people registered** and addressed other issues raised by the Galante.

In March 2024, the Galante opened a further investigation into OpenAI's new 'Sora' model for AI video creation[205], calling on OpenAI to state whether it will be offered to Italian users, and to clarify what data is collected and processed to train the algorithm, and which sources are used.

In 2023, Italian Prime Minister Giorgia Meloni, attended the world's first AI Safety Summit in the UK and pledged to **champion 'ethical guardrails' aligned with the Vatican Rome Call for 'algro-ethics'** and throughout the G7 during the Italian Presidency in 2024 (more information on the G7 and AI can be found in the International chapter of this report).

Italian Prime Minister Giorgia Meloni meets UK Prime Minister Rishi Sunak (left), UN Secretary General Antonio Guterres (right) and other world leaders at the UK AI Safety Summit (November 2023)[206]



7. UNITED STATES OF AMERICA

The U.S does not currently have a national level framework for regulating AI and appears to be following a similar path to the UK, with individual US government departments providing recommendations and guidance. In addition, U.S. State and City governments are also pursuing their own AI regulations and task forces, with AI oversight therefore targeting specific use cases and locations, rather than seeking to regulate AI technology as a whole (which is the European approach to regulating AI).

In 2020, the **White House issued a memorandum** [207] to the heads of all U.S. Government Agencies outlining a **10 point framework** that they should use to assess the potential regulatory and non-regulatory approaches to managing AI in their sectors. The memorandum noted that *"The importance of developing and deploying AI requires a regulatory approach that fosters innovation and growth and engenders trust, while protecting core American values, through both regulatory and non-regulatory actions.....To that end, Federal agencies must avoid regulatory or non-regulatory actions that needlessly hamper AI innovation and growth"*

Since then several U.S. agencies have issued AI guidance, including the U.S. Department of Defence (DoD) **Recommendations on the Ethical Use of AI in Defence** [208], the U.S. Food & Drug Administration (FDA) **Action Plan for AI in Medical Devices** [209], guidance from the US Federal Trade Commission (FCC) on the **Use of AI and Algorithms by Companies** [210], and a **Trustworthy AI Playbook** [211] from the U.S. Department of Health & Human Services (HHS).

In 2022, the White House issued a **Blueprint for an AI Bill of Rights** [212] which addressed concerns about AI misuse and provided recommendations for safely using AI in both the public and private sectors. This 'Bill of Rights' is not legally binding and calls for **five safety strategies**, which are for:

1. **Safe & Effective Systems**
2. **Algorithmic Discrimination Protection**
3. **Data Privacy**
4. **Notice & Explanation**
5. **Human Alternatives, Consideration & Fallback**

Whilst the 'AI Bill of Rights' is not legally binding, it serves as a helpful guide for lawmakers, at all levels of government, who are considering AI regulation. The US standards setting body **NIST** (National Institute of Standards & Technology) has also released an **AI Risk Management Framework**[213] to help manage AI's potential risks to individuals, organisations and society, but is also non-binding.

NIST AI Risk Management Framework : 7 Characteristics of Trustworthy AI Systems[214]

Since 2021, several **U.S. States and Cities have proposed, or passed, legislation concerning AI** [215]. Some has focussed on regulating AI in the private sector, whilst others have set standards for the use of AI in public services. In **2021 AI laws were enacted in 4 U.S. States** and in **2022 AI laws were enacted in more States**, with **Colorado, Illinois and Vermont creating Task Forces (or Commissions) to study AI applications**, such as the use of AI and facial recognition.

At an even more granular, City level, **New York City** was one of the first US cities to introduce an **AI law** [216], which aims to **prevent AI bias in the employment process and came into effect in 2023**.

The start of 2023 also saw several calls for U.S. national level regulation – from industry and government agencies. In March 2023, **the U.S. Chamber of Commerce called for US regulation of AI technology** [217] to enhance US growth and protect national security, whilst in April 2023 the US National Telecommunications & Information Administration (NTIA) launched a request for public comment on potential **accountability measures for AI** to ensure '*that AI systems are legal, effective, ethical, safe, and trustworthy*' [218]. The NTIA states that the insights gathered from this consultation will inform the US Presidents work to ensure a comprehensive US federal government approach to AI risks and opportunities.

US President Biden meets with AI Industry & Academics in San Francisco (June 2023)[219]

US President Biden has also held meetings with the AI Industry and in July 2023 announced that 7 AI companies (including WTTC industry members Microsoft and Google) which later expanded to 15 AI companies, had agreed to **voluntarily manage the risks of AI** by[220]:

- Testing their AI systems (by internal and external experts) before their release and commit to making the test results public
- Ensure that people are able to spot AI created content, by implementing watermarks
- Publicly report AI capabilities and limitations on a regular basis
- Research AI risks such as bias, discrimination and the invasion of privacy

The White House added that **the goal was to make it easy for people to tell when online content is created by AI** and is a topic that is also important to the EU. The US-EU Trade & Technology Council (TTC) has therefore been working together on AI and in 2022 published a **Joint US-EU Roadmap for Trustworthy AI & Risk Management**[221] and at the close of the May 2023 TTC meeting, US Secretary of State Antony Blinken and EU Commissioner Margrethe Vestager announced the US and EU would develop a voluntary **'Code of Conduct' for AI** to bridge the gap until formal laws were introduced in both location and following the sixth TCC meeting the US and EU issued the 2nd edition of a **Terminology & Taxonomy for AI**[222], which details a list of jointly agreed AI definitions.

They further announced that once finalised the AI Code of Conduct would be put to the G7 world leaders as a potential G7 proposal and companies would be encouraged to voluntarily sign up. This follows a **pledge from G7 leaders** in May 2023 to "*advance international discussions on inclusive AI governance and interoperability*" [223].

Also in May 2023, the **US National Science & Technology Council**, **Select Committee on AI** [224] [225], published an updated **National AI R&D Strategic Plan** [226], to take account of substantial developments in AI technology. The plan set out **9**

strategic thrusts to maintain the USA at the forefront of AI innovation.

1. Make long-term investments in fundamental and responsible AI research
2. Develop effective methods of human-AI collaboration
3. Understand and address the ethical, legal, and societal implications of AI
4. Ensure the safety and security of AI systems
5. Develop shared public datasets and environments for AI training and testing
6. Measure and evaluate AI systems through standards and benchmarks
7. Better understanding of the national AI R&D workforce needs
8. Expand public-private partnerships to accelerate AI advances
9. Establish a principled and coordinated approach to international collaboration in AI research

This latest version of the R&D Strategic Plan gives particular attention to **shared public datasets** for AI training and testing, with effective **measurement and evaluation of AI systems**. It also has a direct focus on **risk management** and **cybersecurity measures** to ensure the **safety and security of AI systems**, at both an organisational/business level and at the technical level.

The plan provides a redefined roadmap for AI R&D, but not only for the scientific community, but also for policymakers and businesses who all have a role to play in shaping the future of AI. **The plan emphasises the importance of a shared vision for AI**, and commits the USA towards greater global collaboration, but also notes the need to strengthen AI capabilities within the USA to attract and retain the best talent and organisations at all levels of the AI supply chain.

In November 2023 the **U.S Cybersecurity & Infrastructure Security Agency (CISA)** issued a **Roadmap for AI**[227] to protect the nations AI systems from cyber attack and to deter malicious use of AI that could threaten the U.S critical infrastructure. The roadmap includes working with manufacturers of AI systems to ensure their products include **'security by design'** principles, which ensures cyber security is a core element of AI system development from the beginning and throughout its lifecycle. This is not only important for the U.S, but all AI users.

In July 2023, **U.S Vice President Harris convened consumer protection, labour and civil rights leaders to discuss the risks related to AI** and underscored that the U.S must advance innovation through AI and protect consumers rights. The meeting participants agreed that more work was urgently required to implement the principles and practices outlined in the Blueprint for an AI Bill of Rights, including proactively ensuring that AI tools do not drive harm, or discrimination, amongst any population group.

This was followed by a landmark **Executive Order (EO) on the Safe, Secure, & Trustworthy Development and Use of AI**[228] in October 2023 to manage the risks of AI and embrace its full innovative potential. This extensive EO directed significant action to establish new standards for AI safety and security, promote innovation and competition, advance equity and civil rights, protect citizens privacy and advance U.S leadership in AI. Example actions required under the EO across its eight policy areas included:

1. **New Standards for AI Safety & Security**
    - The National Institute of Standards and Technology (NIST), Department of Homeland Security (DHS) and Departments of Energy (DOE) to develop standards, tools, and tests to ensure that AI systems are safe, secure, and trustworthy.
    - The Department of Commerce (DOC) to protect citizens from AI enabled fraud and deception by establishing standards and best practices for detecting AI generated content and authenticating official content.
2. **Protecting Citizens Privacy**
    - Funding for the National Science Foundation and Research Coordination Network to strengthen privacy preserving research and technologies.
    - Privacy guidance for Federal agencies using commercially available information containing personally identifiable data.
3. **Advancing Equity & Civil Rights**
    - Guidance for landlords and Federal contractors to keep AI algorithms from being used to exacerbate discriminations.
    - Development of best practices for the fair use of AI throughout the criminal justice system.
4. **Standing up for Consumers, Patients & Students**
    - Department of Health & Human Services (DHHS) to advance the responsible use of AI in healthcare.
    - Creation of resources to support teachers deploying AI in education.
5. **Supporting Workers**
    - Development of principles and best practices for the use of AI in the workplace to prevent, for example, employers evaluating job applications unfairly.
    - Production of a report on AI's potential impacts to the job market and options for Federal support for workers facing disruptions caused by AI.
6. **Promoting Innovation & Competition**
    - Pilot of a National AI Research Resource to provide AI researchers and students access to critical AI resources, computing power and data.
    - Expansion of the ability of highly skilled immigrants and non-immigrants, with critical AI skills to study, stay, and work in the United States.
7. **Advancing U.S AI Leadership**
    - The Department of State (DOS) and Department of Commerce (DOC) to expand bilateral, multilateral, and multistakeholder engagements on AI collaboration.
    - International promotion of the safe and responsible development and use of AI to solve global challenges, such as climate change and the UN Sustainable Development Goals (SDG).
8. **Ensure Responsible & Effective U.S Government use of AI**
    - Acceleration of hiring AI professionals in the U.S Government led by the U.S Office of Personnel Management, U.S. Digital Service, U.S. Digital Corps, and Presidential Innovation Fellowship.
    - Guidance for Federal agencies using AI, including clear standards to protect citizens rights and safety, improve AI procurement and strengthen AI deployment.

It is important to note that Executive Orders, whilst powerful, can be undone by future Presidents and cannot create new agencies, or grant new regulatory powers over private companies, unlike acts of Congress. Some U.S stakeholders have therefore called for this Executive Order, alongside the Blueprint for an AI Bill of Rights and NIST AI Risk Management Framework to form the basis for national AI governance and accountability to be enshrined in law in the U.S through action by the U.S Congress.

To coincide with the world's first AI Safety Summit hosted by the UK in November 2023 (covered in the UK chapter of this report) U.S. Vice President Harris made several further AI announcements including:

- **Consultation & Draft Policy Guidance on the use of AI by the U.S Government :** This consultation and draft policy built on the AI Bill of Rights and NIST AI Risk Management Framework. It outlined concrete steps to advance responsible AI innovation in government, increase transparency and accountability, protect Federal workers, and manage risks from the sensitive uses of AI. The draft policy also included requirements that Federal departments and agencies conduct AI impact assessments, identify, monitor, and mitigate AI risks, sufficiently train AI operators, conduct public notices and consultation on the use of AI within their area, and offer options for the public to appeal harms caused by AI.

  The **final policy was published in March 2024** and incorporated many of the suggestions made during the consultation[229]. Specific requirements include[230,231]:

  - **AI Risk Management:** By December 2024, all Federal agencies are required to implement safeguards when using AI in a way that could impact citizen's rights or safety. These safeguards include a range of mandatory actions to reliably assess, test, and monitor AI's impacts on the public, mitigate the risks of algorithmic discrimination, and provide the public with transparency into how the government uses AI.
  - **AI Transparency:** All Federal agencies must improve public transparency of their use of AI, including producing an annual inventory of their AI use cases.
  - **Responsible AI Innovation:** AI presents tremendous opportunities for government and society so the policy encourages all Federal agencies to experiment with generative AI, with adequate safeguards in place.
  - **AI Workforce Growth:** All Federal agencies are encouraged to expand and upskill their AI talent. To facilitate this the U.S Office of Personnel Management has issued **guidance on pay and leave flexibility for AI roles**[232] (to improve retention and emphasise the importance of AI talent across the U.S Government) and the 2025 U.S Budget includes an additional $5 million (USD) to expand a government wide AI training programme, which had 4,800 participants from 78 Federal Agencies in 2023.
  - **Strengthening AI Governance:** To ensure accountability, leadership and oversight of AI in the U.S Government, the policy requires all Federal agencies to appoint a **Chief AI Officer (CAIO)** and establish **AI Governance Boards** to co-ordinate the use of AI across their agency.

  The U.S has also published an inventory of U.S Government AI use cases and how the Federal government is using AI to better deliver public services[233], including in transportation, healthcare, the environment and benefits. At the time of publication of this report there were more than **700 examples of AI use across the U.S Government**.

- **Partners to the Political Declaration on the Responsible Military Use of AI & Autonomy :** The Political Declaration was published in February 2023[234] and in November 2023, Vice President Harris announced that 31 nations had endorsed the Declaration and continued to call on others to join. The Declaration marked the beginning of a crucial dialogue among responsible countries about the use of AI in military applications and included that they should always be in compliance with International and Humanitarian Law, only used by properly trained personnel, have built in critical safeguards, and be subjected to rigorous testing and legal review.
- **Philanthropic funding to advance AI for the public good :** Ten leading philanthropic foundations announced they have collectively committed more than $200 million (USD) in funding towards AI priorities laid out by Vice President Harris[235]. The ten foundations are: *David & Lucile Packard Foundation; Democracy Fund; Ford Foundation; Heising-Simons Foundation; John D. & Catherine T. MacArthur Foundation; Kapor Foundation; Mozilla Foundation; Omidyar Network; Open Society Foundations; and the Wallace Global Fund.* They have formed an **'AI funders network'** to coordinate philanthropic giving for AI around five pillars, which are:

- Ensuring AI protects democracy and civil rights
- Driving AI innovation in the public interest
- Empowering workers to thrive amid AI-driven changes
- Improving transparency and accountability of AI
- Supporting international rules and norms on AI

- **The creation of a new U.S AI Safety Institute (US AISI)[236] located in the US National Institute of Standards and Technology (NIST)**: The U.S. AI Safety Institute was established under NIST at the direction of President Biden to support the responsibilities assigned to the **Department of Commerce** under the president's landmark Executive Order (EO) on AI.

The U.S. AISI will operationalise NIST's AI Risk Management Framework by creating guidelines, tools, benchmarks and best practices for evaluating and mitigating the potentially dangerous capabilities of advanced AI systems.

The Institute will also develop technical guidance that can be used by U.S. regulators when considering policy and enforcement action on issues such as authenticating content created by humans, watermarking AI generated content, identifying and mitigating against harmful discrimination, and enabling the adoption of privacy preserving AI.

The U.S AISI will also focus on information sharing and research collaboration with AI experts from academia, industry and civil society, as well as other institutions from around the world. **In March 2024, the U.S. AISI signed a partnership MOU with its peer organisation in the UK, the UK AI Safety Institute (UK AISI) to collaborate on AI safety testing and knowledge exchange.**

US Secretary of Commerce, Gina Raimondo & UK Secretary of State for Science, Innovation & Technology Michelle Donelan sign AI Safety MOU [237]

The capability of the U.S AI Safety Institute was further enhanced in February 2024 with the creation of the **U.S. AI Safety Institute Consortium (AISIC)**[238] which brings together over 200 AI creators, researchers, organisations and State/Local government representatives to collaboratively support the development and deployment of safe and trustworthy AI. The consortium includes WTTC industry members Microsoft, Google and IBM, as well as many other leading companies and innovative startups on the frontline of developing the most advanced AI systems.

The consortium will initially focus on priority actions outlined in AI Executive Order, including developing guidelines for red teaming (that is acting as an adversary to simulate using AI for dangerous or dishonest purposes), capability evaluations, safety and security testing, risk management and watermarking of AI generated content. This will lay the foundations for AI safety around the world.

The U.S is also committed to helping researchers and entrepreneurs build the next generation of safe and trustworthy AI and in January 2024 the U.S National Science Foundation (NSF) launched the **National AI Research Resource (NAIRR) pilot**[239], as a first step towards shared research infrastructure for AI. This includes democratised access to critical resources necessary for responsible AI innovation and discovery.

The NAIRR pilot involves 11 Federal agencies and 25 private sector, nonprofit and philanthropic organisations, who will provide access to advanced computing, datasets, AI models, software, training and user support to U.S researchers and educators. The pilot will power innovative AI research and inform the investment needed to realise the full NAIRR vision.

Other U.S activities in AI education and research include:

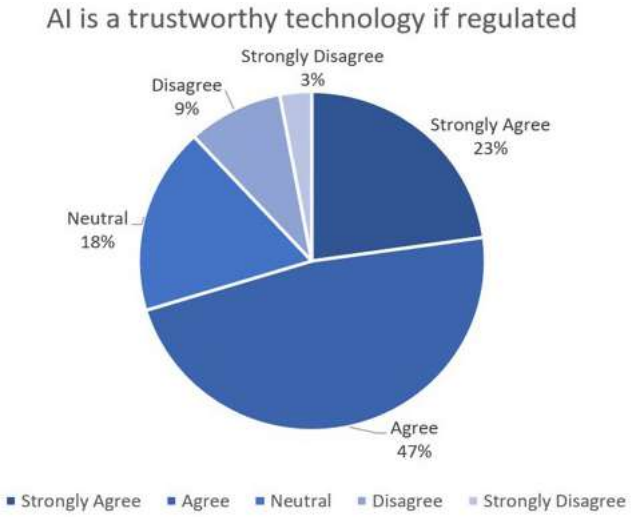
- **National AI Research Institutes :** Call for proposals to establish new AI research institutes for *'AI for Astronomical Sciences', 'AI for Materials Research Discovery'* and *'Strengthening AI for Robustness & Adaptability'*.
- **Strengthening U.S AI Workforce :** By 2025 a pilot initiative led by the U.S Department of Energy and U.S National Science Foundation will have trained more than 500 new researchers at all academic levels and career stages in a variety of AI skills[240].
- **AI and Teaching :** The U.S Department of Education has released a report on **AI & the Future of Teaching & Learning**[241] to guide and help teachers to understand what AI can do to advance educational goals, while evaluating and limiting its risks.
- **EducateAI :** In December 2023 the U.S National Science Foundation launched the EducateAI[242] initiative to enable teachers to create high quality, AI educational experiences. To ensure that teachers are well equipped to teach AI concepts effectively, the EducateAI initiative will offer professional development opportunities to teachers so that they have the knowledge and skills necessary to integrate AI into their lessons and teaching practices.

8. CANADA

Canada is regarded as one of the world's leading AI nations and was the first in the world to issue a **National AI Strategy** in 2017, which was **updated in 2022** [243]. Data published by the Canadian government shows that Canada is home to **more than 1200 AI startups**, with **3 national AI Institutes** (in Edmonton [244], Montreal [245] & Toronto [246]) and Toronto University is considered one of the great global hubs for AI research. In 2022, AI startups in Toronto raised more than $3.7 Billion (CAD) and in 2023 the Canadian government launched a new agency, the **Canada Innovation Corporation (CIC)** to encourage innovation in areas such as AI.

In 2020 the **Canadian Public Awareness Working Group of the Advisory Council on AI** [247] conducted a survey of Canadians views towards AI and found that there was significant interest amongst Canadians in the opportunities offered by AI, but also some concerns regarding its potential to cause harm. **70% of respondents said they believed AI could be trusted if regulated by public authorities**.

Survey by Canadian Public Awareness Working Group of the Advisory Council on AI:



In 2022, the Canadian government introduced **Bill C-27**, the **Digital Charter Implementation Act**, which contained 3 further acts, the **Consumer Privacy Protection Act (CPPA)**, the **Artificial Intelligence and Data Act (AIDA)** and the **Personal Information and Data Protection Tribunal Act (DPTA)**.

The **Artificial Intelligence and Data Act (AIDA)** is currently under negotiation in the Canadian Parliament and aims to standardise the rules regarding the design, development and use of AI across Canada.

The Canadian government was very conscious that the global interconnectedness of the digital economy requires that Canadian regulation of AI is internationally co-ordinated and interoperable with other countries. The AIDA therefore draws on approaches taken from the EU, UK and USA and could be described as taking a risk based approach (such as in the EU), as well as a sector specific approach (such as in the UK and USA).

Canada already possesses robust laws that apply to many AI uses. For examples **the Canadian Personal Information Protection and Electronic Documents Act (PIPEDA)** [248] provides important guardrails around how businesses use personal information, Health Canada has issued **Guiding Principles for the Development of Medical Devices that use AI** [249], the Office of the Superintendent of Financial Institutions is updating its **Risk Guidelines** to account for the use of AI [250], and the Human Rights Commissions are also moving to understand the **implications of AI on human rights issues** in Canada [251].

However the Canadian government recognises that AI has created some regulatory gaps that must be filled through the Artificial Intelligence and Data Act (AIDA). The AIDA would apply to any *"technological system that, autonomously or partly autonomously, processes data related to human activities through the use of a genetic algorithm, a neural network, machine learning or another technique in order to generate content or make decisions, recommendations or predictions*".

The **AIDA takes a risk based approach similar to the EU**, but differs from the EU as it does not ban the use of certain automated decision making tools, rather under the AIDA regulation, AI developers must create a mitigation plan to reduce risks and increase transparency when using AI in high risk systems.

The most significant obligations in the AIDA regulation would apply to 'high impact' AI systems. Although this term has not been fully defined in the Bill (but will be in the final regulation) to ensure interoperability with other AI frameworks such as the EU AI Act (which is also going through EU negotiation in 2023), the Canadian government has suggested factors that will be considered to determine if an AI system is 'high impact'. These include:

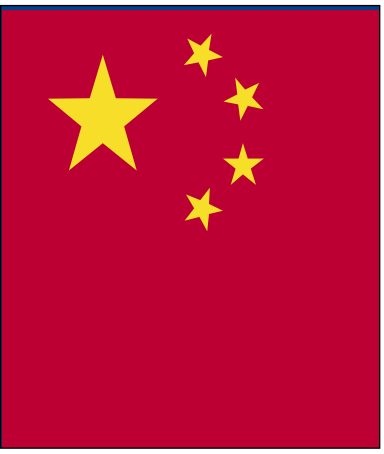
- Risks to health, safety or human rights
- Severity of potential harms
- Scale of use
- Extent to which it is not possible to opt-out from the AI system
- Degree to which the risks are adequately regulated under another law

The AIDA applies different regulatory responsibilities on 3 classes of AI stakeholders – those who **design or develop high impact AI systems**, those who **make high impact AI systems available for use** and those that **manage the operations of high impact AI systems**, but generally developers and operators of high-impact AI systems would be required to:

- Establish measures to identify, assess and mitigate the risks of harm, or biased output
- Monitor compliance and effectiveness of those measures

To administer the Act, the **AIDA proposes to create a new office headed by a new AI and Data Commissioner**. In the initial years after AIDA comes into force, the focus of the Commissioner would be on education, establishing guidelines, and helping businesses to come into compliance through voluntary means, before eventually evolving into an enforcement role. The Canadian Government intends to allow ample time for the AI community to adjust to the new framework before enforcement actions are undertaken. If the Act was to be adopted in 2023, Canada intends for a period of at least 2 years for further consultation on areas such as the types of system that should be 'high impact' and the establishing of an **AI Advisory Committee**, meaning the earliest it could come into force would be 2025.

It is also worth noting that there are **proposed privacy law reforms in Canada at both the Province and Federal level**. The Canada wide **Consumer Privacy Protection Act (CPPA)** in Bill C-27 aims to modernise the existing Canadian privacy law so that it is fit for the digital economy, which includes **restrictions around automated decision making**, whilst provisions related to automated decision making are also included in **Québec's recently revamped privacy law** (called Bill 64 [252]) and came into effect in September 2022. These provisions apply only to decisions that are exclusively automated and give consumers the right to information and the right to object when their personal information is used to make decisions about them without independent human judgment.



9. CHINA

China is an Artificial Intelligence powerhouse and in 2017 issued an **AI Development Plan** [253] which set a goal for the **Chinese AI industry to be generating more than 1 trillion Chinese Yuan (RMB) annually by 2030**, which is approximately equivalent to $150 billion (USD), and have an **AI industry worth 10 trillion RMB (approx. $1.5 trillion USD)**. China has plans for **more than 20 national AI innovation development zones** [254], but is yet to pass a comprehensive national AI law. It has instead focussed on AI regulations relating to specific AI applications, and has issued regulations for **AI powered 'recommendation algorithms'** and **synthetically generated material** (such as 'deepfakes') and in 2023 released a **draft regulation for managing generative AI services** [255].

All organisations and individuals involved in the processing of personal information in China are also bound by China's **Personal Information Protection Law (PIPL)**, which came into force in 2021. This is similar to the EU General Data Protection Regulations (GDPR) and aims to ensure transparency and fairness when collecting and processing personal information.

Within the PIPL are specific rules covering **'automated decision making'** where providers must ensure there is no unreasonable differential treatment of individuals based on an automated decision and if the automated decision could significantly affect the rights of an individual, they can prohibit an organisation from making decisions based solely on automation.

The following table provides a summary of **seven prominent AI governance documents** issued in China since the launch of the AI Development Plan in 2017.

China AI Governance Documents (2017-2023):

Document	Date Published	Summary
New Generation AI Development Plan [256] [257]	2017	This plan focused on encouraging AI development, but also outlined a high-level timetable for developing AI governance regulations through to 2030
Governance Principles for New Generation AI: Developing Responsible Artificial Intelligence [258] [259]	2019	Issued by an expert committee, this document profiled 8 principles for AI governance which were: • Harmony & Friendliness • Fairness & Justice • Inclusion & Sharing • Respect Privacy • Secure, Safe & Controllable • Shared Responsibility • Open Collaboration • Agile Governance
Outline for Establishing a Rule-of-Law Based Society (2020–2025) [260] [261]	2020	This Chinese Communist Party (CCP) document presented a list of social and legal issues to address before 2025. It was the first CCP policy document to specifically call for measures to address AI enabled recommendation algorithms and deepfakes

New Generation Code of Ethics for AI [262] [263]	2021	Issued by an expert committee this document offered high level guidance for how ethics should be embedded in AI governance. This included that humans should maintain control over AI and have ultimate responsibility for AI systems
Provisions on the Management of Algorithmic Recommendations in Internet Information Services [264] [265]	2021	This was China's first legally binding AI regulation. It is for online algorithms that provide content recommendations and includes protections for workers impacted by algorithms. It also created an 'Algorithm Registry' that can also be used in future regulations
Provisions on the Administration of Deep Synthesis Internet Information Services [266] [267]	2022	This regulation is for AI applications that can generate text, video or audio. It prohibits the generation of 'fake news' and requires synthetically generated content to be labelled as generated by AI
Measures for the Management of Generative Artificial Intelligence Services (DRAFT for comment in 2023) [268] [269]	2023	Prepared in response to the explosion in popularity of AI chatbots, this regulation covers almost the exact same ground as the deep synthesis regulation (above), but with more emphasis on text generation and training data. It requires AI system providers to ensure that both the training data and generated content is "true and accurate"

The development of AI regulation in China has been guided since 2017 by the **'New Generation AI Development Plan'** issued by the State Council. This promoted the Chinese national development of AI, as well the laws, regulations and ethical standards to advance AI.

The AI Development Plan was enhanced in 2021, when a special committee of the Chinese Ministry of Science & Technology (MOST) issued an **AI 'Code of Ethics'**, which provided ethical guidance for all stakeholders engaged in AI related activities. It included **6 ethical standards** that should be followed, which were to:

1. Improve Human Welfare
2. Promote Fairness & Justice
3. Protect Privacy & Security
4. Ensure Controllability & Trustworthiness
5. Strengthen Accountability
6. Improve Ethical Literacy

In 2021 the Cyberspace Administration of China (CAC) issued the '**Internet Information Service Algorithmic Recommendation Management Provisions'** which has **29 provisions** and requires that providers of AI powered recommendation systems uphold user rights. **'Recommendation algorithms'** are at the core of most consumer facing digital products, determining which news articles, social media posts and products users see.

Under the provisions companies are banned from using personal characteristics to offer different prices, to different users, such as using customer financial data to advertise the same product at different prices. Providers must also notify users if a recommendation was made based on an algorithm (such as a marketing recommendation for a product) giving them the option to opt out. The provisions include protecting minors from harm and allow users to select, or delete, tags about their personal characteristics and gives users the right to switch off algorithmic recommendation services in full if they wish. But these provisions don't only apply to Chinese providers, **they also apply to all international companies operating in China that use algorithms and/or AI techniques such as machine learning, in their smart phone apps, or websites**.

The provisions also mandate transparency and **audits of recommendation algorithms**. To understand how algorithms work and to ensure that they do so within acceptable parameters, China has created an '**Algorithm Registry**' as part of this regulation. **The public version of the registry includes a high level description of an algorithm's fundamental features, how it functions and its operational use cases**. The registry also requires a security assessment of all registered algorithms.

A tangible example of where this regulation has had a real human effect, are the protections it now provides to food delivery drivers in China, whose schedules and salaries are set by algorithms. China's food delivery industry is 3x larger than the United States' and employs 6 million drivers. Two companies, Meituan and Ele.me, dominate 98% of the market and fierce competition between the two had meant that data and algorithms were assigning jobs to drivers and telling them how quickly they must make their deliveries, with increasingly unrealistic demands, resulting in some tragic accidents.

The new 'recommendation algorithm' regulation now requires that companies balance several factors and loosen up the delivery time limits, whilst making sure workers receive adequate compensation and rest and that they "*ensure workers rights and interests*".

In the public Algorithm Registry filings, both Meituan and Ele.me's emphasises the steps they have taken to lengthen delivery times. Meituan's entry explicitly notes that its algorithm displays the longest among 4 possible estimated delivery times to the customer on their order page, whilst Ele.me's entry emphasises that the "*minimum delivery time will not be adopted*" and offers mechanisms for drivers to request more time in difficult conditions. This example illustrates that as algorithms become increasingly ingrained in society, China's AI regulation is no longer a strictly technical matter, but can have a real, tangible impact on people's lives and livelihoods.

In 2022 China introduced its second legally binding AI regulation. The Cyberspace Administration of China (CAC), Ministry of Industry & Information Technology (MIIT) and the Ministry of Public Security (MPS), jointly issued new regulations on the '**Administration of Deep Synthesis of Internet based Information Services**'. These new rules placed significant restrictions on technologies such as 'deep fakes' and other AI generated media, including the requirement to add labels, or tags, to content created by AI. The provisions define deep synthesis as "*technology utilising generative and/or synthetic algorithms, such as deep learning and virtual reality, to produce text, graphics, audio, video, or virtual scenes.*"

These Deep Synthesis Provisions came into effect in January 2023 and apply to both **'deep synthesis service providers'** (companies that offer deep synthesis services and those that provide them with technical support) and **'deep synthesis service users'** (organisations and people that utilise deep synthesis to create, duplicate, publish or transfer information). While some other countries are considering banning the dissemination of 'deepfake' videos (without the subject's consent), China's law does not ban them, but instead regulates each stage of the process from creation, to labelling, to dissemination.

Following the amazing rise in the popularity of AI chatbots, **China released draft measures and a public consultation for managing 'generative AI' services in early 2023**, which included a requirement that companies must submit their generative AI system to a security assessment before launching it into the market in China. The provisions are very similar to the deep synthesis regulations, but place more emphasis on AI text generation and their training data.

Led by the Cyberspace Administration of China (CAC) they have said that generative AI system providers will be responsible for ensuring their solutions avoid discrimination and that the AI generated content should be "*true and accurate*". Following the public consultation, in July 2023 the CAC and 6 other Chinese regulators jointly passed the **Interim Measures for the Management of Generative AI Services**, which came into force in August 2023. Key points of note from the regulation include:

- **Scope** : The measures only apply to providers of generative AI services to the general public in China. Companies who use generative AI technology for their own internal business purposes are exempt from the rules.
- **Sector Specific Regulations** : The CAC is encouraging industry specific regulators in China to formulate separate and additional sector specific regulations for generative AI (which should incorporate, but then prevail over, the national generative AI regulations). It is therefore likely that more focused rules will be released soon.
- **Collaboration** : To foster AI growth, providers of generative AI systems are encouraged to share computing power resources and public data.
- **User Rights** : Generative AI providers must ensure their solutions do not infringe the legal rights of users and AI providers must complete training data optimisation activities according to the law to prevent bias and discrimination (etc). Providers must also have a process for managing user complaints and conduct age verification to protect minors against addiction towards generative AI services.
- **Oversight** : Providers must go through a security assessment and file their algorithm(s) with the Algorithm Registry. Labelling rules under the existing 'deep synthesis' regulations must also be complied with.

In March 2024 an **'International Dialogue on AI Safety'**[270] was held in Beijing between Chinese and Western scientists. Jointly hosted by the **Beijing Academy of AI** and the **Safe AI Forum**, the event culminated in a **consensus statement recommending a set of 'red lines' for the development of AI to prevent potentially catastrophic and existential risks from AI**.

In the consensus statement, the scientists advocate for prohibiting the development of AI systems that can autonomously replicate, seek power, deceive their creators, or enable the building of weapons of mass destruction (WMD) and conduct cyberattacks. To achieve this, the statement also laid out a series of measures to be taken to ensure those lines could never be crossed. On the second day of the event this statement was discussed with senior Chinese officials and Chinese AI company CEO's who expressed their thanks and enthusiasm for the consensus statement.

International Dialogue on AI Safety (Beijing, March 2024)[271]

In a move similar to the USA, regulation of AI in China is also being enacted at the provincial and city level. In September 2022, Shanghai became the first province in China to pass a law focused AI development. The '**Shanghai Regulations on Promoting the Development of the AI Industry'** [272] provide a framework for companies in the region to develop their AI products and provides space for businesses to explore and test their technologies in a so called 'sandbox'.

At the same time in 2022, the Chinese City of Shenzhen passed its own '**Shenzhen Special Economic Zone Artificial Intelligence Industry Promotion Regulations'** [273]. Shenzhen is regarded as a technology hub in China and home to many leading technology companies such as Tencent, Huawei and DJI Drones and has over 1,300 AI related businesses. The regulations **seek to promote the development and use of AI in both the public and private sectors** and **mandate that an AI governance institution is established** and directs the city government to set up an **AI ethics committee**. The regulation also encourages universities to establish interdisciplinary **AI courses** and set up **AI R&D labs**.

After several years of developing AI specific regulations and AI regulations emerging in provinces and cities, in June 2023, China's State Council announced that it would begin preparations for **national Artificial Intelligence Law** to be submitted to the National People's Congress (China's legislature). It is anticipated this law will build on the existing AI regulations in China to create a more comprehensive, horizontal piece of legislation that acts as a capstone on Chinese AI policy.

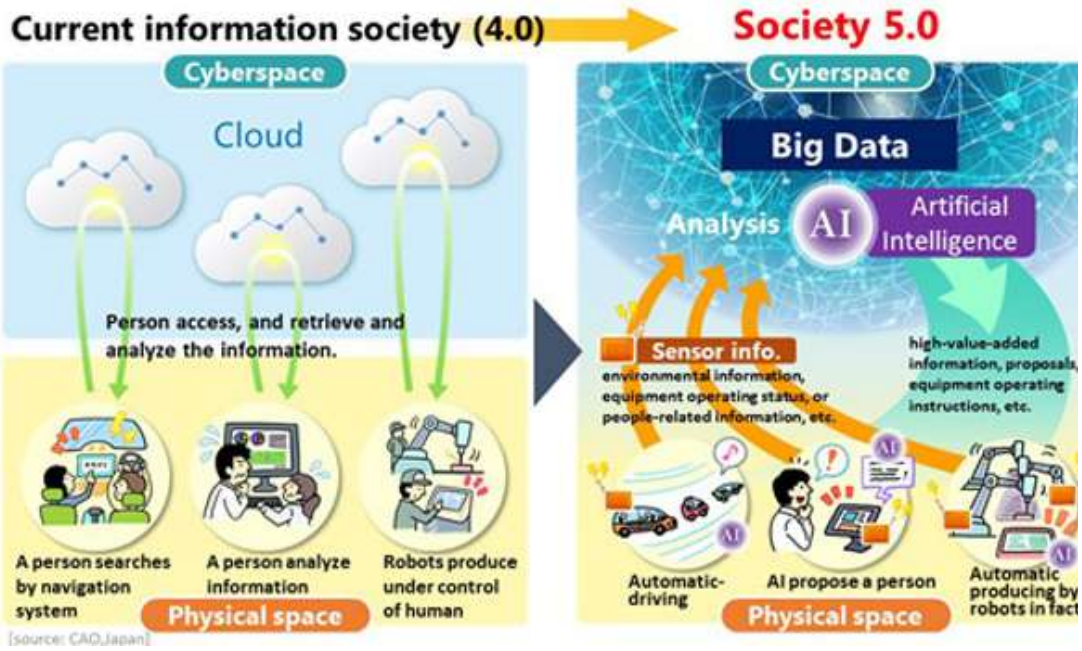
This matters not only to China, but to the whole world. China is the world's largest producer of AI research and its regulations will drive new AI research and development that could influence everything from content controls within AI chatbots used in the Pacific Region, to the safety features embedded in autonomous vehicles in Europe. **As AI has the potential to change the world, a new national Artificial Intelligence Law in China could be one of the world's most important pieces of legislation**.

10. JAPAN

In 2016 Japan introduced **Society 5.0** [274] [275] as a **vision for the future of Japan**. It follows four previous states of society that were determined to be hunter/gathers (society 1), an agricultural society (society 2), an industrial society (society 3) and the current information society (society 4).

Society 5.0 envisions a sustainable, inclusive and economically successful Japan that is powered by game changing technologies such as big data, AI, the Internet of Things (IoT) and robotics, in all industries, and in all areas of social life.

The Japanese transition to Society 5.0 has been deemed similar to the **Fourth Industrial Revolution** [276] as both concepts encourage a fundamental shift of our world towards a new paradigm. But Society 5.0 is a more far-reaching concept, as it envisions the **complete integration of the frontier between cyberspace and the physical space**. Japan therefore sees advancing AI as critical to realising their Society 5.0 vision.



Vision for Society 5.0 by the Government of Japan Cabinet Office

Japan defines AI as "*systems to realise intelligent functions*" and their AI governance journey started in 2019 with the publication of guidance for the **Social Principles of Human Centric AI** [277], which set out **3 philosophies** and **7 principles** for the development and use of AI in Japan. They were:

<u>Philosophies</u>

1. **Human Dignity** – a society that has respect for human dignity
2. **Diversity & Inclusion** – a society where people with diverse backgrounds can pursue their well-being
3. **Sustainability** – a sustainable society in which AI is expected to make a significant contribution to the realisation of Society 5.0 and the need for a society that is compatible with the use of AI (an 'AI-Ready Society')

Principles

1. Human Centric
2. Education/Literacy
3. Privacy Protection
4. Ensuring Security
5. Fair Competition
6. Fairness, Accountability & Transparency
7. Innovation

Japan's AI regulatory policy is based on these 7 social principles and it is important to note that the goal of the social principles is not to restrict the use of AI, but rather to realise the 3 philosophies through AI. These social principles and philosophies were contributed by Japan to the development of the **Responsible AI recommendations from OECD** [278], whose first principle is to achieve "*inclusive growth, sustainable development and wellbeing*".

Also in 2019 Japan published their first **National AI Strategy** [279] [280]. This led to educational reforms and the widespread introduction of **AI education** in Japanese schools and corporate HR development programmes across Japan to take account **of AI integrated with the workforce**. A series of **AI research projects** were also started and the strategy was updated in 2021 to include **AI as a tool to tackle pandemics, natural disasters and climate change**. The strategy was again updated in 2022 to further promote the **implementation of AI in society**.

In 2021 the Japanese Ministry of Economy, Trade & Industry (METI) published **AI Governance in Japan (v1.1)** [281] noting that "*legally binding horizontal requirements for AI systems are deemed unnecessary at the moment*", because regulations have difficulty in keeping pace with the complexity of innovation and speed of AI developments. Therefore like the USA and UK, Japan does not have a comprehensive overarching regulation for AI and instead relies on several non-binding guidance documents. **The emphasis is on a risk based and multi-stakeholder process**, rather than a one-size-fits all AI regulation.

Examples of Japan's AI guidance include:

- **Governance Guidance for the Implementation of AI Principles v1.1** [282] (2022) which is targeted at companies that operate AI systems and includes actionable targets that can be implemented by any business to achieve the 7 social principles. It also provides hypothetical examples of implementing each of the actionable targets and practical examples for undertaking a gap analysis between the actionable targets and the current state of the business.
    - An example actionable target from the document is : "*Target 1-1: Companies that develop and operate AI systems should, under the leadership of top management, understand not only positive impacts but also negative impacts, including unintended risks, that AI systems may have. This information should be reported to the top management and shared among those in top managerial positions, and their understanding should be updated in a timely manner*".
    - A hypothetical example of implementing this target (summarised from the document) is : "*we have reviewed the positive impacts that AI can have on our business by referring to comprehensive and exhaustive materials online (news feeds and research papers). In addition, we have investigated whether any incidents have been reported of AI systems whose function is the same, or similar, to the AI system that we are going to develop and operate, and even if there were no reports of such incidents, we have examined whether there were reports anticipating specific possibilities of incidents. In our analysis, we find that some incidents relate to the management of personal information, fairness and security. We therefore plan to perform in-depth impact analyses of the proposed AI system, with a gap analysis against our current business operations*"
- **Corporate Privacy Governance Guidebook v8** [283] (2020) and the **Guidebook for the Utilisation of Camera Images v3** [284] (2022) which were both jointly developed by METI and the Ministry of Internal Affairs and Communications (MIC) and provide guidelines on how to handle data (text & images), but not only in terms of compliance with the Japanese Act for the Protection of Personal Information (APPI), but also by taking appropriate privacy measures based on communication and engagement with stakeholders.
- **Contract Guidelines on Utilisation of AI and Data** (2018) aims to promote the free flow of data and the utilisation of AI among businesses. It consists of two sections – one focussed on 'Data', and the other on 'AI'. The 'Data' section provides guidance for implementing contracts related to data utilisation, whilst the 'AI' section provides guidance for

contracts related to the development and use of AI based software. Each section describes the main issues associated with such contracts, provides sample contract clauses, and includes points to be considered in contract drafting. It is intended that this guidance may be referred to when drafting any contract related to the development or use of AI or data. However this was developed further by the Ministry of Agriculture, Forestry and Fisheries (MAFF) who issued **Contract Guidelines on Utilisation of AI and Data in the Agricultural Sector** [285]**,** as part of their efforts to promote 'smart agriculture'.

- **Machine Learning Quality Management Guidelines v3** [286] (2023) aims to enable providers of AI products and services to evaluate and improve the quality of their AI systems. This is to reduce accidents and/or losses caused by AI malfunctions. It also enables AI system providers to express the quality of their products in a standardised and consistent way, which can be used for both **commercial purposes** (such as when quoting the prices and performance of their AI based products) and for **social purposes** (such as to demonstrate their commitment to 'safe and response AI' to society).

Existing legislation and civil law are also used in Japan to manage and promote AI in a variety of contexts. For example:

- The **Act on the Protection of Personal Information (APPI)** [287] describes the key mandatory obligations for organisations that collect, use, or transfer personal information. In 2022 an amendment to the APPI introduced the concept of **'pseudonymised personal data'** (which is a technique to replace, or remove, information in data that identifies an individual). Since the obligations for handling pseudonymised data (which does not identify an individual) are less onerous than for personal information (which does identify an individual), this new concept is expected to enable and encourage businesses to use more data for AI development.
- In the financial sector, the **Financial Instruments & Exchange Act** [288], now requires businesses engaged in AI algorithmic high-speed trading to register with the Japanese government and requires them to maintain transaction records and establish a risk management system, whilst the **Instalment Sales Act** [289] was revised in 2020 to enable a "*certified comprehensive credit purchase intermediary*" to determine credit amounts using data and AI. Previously credit card companies had to use a statutory formula considering annual income, family structure, and other factors when assessing credit amounts
- In the mobility sector the **Road Transport Vehicle Act** [290] and **Road Traffic Act** [291] were revised in 2020 to allow Level 3 automated driving on public roads. This permits an AI powered self-driving system to operate a car for most of the time, but with a human driver ready to take over in case of an emergency. **In 2021 Honda became the first manufacturer to achieve a legally approved Level 3 car in Japan** [292]. In 2022 a new amendment allowed Level 4 automated driving and came into effect in April 2023 (Level 4 allows higher levels of automation and is initially intended for use on express highways and certain geographic regions in Japan)

G7 Digital & Technology Ministers Meeting, April 2023, Japan

In **2023 Japan chaired the G7 group of nations** (Japan, UK, France, Germany, Italy, USA, Canada, plus the EU), with AI regulation one of the most challenging topics for G7 leaders to address. At a meeting of the 7 Digital & Technology Ministers they endorsed a **G7 AI Action Plan** [293] for **enhancing global interoperability of Trustworthy AI** and **agreed to convene further G7 discussions on generative AI** as soon as possible to focus on "*governance, how to safeguard intellectual property rights including copyright, promote transparency, address disinformation, including foreign information manipulation, and how to responsibly utilise these new technologies*" [294].

At the nation level Japan is also considering the future for generative AI tools. In 2018 Japan amended its **Copyright Act** [295] (which came into force in 2019) to support the use of data in machine learning. The amendment clarified that downloading, or processing data, through the internet or other means to develop AI models is not an infringement of copyright. However the sudden rise in the popularity of generative AI art tools that can **generate anime style images** has raised a national question about copyright protection and the governance of generative AI systems. The **Japanese anime industry is worth $25 billion (USD)** and relies on the skilled labour of many Japanese artists and studios.

In January 2023 Netflix released a short 3 minute film called 'The Dog & the Boy" [296]. All the background anime art was created by AI image generators, which caused some public controversy. In June 2023 the Japanese Agency for Cultural Affairs held a seminar to address the issue, releasing a **slide deck** [297] **and summary** [298] **of guidelines around the use of generative AI systems in Japan**, with some pathways to protect artists work, as well as the rights of AI developers.

Alongside regulations and guidance on AI issued by the Japanese government, leading Japanese companies are also taking a proactive approach to AI governance. For example, **Fujitsu** has published a guide and tools to conduct an **AI Ethics Impact Assessment** [299], **Sony** has established **AI Ethics Guidelines** [300] and incorporated them within its Quality Management System (QMS) and **NEC** has developed **AI & Human Rights Principles** [301] which it has implemented across the NEC Group.

11. SINGAPORE

Singapore is considered one of the most advanced nations in Asia Pacific and the world. In 2014 Singapore launched its flagship **Smart Nation** [302] initiative so that "*Singapore will be a nation where people can live meaningful and fulfilled lives, enabled seamlessly by technology*" (by Singapore Prime Minister Lee Hsien Loong in 2014) which was quickly followed by the establishment of several technology focussed government agencies, private sector organisations and projects.

Since then Singapore has continually pushed technological boundaries. As a **percentage of GDP**, **Singapore's government supported R&D in AI is 18x larger than similar R&D spending in the USA** [303] and in 2023 Singapore was named the **leading 'smart city' in Asia** (and 7th in the world) [304] by the Swiss Institute for Management Development (IMD) and **3rd in the world in AI** (behind only the USA and China) in the **Global AI Index** [305] from Tortoise Media. This index aims to benchmark nations on their level of AI investment, innovation and implementation.

	Overall	Talent	Infrastructure	Operating Environment	Research	Development	Government Strategy	Commercial
United States	1	1	1	28	1	1	8	1
China	2	20	2	3	2	2	3	2
Singapore	3	4	3	22	3	5	16	4
United Kingdom	4	5	24	40	5	8	10	5
Canada	5	6	23	8	7	11	5	7

Global AI Index (The numbers represent the global ranking for each pillar)

The Global AI Index reviews countries across 7 pillars [306]

- **Talent**: Availability of skilled AI workers
- **Infrastructure**: Reliability, scale and access to AI relevant infrastructure (e.g. supercomputers)
- **Operating Environment** : Regulatory context and public acceptance of AI
- **Research**: Extent of specialist researchers & number of AI publications
- **Development**: Development of fundamental platforms that AI solutions rely on
- **Government Strategy**: Depth, commitment & investment by the national government in AI
- **Commercial**: Level of AI start-ups & business initiatives based on AI

By 2030 Singapore aims to be a global leader in *'developing and deploying scalable and impactful AI solutions in key sectors of high value and relevance to its citizens and businesses'* and hosts over 270 AI start-up companies, but like many other countries Singapore does not yet have a comprehensive AI specific legislation and relies on guidance provided through several voluntary AI frameworks and AI self-assessment guides.

The Singapore Infocomm Media Development Authority (IMDA), an agency of the Singapore Government, develops and regulates the infocomm and media sectors, and is the driving force behind Singapore's digital transformation. IDMA has identified **four frontier technologies** [307] which are key to the development of Singapore, which are Cybersecurity, Immersive Media, the Internet of Things (IoT) and Artificial Intelligence.

To advance the AI frontier technology, **AI Singapore (AISG)** [308] was launched in 2017 to bring together Singapore based research institutions, AI start-ups and companies developing AI products and services so that Singapore can build national AI capabilities. Its mission is *"To anchor deep national capabilities in AI, thereby creating social and economic impacts, growing local talent, building an AI ecosystem and putting Singapore on the world map"*. **Up to 2023 AISG partnerships with business have created close to $60 million (SGD) in value** [309] and is enabled by a partnership between the Singapore National Research Foundation (NRF), the Smart Nation & Digital Government Office (SNDGO), SGInnovate, the Economic Development Board (EDB), the Infocomm Media Development Authority (IMDA) and the Integrated Health Information Systems (IHiS).

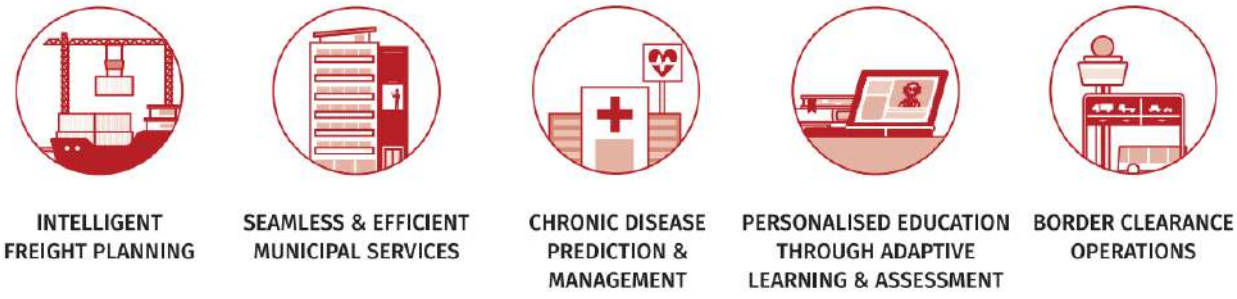
One of AI Singapore's (AISG) flagship initiatives is '**100 Experiments (100E)**' [310] which aims to solve industries AI problem statements and help them to build their own AI teams. It functions by organisations proposing practical challenges that they are facing where no commercial 'off the shelf' AI solution is available, and the 100E programme matches the organisation with the AISG network to build customised and novel solutions. **AISG assists organisations in recruiting AI engineers, designing the AI infrastructure and can providing grants of up to $330,000 (SGD)**, which must be matched funded by the organisation setting the challenge (in cash, or in kind). **In 2020 the number of 100E projects that AISG would support was increased from 100 to 200**, with the aim of each project achieving a minimum viable product (MVP) within **9 to 18 months**. Government oversight ensures the project follows Singapore's trustworthy and responsible AI principles.

To develop these principles, Singapore established the **Advisory Council on the Ethical Use of AI and Data** [311] in 2018 to develop ethics standards and reference governance frameworks, and to publish **advisory guidelines**, **practical implementation guides** and **codes of practice** for the voluntary adoption by industry.

This led to Singapore launching its **National AI Strategy** [312] in 2019. It was the first country in South East Asia to launch an AI Strategy and has 4 approaches:

1. **Emphasise Deployment**: Singapore will work jointly across public, private and research institutions to enable effective deployment of AI solutions.
2. **Focus on Key Sectors**: Singapore will focus on driving AI deployment in key sectors with high social or economic value. The 9 identified sectors are : Transport & Logistics, Manufacturing, Finance, Safety & Security, Cybersecurity, Smart Cities & Estates, Healthcare, Education and Government.
3. **Strengthen the AI Development Loop:** This section notes 3 aspects are required for effective AI deployment. They are 1) **Problem Definition**, 2) **Development & Testing** and 3) **Scaling**. Within each of the 9 key sectors, Singapore will identify and initiate impactful use cases called **'National AI Projects'**. Through these projects, Singapore will create gains, draw lessons and progressively tighten the feedback loop between problem definition, development & testing and scaling, to innovate in AI cycles that will become increasingly shorter.
4. **Adopt a Human Centric Approach**: First Singapore will focus on benefits to citizens and businesses so that AI serves human needs, rather than developing the technology for its own sake. Second Singapore will be proactive in addressing the risks and governance issues that come with the increasing use of AI and thirdly Singapore will build an AI-ready population and workforce.

Recognising the immense potential of AI towards sustained economic growth and country wide innovation, **Singapore embarked on an initial group of 5 'National AI Projects' in 2019**.



Initial 5 National AI Projects

In 2021, the government renamed National AI Projects to 'National AI Programmes' to better reflect their larger scope and launched 2 new National AI Programmes:

- **National AI Programme in Government : This aims to advance the government's digital transformation efforts through the greater use of AI in government agencies. The government hopes that AI can strengthen policymaking and planning, provide more personalised and responsive services, and optimise government processes for the benefit of citizens and businesses**. In May 2023, Singapore launched the **AI Government Cloud Cluster (AGCC)** [313], which is designed to support government agencies and accelerate adoption of AI in Singapore's public sector.
- **The National AI Programme in Finance : This aims to develop Singapore into a global hub for financial institutions to research, develop, and deploy AI solutions**

As part of this announcement the Singapore government also committed an additional **$180 million (SGD) for AI research and development out to 2025**, on top of the previously announced **$500 million (SGD)** in 2020.

Delivery of the National AI Strategy and its Programmes is overseen by a **National AI Office**, established under the Smart Nation and Digital Government Office. This office aims to catalyse and co-ordinate efforts across research, industry and government stakeholders and drive forward 5 critical enablers identified in the National AI Strategy, which are:

1. **Partnerships between the Research Community, Industry & Government** – to enable the rapid commercialisation and deployment of fundamental AI research
2. **AI Talent & Education** – to address the shortfall in both the quantity and quality of workers across the entire range of AI-related job roles
3. **Data Architecture** – to enable quick and secure access to high quality, cross-sectoral datasets
4. **Progressive & Trusted Environment** – to strengthen trust in AI technologies through an environment of test-bedding, developing and deploying AI solutions
5. **International Collaboration** – to shape and develop international AI governance and enablers

Singapore's National AI Strategy is representative of the smart nation's journey to becoming a global AI leader by 2030 and several regulatory agencies in Singapore have issued new legislation, AI guidance, self-assessment tools and policy papers to support achieving that vision.

In 2017 amendments were made to the **Singapore Road Traffic Act [1961]** [314] and new legislation was introduced in the **Road Traffic (Autonomous Vehicles) Rules [2017]** [315] to facilitate and regulate trials of AI powered driverless vehicles.

In 2018, the Monetary Authority of Singapore (MAS) released **Principles to Promote Fairness, Ethics, Accountability & Transparency (FEAT) in the use of AI & Data Analytics (AIDA) in Singapore's Financial Sector** [316], which provides foundational principles for financial businesses to consider when making decision using AI and to additionally promote public trust and confidence in the use of AI by the financial industry.

In 2021 the **Veritas** [317] initiative was launched, as a multi-phased collaborative project between MAS and the financial industry, to enable financial institutions to evaluate their Artificial Intelligence and Data Analytics (AIDA) driven solutions against the FEAT principles. A year late the Veritas Consortium (comprising of 27 industry organisations) released **5 white papers** [318] and an **online toolkit** [319] to accelerate the adoption of the FEAT principles in the finance sector and to guide the responsible use of AI by financial institutions.

To support the wider adoption of AI across all industries, the Singapore Personal Data Protection Commission (PDCP) released a **Model AI Governance Framework** in 2019, followed by a **second edition** [320] in 2020. The AI Model Framework provides **readily implementable guidance to private sector organisations so they can address ethical and governance issues when deploying AI solutions**. By explaining how AI systems work, building good data accountability practices, and creating open and transparent communication, the Model Framework aims to promote public understanding and trust in AI. The Singapore AI Model Framework is similar to the US Blueprint for an AI Bill of Rights [111] and the following table from the US Centre for Security & Emerging Technologies (CSET) [321] illustrates a **comparison between the key principles of the Singapore and US models**, offering an opportunity towards international alignment.

Singapore: Model AI Governance Framework	USA: Blueprint for an AI Bill of Rights
Internal Governance Structures and Measures • Delegate clear responsibilities for the ethical use of AI to relevant personnel • Risk management and mitigation, monitoring and reporting systems	**Safe and Effective Systems** • Pre-deployment testing and risk mitigation of AI systems • Protect individuals from inappropriate data use • Independent evaluation and reporting
	Data Privacy • Collect only strictly necessary data and always seek permission • Consent requests should be accessible and provide agency • Increased oversight for surveillance technologies
Determining the Level of Human Involvement in AI Augmented Decision Making • Risk-benefit analysis of using AI for commercial objectives and frequent risk impact assessments • Consider differences in societal norms • Distinguish between "human-in-the-loop," "human-out-of-the-loop," and "human-over-the-loop" approaches.	**Human Alternatives, Consideration, and Fallback** • Individuals should be able to opt for a human alternative to an AI system • Access to human consideration and remedy if automated system fails
Operations Management • Maintain data accountability practices, such as knowing data lineage and how accuracy has been sustained over time • Reduce inherent bias, selection bias, and measurement bias • Explainability of AI algorithms, repeatability documentation, and auditability are key	**Algorithmic Discrimination Protections** • Design AI systems equitably. • Protect individuals and communities from algorithmic discrimination • Make proactive equity assessments and algorithmic impact assessments public
Stakeholder Interaction & Communication • Disclose information on how the AI will affect consumers • Focus on transparency • Maintain communication channels with the public	**Notice & Explanation** • Provide accessible plain language documentation of AI systems use to individuals • Automated systems should provide meaningful explanations

The PDPC has also issued an **AI Implementation & Self-Assessment Guide for Organisations** (in partnership with the World Economic Forum [WEF]) [322] and a **Compendium of Use Cases**, **Volume 1** [323] (with includes a travel example from WTTC member Visa) and **Volume 2** [324] (which includes examples from WTTC members Google, IBM & Microsoft) that demonstrates how local and international organisations, across different sectors and sizes, have implemented their AI governance practices aligned with the Singapore AI Model Framework.

The Singapore Model AI Governance Framework, the Implementation & Self-Assessment Guide for Organizations (ISAGO) and the two Compendiums of Use Cases work together to produce a **pool of flexible, self-regulatory resources, that Singaporean industries are voluntarily encouraged to adopt and apply** (without the need for formal government regulations to be issued that could be too prescriptive and not flexible enough to account for rapid AI innovation).

In 2020, the PDPC and Infocomm Media Development Authority (IMDA) jointly released a **Guide to Job Redesign in the Age of AI** [325] to assist organisations and employees in **understanding how existing job roles could be redesigned to embrace the potential of AI** and to maximise the value of employees' work. The Guide supports IMDA's efforts to build a trusted and progressive national AI environment that benefits businesses, employees and consumers.

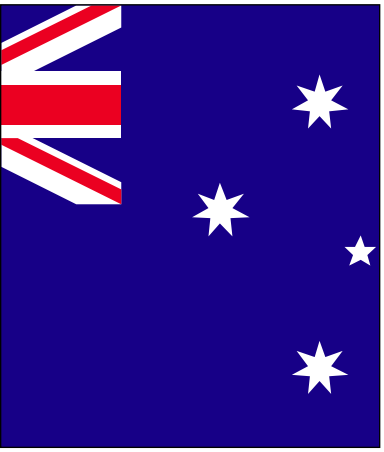
In 2022, Singapore launched **AI Verify** [326] [327], the world's first **AI Governance Testing Framework and Toolkit for companies that wish to demonstrate responsible AI in an objective and verifiable manner**. Organisations can verify the claimed performance of their AI systems against a set of 11 principles through standardised tests. The 11 principles draw on the Singapore Model AI Governance Framework and other international AI frameworks and are: *transparency, explainability, repeatability, safety, security, robustness, fairness, data governance, accountability, human oversight and inclusive growth with societal & environmental well-being*

The self-assessment testing processes comprises of technical tests and process checks and is supported by the **AI Verify online toolkit** [328] that will generate reports for developers, management, and business partners [329], covering the major areas affecting AI performance. Companies that have tested AI Verify include Google, IBM [330], Microsoft, Singapore Airlines [331] and the Singapore Land Transport Authority, but at the time of publication of this report (Aug 2023), AI Verify cannot test generative AI systems (such as sophisticated AI chatbots) and IMDA (in partnership with Singaporean AI company Aicadium) have issued a discussion paper on the **Implications of Generative AI for Trust & Governance** [332] [333].

As other AI testing technologies are growing around the world, there is a need to collect the best expertise and lessons learned. IMDA has therefore also established the **AI Verify Foundation** [334] [335] to harness the collective power and contributions from the global AI and business community. The Foundation aims to achieve alignment and interoperability amongst AI testing capabilities and assurance methods to meet the needs of companies and regulators all around the world.

Since 2020, Singapore also has several **Digital Economy Agreements (DEAs)** in place (or being negotiated) with other countries, including with Australia, New Zealand, Korea, Chile and the UK. An DEA enhances digital trade arrangements between two, or more, countries, including for cooperation on AI and cross border data flows.

One example is the **Singapore-Australia Digital Economy Agreement (SADEA)** [336], which entered into force in December 2020. This encourages digital collaboration between Singapore and Australia and the sharing of AI best practices and ethical frameworks. For example, the Australian City of Darwin piloted Singapore's Model AI Governance Framework and ISAGO, as part of their **'Switching on Darwin'** [337] [338] programme which aims to transform Darwin into a 'smart city'.



12. AUSTRALIA

The Australian Government is backing critical and emerging technologies to strengthen Australia's future and to position Australia as a leader in digital economy regulation. This includes a focus on Artificial Intelligence, Quantum Computing and Robotics, and a **Digital Technology Taskforce** has been established to inform the governments digital economy policies and regulations.

Following the Australian elections in May 2022, the newly elected government archived the **Australian AI Action Plan** [339](published in 2021) and issued a new consultation on **Safe & Responsible AI**[340]. In January 2024 the government published an **interim response** to the consultation which included the feedback received from stakeholders and how the Australian government plans to ensure that AI is designed, developed and deployed safely and responsibly in Australia. This included the potential for strengthening existing laws, introducing new laws and considering mandatory safeguards for the use of AI in high risk settings. While further consultation on these specific actions is on-going the government committed to immediate action by:

- Working with industry to develop a voluntary AI Safety Standard
- Working with industry to develop options for voluntary labelling and watermarking of AI generated materials
- Establishing an Expert Advisory Body to support the development of options for further AI guardrails

In early 2023 the Australian government agency responsible for scientific research (Commonwealth Scientific & Industrial Research Organisation [CSIRO]) also launched a new **Responsible AI Network**[341] to support Australian companies to create and use AI ethically and safely and the Australian Department of Industry, Science & Resources published a discussion paper on **Safe & Responsible AI in Australia**[342] and invited public comment and input. This followed the new governments **Rapid Research Report on Generative AI**[343] delivered in March 2023 by the National Science & Technology Council.

The following therefore provides a summary of Australian AI strategy and regulatory activities from 2019 to 2023, noting that documents and policies prior to the 2022 election may be subject to change.

For Australia to realise the immense potential of AI it needs to be safe, secure and reliable and in 2019 they published **Australia's AI Ethics Framework** [344]. This is a voluntary framework of **8 principles**, with **4 aims** which are to:

Aims:

- Build public trust in a product, or organisation, using AI
- Drive consumer loyalty in AI enabled services
- Positively influence outcomes from AI
- Ensure all Australians benefit from this transformative technology

8 Ethical Principles

- Human, Societal & Environmental Wellbeing
- Human Centred Values
- Fairness
- Privacy Protection & Security

- Reliability & Security
- Transparency & Explainability
- Contestability
- Accountability

The AI Ethics Framework has been piloted by several Australian businesses, including with **Microsoft** [345] and the **National Australia Bank** [346]. The high level findings from these studies included [347]:

1. **Responsibilities** : Ethical responsibilities between AI developers and AI users need to be discussed and agreed. Determining 'accountability' for AI enabled decisions is particularly important.
2. **Culture** : Businesses (AI users) need to educate staff on the benefits and importance of implementing AI ethics (for the company and its customers) and build ethics into their corporate culture
3. **Trade Offs** : Some ethical principles are more challenging to implement than others, for examples 'fairness' involves trade-offs and staff need to make a judgement call on who is most at risk and what protections would address potential impacts and meet legal requirements. Businesses should therefore continuously monitor and re-assess (as necessary) if they have these value judgements correct.
4. **Implementation** : Businesses can support their ethical AI efforts in several ways, including by:

    a. Discussing the AI ethical principles with AI vendors.
    b. Setting standards of responsible behaviour for when staff deploy AI. For example via a corporate 'Responsible AI Policy' with supporting guidance.
    c. Forming multi-disciplinary teams when deploying AI systems, so that the business can identify and consider diverse perspectives.
    d. Establish processes to ensure there is clear human accountability for AI enabled decisions and an appropriate senior company official (e.g. board level) to oversee and manage ethical risks.
    e. Increase ethical AI awareness training for staff.

The potential for AI technologies to be ethically misused has been widely acknowledged both in Australia and around the world. The **Australian Human Rights Commissioner (AHRC)** has expressed concerns regarding the potential for AI to threaten human rights, stating in a 2019 white paper on **AI Governance & Leadership** [348] that "*our challenge as a nation is to ensure these technologies deliver what Australians need and want, rather than what they fear*".

In 2020, the AHRC published a report on **Using AI to Make Decisions : Addressing the Problem of Algorithmic Bias** [349],which provided guidance to governments and industry on making fairer decisions with processes driven by AI.

This was enhanced in 2021 when the Australian Human Rights Commission (AHRC) published a full report into **Human Rights & Technology** [350], which was a culmination of 3 years work and informed by nearly 300 written submissions and more than 700 consultation participants. The report made **38 detailed recommendations** [351], with **17 dedicated to the use of AI**. Four important high level recommendations included:

- The creation of an independent Australian regulator (an '**AI Safety Commissioner'**) to promote safety and protect human rights in the development and use of AI.
- Mandating the completion of '**Human Rights Impacts Assessments'** for government use of AI, and requiring government agencies to provide notice regarding their use of AI.
- Individuals subjected to government decisions made with AI should be provided with a **right to the reasons explaining the basis for the decision**, and the **right to recourse** through an independent tribunal.
- Encouraging the private sector to use of the **AI Ethics Principles framework** when developing and using AI technologies.

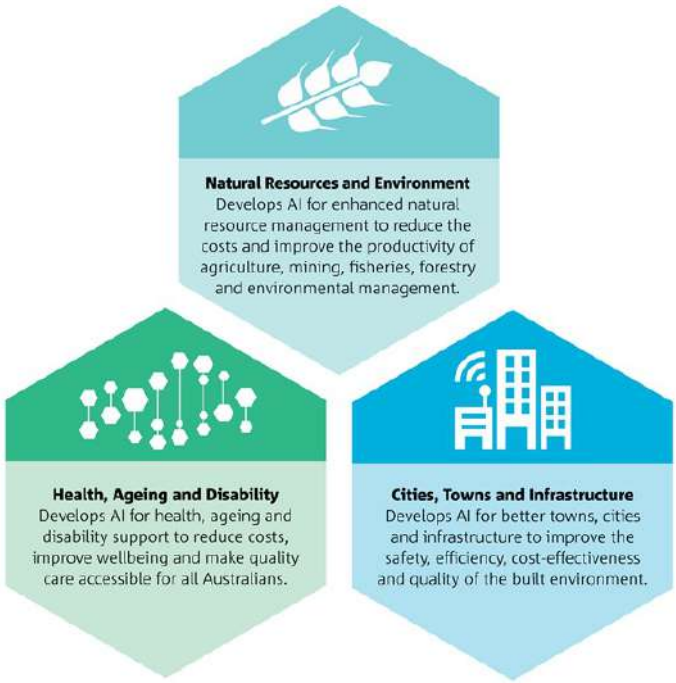
The AHRC has also issued sector specific material and in 2022 published guidance on **AI and Discrimination in Insurance Pricing and Underwriting** [352], which outlined recommendations to prevent unlawful discrimination when using AI in insurance pricing and included a **travel insurance case study** example where age is an important factor.

The **Australian eSafety Commissioner** has also issued **Safety by Design** [353] principles to put user safety at the centre of the design and development process for online products and services and suggested this could also apply to new technologies such as AI, with the Commissioner stating that '*shifting the burden of proof onto technology companies to show they have taken meaningful steps to assess risks, understand potential harms and engineer out potential misuse before these products are released into the wild could make a decisive difference.*'

Since the publication of the Australia AI Ethics Framework in 2019, the Australian government has been committed to the development and adoption of **'trusted, secure and responsible AI'**

To capture the full benefits of AI, 'Data61' (the data science research team of the Commonwealth Scientific & Industrial Research Organisation [CSIRO]) published an **AI Roadmap** [354] in 2019 to *'solve Australian problems, grow the economy and improve quality of life'*.

To achieve those aims the roadmap identified **3 'high potential areas' where Australia could specialise in AI** that would solve problems at home and provide a significant export opportunity. These are illustrated in the diagram below



The roadmap also identified several statistics including:

- AI and other digital technologies could contribute **$315 million (AUD) to the Australian economy by 2028**
- To realise this opportunity **Australia will need more than 160,000 specialist AI workers by 2030**
- In 2016 in Australia, 13,280 new cases of melanoma (skin cancer) were diagnosed and an **AI system designed to detect skin cancer performed 'on par' with 21 certified dermatologists**
- **AI powered robots could save Australia's farm sector $1.3 billion (AUD) per year** by automating weed removal and improving agricultural productivity
- **AI could help reduce the more than 1000 deaths per year, and more than 57,000 injuries per year**, on Australian roads
- **AI is being used to help maintain the Sydney Harbour Bridge**. There are 2400 sensors on the bridge and the data generated by these sensors is analysed by AI to identify priority locations for proactive maintenance. This keeps costs down and minimises traffic disruptions

Whilst AI has many current and future uses, Australia does not currently have an overarching or specific law regulating AI and relies on existing laws and guidance for AI governance. For example a review of the **Australian Privacy Act**[355] commenced in 2020, and in February 2023 the Attorney General's office released a **Privacy Act Review Report**[356] and **Summary**[357] with **116 proposals to strengthen the protection of personal information in the digital age and to provide more control for individuals over their information.** Following a consultation process the Australian government is expected to submit updated privacy legislation which if passed, would significantly overhaul the Australian Privacy Act.

The Privacy Act Review proposals include **3 specific recommendations related to AI and Automated Decision Making (ADM)** which are that:

1. Organisations that use automated decision making should be required to include in their privacy policies if personal information will be used in automated decisions that would have a legal (or similar) effect on an individual's rights

2. The Office of the Australian Information Commissioner (OAIC) should publish guidance on the types of decisions that would be considered to have a legal (or similar) effect on an individual's rights

3. Individuals should have a right to request, and be provided with, information on how organisations make automated decisions, that have legal (or similar) effects on their rights

In 2020, **Standards Australia** (the national standards setting body) published an **AI Standards Roadmap** [358] that built on the AI Ethics Framework and AI Roadmap. It took a deliberately international perspective and proposed a framework to help shape the development of global AI Standards. The roadmap made **8 actionable recommendations** that aimed to ensure Australia's interests in AI (ranging from AI safety, to opportunities for AI exports by Australian businesses) are protected and promoted.

Standards Australia felt that as Australia would be a developer, but more significantly a purchaser of AI solutions, it was important that Australia was involved in the development of international standards for AI products and services. The **roadmap therefore included recommendations to enhance Australian cooperation for international standards bodies** such as the US National Institute for Standards (NIST) and to encouraging the global sharing of good practices in the design, deployment and evaluation of AI systems.

Also in 2020, The Australian National Transport Commission (NTC) outlined plans for a **regulatory regime that would enable the use of AI powered automated vehicles in Australia** [359], which was **approved by Ministers in 2022** [360]. The approved framework included the safety and insurance requirements, enforcement actions and several other protections for safe driverless vehicles.

In 2021, the former Australian government released a **Digital Economy Strategy** which aimed to position Australia as a global leader in AI by 2030 and led to the publication of Australia's **AI Action Plan** [216], which created a strategic vision to boost the development and adoption of AI in Australia, with a pledge from the government to invest $124.1 million (AUD) "*to establish Australia as a global leader in developing and adopting trusted, secure and responsible AI*"

As noted at the start of this chapter, the 2021 AI Action Plan was archived after the 2022 national election and the new Australian government are yet to publish an update, or replacement (as of early 2024). However the original AI Action Plan did establish a **National AI Centre**[361] within CISRO's data and digital specialist division (called Data61) that co-ordinates Australia's AI expertise and capabilities. It brings together government, industry and the research sector to boost research, development and the adoption of AI in Australia. In the 2023-24 budget, $21.6 million (AUD) was committed to expand the remit of the National AI Centre to provide continued leadership to the AI industry across Australia.

The AI Action Plan also established a **Next Generation AI & Emerging Technologies Graduate Programme**[362] which provides in depth training to young talent and facilitates collaboration amongst students, researchers and industry professionals to build a capable and competitive workforce for the future. CSIRO estimates that Australia will need more than 160,000 new AI and emerging technology workers by 2030. In the 2023-24 budget, the Australian government committed $34.5 million (AUD) to this graduate programme to attract and retain the next generation of job-ready AI specialists.

T

Australia Next Generation Graduates Programme

o further advance AI and other emerging technologies the former Australian government issued a **Blueprint** and later **Action Plan for Critical Technologies** in 2021, which the government defined as a *'framework for capitalising on critical technologies to drive a technologically advanced, future ready nation'*. Following the change of government in 2022, this was archived and a new **List of Critical Technologies in the National Interest** [363] was published in 2023, along with a **Critical Technologies Statement** [364] which outlined how the Australian government is supporting these critical technologies.

The Critical Technologies list includes Quantum technologies, Bio technologies and AI technologies [365] (to name a few) and under AI, **Australia is focusing on 3 areas to transform existing industries and build new ones**.

They are:

1. AI for better health, aged care and disability services
2. AI for better towns, cities and infrastructure
3. AI for better natural resource management

The Australian Department of Home Affairs has also published **10 Critical Technology Supply Chain Principles** [366] to help governments and industry decide about suppliers. As society becomes more depending on technology, the supply of critical technologies can be critical to national security, economic prosperity and social cohesion. The 10 Principles therefore aim to guide decision makers in managing the risks of opportunities of acquiring and using critical technologies (including AI systems).

In 2022 the Australian Digital Technology Taskforce released a consultation paper on **Positioning Australia as a Leader in Digital Economy Regulation – Automated Decision Making and AI Regulation** [217] and invited businesses, AI experts, researchers and the public to comment on the barriers to greater AI adoption, whether there is a need for new AI regulations or guidance, and what international frameworks Australia should consider adopting. As noted at the start of this chapter the current government has not issued an official reply to this consultation.

However some submissions have been made public, such as from the **Law Council of Australia**[367] and from professional services firm **KPMG**[368]. A joint response from the **Royal Australian & New Zealand College of Radiologists (RANZCR)** [369]provided **5 recommendations for the regulation of AI in healthcare** and they have also published their own **9 ethical principles for the use of AI in medicine**[370]. A common theme from several of the public and industry submissions was a request for a **new Australian regulator** that will be responsible for developing and enforcing AI legislation. However that does not currently exist and as explained in this chapter AI governance in Australia is currently through guidance and existing laws, such as for intellectual property, consumer rights and privacy.

However in June 2023 the current government issued a new **Consultation Paper on Safe & Responsible AI** [219] asking for views on how Australia can *'mitigate any potential risks of AI and support safe and responsible AI practices'*. In announcing the consultation, the Minister for Industry & Science said that with the accelerated development and big leap forward in AI technology, Australia needs *'modern laws, for modern technology'*.

The discussion paper sets out the current state of **AI safeguards in Australia** and notes that while international investment in AI is growing, public trust and confidence in AI solutions in Australia is low, which has led to a low rate of AI adoption in Australia. It also emphasises the importance of considering the international regulatory environment when developing an Australian approach to regulating AI and proposes a **draft risk management approach to AI** that draws on the EU AI Act and Canadian Artificial Intelligence and Data Act (AIDA) – both of which area described earlier in this report.

The discussion paper was informed by and builds on **three AI developments in Australia in early 2023**, which are:

1. A **Responsible AI Network** [218] established by the National AI Centre which brings together AI experts, Australian regulatory bodies and training organisations to support Australian companies in creating and using AI systems ethically and safely. It will also produce best practice guidance along 7 pillars which are : **Law, Standards, Principles, Governance, Leadership, Technology and Design**
2. Australia's **AI Ecosystem Report** [371] from the National AI Centre which evaluates the current state of AI adoption and innovation in Australia. It indicates that Australian businesses have matured their understanding of AI, with **60% of respondents to a survey stating that they are accelerating and expanding their AI related solutions**. It also notes that while many businesses engage AI technology and service providers to assist with their AI related projects (with an average of 4 AI partners per AI project), **many businesses are also developing in-house capabilities in the areas of AI strategy, data analysis and AI operations**.

3. A **Rapid Response Information Report on Generative AI** [220] from the office of Australian Government Chief Scientist, which examined the **opportunities and risks of generative AI over the next 2, 5 and 10 years** and examples of strategies that have been put in place internationally to address the impacts and opportunities of generative AI. The report raised several questions for Australia including does Australia have *'sufficient computing power, appropriately skilled practitioners, the right scientific expertise, workforce development strategies and policy settings that range from critical technologies, to education, ethics, governance and regulation'*

The government issued an interim response to the Safe & Responsible AI consultation in January 2024, which is covered at the start of this chapter. The government response was guided by **5 principles,** which were:

1. **Risk Based Approach :** This includes considering obligations on developers and deployers of AI based on the level of risk posed by the use, deployment and development of AI.

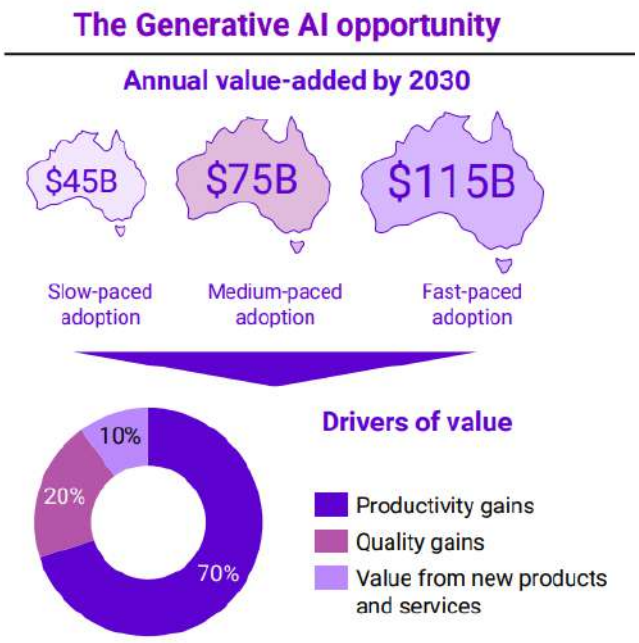
2. **Balanced & Proportionate :** This includes balancing the need for innovation and competition, with the need to protect community interests such as privacy, security and online safety.

3. **Collaborative & Transparent :** This includes opportunities for public involvement and drawing on technical expertise, as well as making it clear and easy for those developing, or implementing AI to know their rights and protections

4. **Trusted International Partner :** This includes being consistent with the 'Bletchley Declaration' signed at the UK AI Safety Summit (in November 2023) and addressing high risk applications of AI, as well as near term risks to individuals, institutions and the most vulnerable populations.

5. **Community First :** This includes placing people and communities at the centre when developing and implementing AI regulatory approaches and ensuring AI is designed, developed and deployed considering the needs, abilities and social context of all people.

Published in July 2023 (and therefore after the launch of the Safe & Responsible AI consultation, so did not contribute to it) a joint paper from the **Tech Council of Australia** and **Microsoft** on **Australia's Generative AI Opportunity**[372] also examined generative **AI in Australia and found that AI could add tens of billions of Australian Dollars to their economy by 2030,** with the right regulatory and workforce policies and practices in place. The report examined how generative AI will impact jobs and occupations in Australia, the opportunities that generative AI presents to Australian industries and how Australian businesses can seize the opportunities presented by generative AI.



Tech Council of Australia & Microsoft : Generative AI Opportunities in Australia

At the Australian State level, **New South Wales** (which contains the cities of Sydney and Melbourne) has also been considering AI since 2020, when it launched its public **Artificial Intelligence – Have Your Say** campaign [373] in December 2020 to raise awareness of AI and to respond to community concerns. The State established an **AI Advisory Committee** in early 2021 with government and non-government experts and has published an **NSW AI Strategy** [374] which focusses on improving state government decision making and service delivery to citizens through AI.

In 2022 the New South Wales (NSW) government also published its **NSW AI Assurance Framework**[375] to assist NSW state agencies in designing, building and using AI systems. It also helps the state agencies to identify any risks that may be associated with their AI projects. The **NSW AI Assurance Framework** and the four **NSW Ethical Principles for the Use of AI**[376] (Fairness, Privacy & Security, Transparency, Accountability) are mandatory for all NSW government agencies using AI.

ACKNOWLEDGEMENTS

AUTHORS & EDITORS

James McDonald
Director of Travel Transformation
World Travel & Tourism Council

Jonathan Mitcham
Senior Research Analyst
World Travel & Tourism Council (WTTC)

CONTRIBUTORS

Julie Shainock
Managing Director, Travel, Transport & Logistics (TTL)
Microsoft

Shane O'Flaherty
Global Director, Travel, Transportation and Hospitality
Microsoft

Smith Codio
Director, Customer Experience of Automotive, Mobility & Transportation Industry
Microsoft

DESIGN

World Travel & Tourism Council

IMAGES

Photos: Shutterstock
Infographics: See Endnote references for sources.

The Voice of Travel & Tourism.

WTTC promotes sustainable growth for the Travel & Tourism sector, working with governments and international institutions. Council Members are the Chairs, Presidents and Chief Executives of the world's leading private sector Travel & Tourism businesses.

For more information, visit: www.WTTC.org

Microsoft's advancements in AI are grounded in our company's mission to empower every person and organisation on the planet to achieve more — from helping people be more productive to solving society's most pressing challenges.

For more information,
visit: www.microsoft.com/en-us/ai

DISCLAIMER

This report provides a summary of global AI strategies, policies and regulations and accompanies the World Travel & Tourism Council (WTTC) report **"Introduction to Artificial Intelligence : A Guide for Travel & Tourism Leaders".**

This document is **correct up to the date of publication** and will be **periodically updated by WTTC** with more countries and as AI governance develops in this fast evolving technological area.

CHANGE LOG

Document Version	Date Published	Change
1	April 2024	First Edition. Includes UN, OECD, G20, G7, EU, UK, France, Germany, Italy, USA, Canada, China, Japan, Singapore & Australia

ENDNOTES

1: UN Interagency Working Group on AI (IAWG-AI) (https://unsceb.org/inter-agency-working-group-artificial-intelligence)
2: UNESCO Ethics of AI (https://unesdoc.unesco.org/ark:/48223/pf0000381137)
3: 2022 ITU Directory & Report on UN Activities on AI (https://aiforgood.itu.int/about-ai-for-good/un-ai-actions)
4: UN ToR Task Force for the use of AI in the UN (https://unsceb.org/sites/default/files/2024-02/ToR%20-HLCM%20AI%20Task%20Force%20-%20final%2011%20Jan%202024%20%281%29.pdf)
5: UN High Level Advisory Board on AI (https://www.un.org/techenvoy/ai-advisory-body)
6: UN Interim Report – Governing AI for Humanity (https://www.un.org/sites/un2.un.org/files/un_ai_advisory_body_governing_ai_for_humanity_interim_report.pdf)
7: UN Security Council debate on AI (https://press.un.org/en/2023/sc15359.doc.htm)
8: UN Secretary General speech to UN Security Council debate on AI (https://press.un.org/en/2023/sgsm21880.doc.htm)
9: 2024 UN General Assembly Resolution of Safe, Secure & Trustworthy AI for Sustainable Development (https://news.un.org/en/story/2024/03/1147831)
10: US National Security Advisor comments on UN General Assembly Resolution on AI (https://www.whitehouse.gov/briefing-room/statements-releases/2024/03/21/statement-from-national-security-advisor-jake-sullivan-on-the-united-nations-general-assembly-resolution-on-artificial-intelligence-for-sustainable-development)
11: US Ambassador & Permanent Representative to the UN comments on UN General Assembly Resolution on AI (https://news.un.org/en/story/2024/03/1147831)
12: OECD AI System Definition (https://www.oecd-ilibrary.org/science-and-technology/explanatory-memorandum-on-the-updated-oecd-definition-of-an-ai-system_623da898-en)
13: OECD AI Policy Observatory (https://oecd.ai/en/)
14: OECD State of Implementation of the OECD AI Principles (4 Years On) (https://www.oecd.org/publications/the-state-of-implementation-of-the-oecd-ai-principles-four-years-on-835641c9-en.htm)
15: OECD Initial Policy Considerations of Generative AI (https://www.oecd.org/publications/initial-policy-considerations-for-generative-artificial-intelligence-fae2d1e6-en.htm)
16: 2019 G20 AI Principles & Ministerial Statement of Trade & Digital Economy Ministers (https://www.mofa.go.jp/files/000486596.pdf)
17: 2023 G20 New Delhi Leaders Declaration (https://www.mea.gov.in/Images/CPV/G20-New-Delhi-Leaders-Declaration.pdf)
18: 2023 G7 Hiroshima AI Process – Leaders Statement (https://www.mofa.go.jp/files/100573466.pdf)
19: 2023 G7 Hiroshima Summit & Hiroshima AI Process – Image from JapanGov, The Official Website of the Government of Japan (https://www.japan.go.jp/kizuna/2024/02/hiroshima_ai_process.html)
20: 2023 G7 Hiroshima AI Process – Guiding Principles (https://www.mofa.go.jp/files/100573471.pdf)
21: 2023 G7 Hiroshima AI Process – Code of Conduct (https://www.mofa.go.jp/files/100573473.pdf)
22: 2024 G7 Ministerial Declaration on AI (https://assets.innovazione.gov.it/1710505409-final-version_declaration.pdf)
23: EU Commission Mid Term Review of the EU Digital Single Market Strategy (https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52017DC0228)
24: EU Council call for EU Commission to put forward an EU approach to AI (https://www.consilium.europa.eu/media/21620/19-euco-final-conclusions-en.pdf)
25: EU Parliament Recommendations on Robotics (https://www.europarl.europa.eu/doceo/document/TA-8-2017-0051_EN.pdf)
26: EU Parliament Industrial Policy on AI and Robotics (https://www.europarl.europa.eu/doceo/document/TA-8-2019-0081_EN.pdf)
27: EU Economic & Social Committee (EESC) opinion on the Consequences of AI on the EU Single Market, Production, Consumption, Employment & Society (https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/artificial-intelligence-consequences-artificial-intelligence-digital-single-market-production-consumption-employment-and)
28: EU Member States Declaration of Cooperation on AI (https://digital-strategy.ec.europa.eu/en/news/eu-member-states-sign-cooperate-artificial-intelligence)
29: EU Commission Co-ordinated Plan on AI for Europe (https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52018DC0795)
30: EU Commission Communique on AI for Europe (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0237)
31: EU 1st AI Ethical Guidelines (https://digital-strategy.ec.europa.eu/en/library/draft-ethics-guidelines-trustworthy-ai)
32: EU Policy & Investment Recommendations for Trustworthy AI (https://digital-strategy.ec.europa.eu/en/library/policy-and-investment-recommendations-trustworthy-artificial-intelligence)
33: European AI Alliance (https://digital-strategy.ec.europa.eu/en/policies/european-ai-alliance)
34: EU ALTAI Portal (https://futurium.ec.europa.eu/en/european-ai-alliance/pages/welcome-altai-portal)
35: EU White Paper & Consultation on AI (https://digital-strategy.ec.europa.eu/en/consultations/white-paper-artificial-intelligence-european-approach-excellence-and-trust)
36: EU Commission Proposal for EU AI Regulation & Harmonisation (https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai)
37: EU Commission – AI Regulation Impact Assessment (https://digital-strategy.ec.europa.eu/en/library/impact-assessment-regulation-artificial-intelligence)
38: EU Commission Updated Co-ordinated Plan for AI (https://digital-strategy.ec.europa.eu/en/policies/plan-ai)
39: EU Co-ordinated Plan for AI – Policy 1 – AI enabling conditions (https://digital-strategy.ec.europa.eu/en/policies/enabling-ai)
40: EU Co-ordinated Plan for AI – Policy 2 – AI thrives from lab to market (https://digital-strategy.ec.europa.eu/en/policies/ai-lab-market)
41: EU Co-ordinated Plan for AI – Policy 3 – AI works for people (https://digital-strategy.ec.europa.eu/en/policies/ai-people)
42: EU Co-ordinated Plan for AI – Policy 4 – AI leadership in high impact sectors (https://digital-strategy.ec.europa.eu/en/policies/build-leadership-ai)
43: EU AI Strategies Status – Bottom of Page (https://digital-strategy.ec.europa.eu/en/policies/plan-ai)
44: OECD AI Strategies Dashboard (https://oecd.ai/en/dashboards/overview)
45: Belgium – AI 4 Belgium Strategy Report (https://www.ai4belgium.be/wp-content/uploads/2019/04/report_en.pdf)

46: Romania – Draft AI Strategy (https://drive.google.com/file/d/1jQ1__xscTEbR5QZNHfhPPPjjrY62fDb4/view)
47: Finland – 1st Progress Report (https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/163663/TEM_2021_53.pdf)
48: France – National AI Strategy (https://www.entreprises.gouv.fr/fr/numerique/enjeux/la-strategie-nationale-pour-l-ia)
49: Germany – National AI Strategy Update (https://www.ki-strategie-deutschland.de/files/downloads/Fortschreibung_KI-Strategie_engl.pdf)
50: Germany – National Data Strategy (https://www.bundesregierung.de/breg-en/service/information-material-issued-by-the-federal-government/data-strategy-of-the-federal-german-government-1950612)
51: Sweden – National Approach to AI (https://wp.oecd.ai/app/uploads/2021/12/Sweden_National_Approach_to_Artificial_Intelligence_2018.pdf)
52: Czech Republic – National AI Strategy (https://www.mpo.cz/assets/en/guidepost/for-the-media/press-releases/2019/5/NAIS_eng_web.pdf)
53: Denmark – Digital Growth Strategy (https://eng.em.dk/media/10566/digital-growth-strategy-report_uk_web-2.pdf)
54: Denmark – National AI Strategy (https://eng.em.dk/media/13081/305755-gb-version_4k.pdf)
55: Estonia – AI Taskforce Report (https://f98cc689-5814-47ec-86b3-db505a7c3978.filesusr.com/ugd/7df26f_486454c9f-32340b28206e140350159cf.pdf)
56: Estonia – National AI Strategy (https://www.kratid.ee/_files/ugd/980182_8d0df96fd41145739dff2595e0ab3e8d.pdf)
57: Lithuania – National AI Strategy (https://wp.oecd.ai/app/uploads/2021/12/Lithuania_Artificial_Intelligence_Strategy_2019.pdf)
58: Luxembourg – AI Strategic Vision (https://digital-luxembourg.public.lu/sites/default/files/2020-09/AI_EN_0.pdf)
59: Malta – Ultimate AI Launchpad (https://malta.ai/wp-content/uploads/2019/11/Malta_The_Ultimate_AI_Launchpad_vFinal.pdf)
60: Malta – Ethical AI Framework (https://malta.ai/wp-content/uploads/2019/10/Malta_Towards_Ethical_and_Trustworthy_AI_vFINAL.pdf)
61: Netherlands – Strategic Action Plan for AI (https://wp.oecd.ai/app/uploads/2021/12/Netherlands_Strategic_Action_Plan_for_Artificial_Intelligence.pdf)
62: Portugal – AI 2019 to 2030 (https://wp.oecd.ai/app/uploads/2021/12/Portugal_AI_Portugal_2030_2019-2030.pdf)
63: Slovakia – Action Plan for Digital Transformation (https://www.mirri.gov.sk/wp-content/uploads/2019/10/AP-DT-English-Version-FINAL.pdf)
64: Switzerland – Digital Switzerland Strategy (https://digital.swiss/userdata/uploads/strategie-dch-en.pdf)
65: Austria – AI Mission Austria (https://www.bmk.gv.at/dam/jcr:8acef058-7167-4335-880e-9fa341b723c8/aimat_ua.pdf)
66: Bulgaria – Concept for AI in Bulgaria till 2030 (https://www.mtc.government.bg/sites/default/files/conceptforthedevelopmentofaiinbulgariauntil2030.pdf)
67: Cyprus – National AI Strategy (https://www.dmrid.gov.cy/dmrid/research.nsf/planning02_el/planning02_el?OpenDocument)
68: Hungary – National AI Strategy (https://digitalisjoletprogram.hu/files/2f/32/2f32f239878a4559b6541e46277d6e88.pdf)
69: Italy – AI Strategy Programme (https://wp.oecd.ai/app/uploads/2021/12/Italy_Artificial_Intelligence_Strategic_Programme_2022-2024.pdf)
70: Latvia – National AI Strategy (https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Ftap.mk.gov.lv%2Fdoc%2F2020_02%2FIZ_MI%255b1%255d.2.docx&wdOrigin=BROWSELINK)
71: Norway – National AI Strategy (https://wp.oecd.ai/app/uploads/2021/12/Norway_National_Strategy_for_Artificial_Intelligence_2020.pdf)
72: Poland – Policy for AI Development from 2020 (https://wp.oecd.ai/app/uploads/2021/12/Poland_Policy_for_Artificial_Intelligence_Development_in_Poland_from_2020_2020.pdf)
73: Spain – National AI Strategy (https://www.lamoncloa.gob.es/presidente/actividades/Documents/2020/ENIA2B.pdf)
74: Ireland – National AI Strategy (https://enterprise.gov.ie/en/publications/publication-files/national-ai-strategy.pdf)
75: Slovenia – National Programme on AI (https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.gov.si%2Fassets%2Fministrstva%2FMDP%2FDID%2FNpUI-SI-2025.docx&wdOrigin=BROWSELINK)
76: EU Digital Strategy (https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en)
77: EU Commission Proposal for an EU AI Act (https://eur-lex.europa.eu/resource.html?uri=cellar:e0649735-a372-11eb-9585-01aa75ed71a1.0001.02/DOC_1&format=PDF)
78: EU GDPR – Article 22 – Automated Decision Making (https://gdpr-info.eu/art-22-gdpr)
79: EU Parliament – Paper on AI Regulatory Sandboxes (https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733544/EPRS_BRI(2022)733544_EN.pdf)
80: EU Parliament AI Act Position tt(https://www.europarl.europa.eu/news/en/headlines/society/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence)
81: EU Parliament – What Think Tanks are Thinking (https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/745695/EPRS_BRI(2023)745695_EN.pdf)
82: EU Parliament – General Purpose AI Paper (https://www.europarl.europa.eu/RegData/etudes/ATAG/2023/745708/EPRS_ATA(2023)745708_EN.pdf)
83: EU Guidelines on Responsible Use of Generative AI in Research (https://research-and-innovation.ec.europa.eu/document/download/2b6cf7e5-36ac-41cb-aab5-0d32050143dc_en?filename=ec_rtd_ai-guidelines.pdf)
84:EU AI Pact (https://digital-strategy.ec.europa.eu/en/policies/ai-pact)
85:Industry Open Letter to EU on AI Act (https://drive.google.com/file/d/1wrtxfvcD9FwfNfWGDL37Q6Nd8wBKXCkn/view)
86: EU Parliament - Framework of ethical aspects of AI, robotics & related technologies (https://oeil.secure.europarl.europa.eu/oeil/popups/summary.do?id=1636985&t=d&l=en)
87: EU Parliament - Civil liability regime for AI (https://oeil.secure.europarl.europa.eu/oeil/popups/summary.do?id=1636987&t=e&l=en)
88: EU Parliament – IP rights for the development of AI technologies (https://oeil.secure.europarl.europa.eu/oeil/popups/summary.do?id=1636989&t=e&l=en)
89: EU Parliament – Guidelines on Military Use of AI (https://oeil.secure.europarl.europa.eu/oeil/popups/summary.do?id=1647869&t=e&l=en)
90: EU Parliament - Use of AI in the Education, Cultural and Audiovisual Sectors (https://www.europarl.europa.eu/doceo/document/TA-9-2021-0238_EN.pdf)

91: EU Parliament - AI used by the Police & Judicial Authorities (https://multimedia.europarl.europa.eu/en/video/artificial-intelligence-in-criminal-law-and-its-use-by-the-police-and-judicial-authorities-in-criminal-matters-opening-statements-by-petar-vitanov-sd-bg-rapporteur-and-by-ylva-johansson-european-commissioner-for-home-affairs_I211310)
92: EU Parliament – Impact of AI on the EU Economy in the Digital Age (https://www.europarl.europa.eu/committees/en/aida/home/highlights)
93: EU Parliament Proposal for an EU AI Roadmap (https://www.europarl.europa.eu/news/en/headlines/priorities/artificial-intelligence-in-the-eu/20220422STO27705/the-future-of-ai-the-parliament-s-roadmap-for-the-eu)
94: EU AIDA - AI as Tool of International Diplomacy (https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662926/IPOL_STU(2021)662926_EN.pdf)
95: EU AIDA – AI and EU Green Deal (https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662906/IPOL_STU(2021)662906_EN.pdf)
96: EU AIDA – Challenges of Open Source AI (https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662908/IPOL_STU(2021)662908_EN.pdf)
97: EU AIDA – AI and Working Conditions (https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662911/IPOL_STU(2021)662911_EN.pdf)
98: EU AIDA – AI and Smart Cities (https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/662937/IPOL_BRI(2021)662937_EN.pdf)
99: EU Horizon Europe (https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en)
100: EU Digital Europe Programme (https://digital-strategy.ec.europa.eu/en/activities/digital-programme)
101: EU Digital Decade (https://digital-strategy.ec.europa.eu/en/policies/europes-digital-decade)
102: EU Recovery & Resilience Facility (https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility_en)
103: EU Cyber Security Strategy (https://digital-strategy.ec.europa.eu/en/policies/cybersecurity-strategy)
104: EU Digital Services Act (https://digital-strategy.ec.europa.eu/en/policies/digital-services-act-package)
105: EU Digital Markets Act (https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en)
106: EU Data Governance Act (https://digital-strategy.ec.europa.eu/en/policies/data-governance-act)
107: EU Product Liability Directive Consultation (https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12979-Civil-liability-adapting-liability-rules-to-the-digital-age-and-artificial-intelligence_en)
108: EU Commission Proposal for an EU AI Liability Directive (https://ec.europa.eu/commission/presscorner/detail/en/ip_22_5807)
109: EU Parliament Briefing Paper on EU AI Liability Directive (https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/739342/EPRS_BRI(2023)739342_EN.pdf)
110: EU 2023 State of the Union Address – Ursula von der Leyen (https://state-of-the-union.ec.europa.eu/state-union-2023_en)
111: EU Large AI Grand Challenge (https://ec.europa.eu/commission/presscorner/detail/en/IP_23_5739)
112: EU AI Innovation Package (https://ec.europa.eu/commission/presscorner/detail/en/ip_24_383)
113: EU AI Factories (https://digital-strategy.ec.europa.eu/en/policies/ai-factories)
114: EU Digital Infrastructure Consortium (https://digital-strategy.ec.europa.eu/en/policies/edic)
115: EU Alliance for Language Technologies EDIC (https://language-data-space.ec.europa.eu/related-initiatives/alt-edic_en)
116: EU CitiVERSE EDIC (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202400459)
117: EU Commission AI@EC Strategic Vision (https://commission.europa.eu/document/download/601a9e64-cdb9-4545-becb-1079ba8c457c_en?filename=EN%20Artificial%20Intelligence%20in%20the%20European%20Commission.PDF)
118: EASA AI Roadmap v2 (https://www.easa.europa.eu/en/domains/research-innovation/ai)
119: UK Technology Sector 3rd in World (https://www.gov.uk/government/news/uk-tech-sector-retains-1-spot-in-europe-and-3-in-world-as-sector-resilience-brings-continued-growth)
120: UK Build Back Better Plan (https://www.gov.uk/government/publications/build-back-better-our-plan-for-growth/build-back-better-our-plan-for-growth-html)
121: UK National Security & Investment Act (https://www.legislation.gov.uk/ukpga/2021/25/contents)
122: UK CMA Pricing Algorithms Guidance (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746353/Algorithms_econ_report.pdf)
123: UK CMA Algorithms & How They Can Harm Consumers (https://www.gov.uk/government/publications/algorithms-how-they-can-reduce-competition-and-harm-consumers/algorithms-how-they-can-reduce-competition-and-harm-consumers)
124: UK DCMS Framework for Data Ethics in the Public Sector (https://www.gov.uk/government/publications/data-ethics-framework)
125: UK DfE – Policy Paper on Generative AI in Education (https://www.gov.uk/government/publications/generative-artificial-intelligence-in-education)
126: UK National Cyber Security Centre – Intelligent Security Tools Guidance (https://www.ncsc.gov.uk/collection/intelligent-security-tools)
127: UK ICO – Explaining decisions made with AI (https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/artificial-intelligence/explaining-decisions-made-with-artificial-intelligence)
128: UK ICO – Guidance on AI & Data Protection (https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/artificial-intelligence/guidance-on-ai-and-data-protection)
129: UK ICO – AI & Data Protection Risk Toolkit (https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/artificial-intelligence/guidance-on-ai-and-data-protection/ai-and-data-protection-risk-toolkit)
130: UK ICO – UK GDPR Article 22 – Automated Decision Making (https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/individual-rights/individual-rights/rights-related-to-automated-decision-making-including-profiling)
131: UK AI Council (https://www.gov.uk/government/groups/ai-council)
132: UK update on AI Council (https://www.gov.uk/government/news/ai-council)
133: UK Office for AI (https://www.gov.uk/government/organisations/office-for-artificial-intelligence)
134: UK National AI Strategy (https://www.gov.uk/government/publications/national-ai-strategy)

135: UK Pro Innovation Approach to AI White Paper (https://www.gov.uk/government/publications/ai-regulation-a-pro-innovation-approach)
136: UK Initial Guidance for Regulators – Implementing the UK's AI Regulatory Principles (https://assets.publishing.service.gov.uk/media/65c0b6bd63a23d0013c821a0/implementing_the_uk_ai_regulatory_principles_guidance_for_regulators.pdf)
137: UK Government Advisory Service for Businesses (https://www.gov.uk/government/news/new-advisory-service-to-help-businesses-launch-ai-and-digital-innovations)
138: UK Government AI Foundation Task Force (https://www.gov.uk/government/news/initial-100-million-for-expert-taskforce-to-help-uk-build-and-adopt-next-generation-of-safe-ai)
139: UK Government AI Foundation Task Fore – Chair Announced (https://www.gov.uk/government/news/tech-entrepreneur-ian-hogarth-to-lead-uks-ai-foundation-model-taskforce)
140: UK CMA Foundation Models – Initial Report (https://www.gov.uk/government/publications/ai-foundation-models-initial-report)
141: Alan Turing Institute – AI Standards Hub (https://aistandardshub.org)
142: UK AI Safety Summit – Event Website (https://www.aisafetysummit.gov.uk)
143: UK AI Safety Summit – Programme (https://www.gov.uk/government/publications/ai-safety-summit-programme/ai-safety-summit-day-1-and-2-programme)
144: UK AI Safety Summit – Attendees (https://www.gov.uk/government/publications/ai-safety-summit-introduction/ai-safety-summit-confirmed-governments-and-organisations)
145: UK Government hosts AI Summit at Bletchley Park – Picture by Marcel Grabowski – UK Government Flickr – CC 2.0 Licence (https://www.flickr.com/photos/ukgov/53302172953/in/album-72177720312359636)
146:Industry AI Safety Policies (https://www.aisafetysummit.gov.uk/policy-updates/#company-policies)
147:UK Prime Minister speech to UK AI Safety Summit (https://www.gov.uk/government/speeches/prime-ministers-speech-at-the-ai-safety-summit-2-november-2023)
148:Bletchley Declaration at UK AI Safety Summit (https://www.gov.uk/government/publications/ai-safety-summit-2023-the-bletchley-declaration/the-bletchley-declaration-by-countries-attending-the-ai-safety-summit-1-2-november-2023)
149:UK AI Safety Institute - Website (https://www.gov.uk/government/organisations/ai-safety-institute)
150: UK AI Safety Institute – Introduction (https://assets.publishing.service.gov.uk/media/65438d159e05fd0014be7bd9/introducing-ai-safety-institute-web-accessible.pdf)
151:Summary of UK-US AI Safety Institutes MOU (https://www.gov.uk/government/publications/collaboration-on-the-safety-of-ai-uk-us-memorandum-of-understanding/collaboration-on-the-safety-of-ai-uk-us-memorandum-of-understanding)
152: UK & US Announce AI Safety Institutes MOU (https://www.gov.uk/government/news/uk-united-states-announce-partnership-on-science-of-ai-safety)
153: UK Government Statement on new UK Supercomputers (https://www.gov.uk/government/news/technology-secretary-announces-investment-boost-making-british-ai-supercomputing-30-times-more-powerful)
154: UK Pro-Innovation Approach to UK – Government Consultation Response (https://www.gov.uk/government/consultations/ai-regulation-a-pro-innovation-approach-policy-proposals)
155:UK CAA Strategy on AI (https://www.caa.co.uk/our-work/innovation/artificial-intelligence)
156: UK CAA Terminology Framework for AI (https://www.caa.co.uk/publication/download/21088)
157: UK CAA Building Trust in AI – 5 Principles (https://www.caa.co.uk/publication/download/21120)
158:France National Strategy for AI (https://www.entreprises.gouv.fr/fr/numerique/enjeux/la-strategie-nationale-pour-l-ia)
159: France 2030 Plan (https://www.info.gouv.fr/france-2030)
160: France National AI Strategy – 2nd Phase (https://www.enseignementsup-recherche.gouv.fr/sites/default/files/2021-11/dossier-de-presse---strat-gie-nationale-pour-l-intelligence-artificielle-2e-phase-14920.pdf)
161: France National AI Research Programme (https://www.inria.fr/fr/programme-national-recherche-intelligence-artificielle)
162: LaborIA (https://www.laboria.ai/le-laboria)
163: PEPR AI Research Programme (https://www.inria.fr/fr/france-2030-pepr-intelligence-artificielle-recherche-innovation)
164: Confiance.ai (https://www.confiance.ai)
165: Towards the Engineering of Trustworthy AI Applications for Critical Systems (https://www.confiance.ai/wp-content/uploads/2023/09/LivreBlanc-Confiance.ai-Octobre2022-1.pdf)
166: Digital Common Good Methodology (https://www.inria.fr/sites/default/files/2024-03/CP_confianceai_240307_bilanetperspectives%5B95%5D.pdf)
167: Cour des Comptes (https://www.ccomptes.fr/fr/publications/la-strategie-nationale-de-recherche-en-intelligence-artificielle)
168: IA Cluster (https://www.enseignementsup-recherche.gouv.fr/fr/france-2030-emmanuel-macron-annonce-un-effort-sans-precedent-de-la-france-en-intelligence-91286)
169: IA Booster France 2030 Programme (https://www.entreprises.gouv.fr/fr/actualites/france-2030/lancement-du-programme-ia-booster-france-2030)
170: Bpifrance (https://www.bpifrance.fr/catalogue-offres/ia-booster-france-2030)
171: France-UK Research and AI Partnership (https://www.gov.uk/government/news/uk-and-france-to-deepen-research-and-ai-links-following-horizon-association)
172: AI Commission 25 Recommendations (https://www.info.gouv.fr/actualite/25-recommandations-pour-lia-en-france)
173: National Pilot Committee for Digital Ethics [CNPEN] (https://www.ccne-ethique.fr/fr/cnpen)
174: Opinion 7 of Generative AI Systems: Ethical Issues (https://www.ccne-ethique.fr/sites/default/files/2023-09/CNPEN_avis7_06_09_2023_web-rs2.pdf)
175: WEF Policy Framework for Responsible Limits on Facial Recognition (https://www3.weforum.org/docs/WEF_Facial_Recognition_for_Law_Enforcement_Investigations_2022.pdf)
176: AFNOR Statement on ISO/IEC 42001 Standard (https://www.afnor.org/en/news/a-quality-standard-and-certification-for-ai)
177: ISO/IEC 42001:2023 (https://www.boutique.afnor.org/en-gb/standard/iso-iec-420012023/information-technology-artificial-intelli-

gence-management-system/xs142381/355348#AreasStoreProductsSummaryView)
178: Angela Merket launches Digital Transformation Strategy (https://www.dw.com/en/germany-launches-digital-strategy-to-become-artificial-intelligence-leader/a-46298494)
179: Germany National AI Strategy (https://www.ki-strategie-deutschland.de/files/downloads/Fortschreibung_KI-Strategie_engl.pdf)
180: Executive Summary of Study Commission on AI (https://www.bundestag.de/resource/blob/804184/f31eb697deef36fc271c0587e85e5b19/Kurzfassung-des-Gesamtberichts-englische-Uebersetzung-data.pdf)
181: EU AI Watch (https://ai-watch.ec.europa.eu/index_en)
182: Germany International Futures Lab on AI (https://www.bmbf.de/bmbf/en/international-affairs/worldwide-networking/internationalization-strategy/international-future-labs-for-artificial-intelligence/international-future-labs-for-artificial-intelligence_node.html)
183: BMBF Action Plan for AI (https://www.bmbf.de/SharedDocs/Publikationen/de/bmbf/FS/863968_Aktionsplan_Kuenstliche_Intelligenz_en.pdf?__blob=publicationFile&v=2)
184: German Research Centre for AI (https://www.dfki.de/en/web/research)
185: Germany Competition & Digitalisation Act (https://www.bmwk.de/Redaktion/DE/Artikel/Service/gwb-digitalisierungsgesetz.html)
186: Germany Regulatory Sandbox Strategy (https://www.bmwk.de/Redaktion/EN/Downloads/I/info-reallabore.pdf?__blob=publicationFile&v=1)
187: Germany Act on Autonomous Driving (https://bmdv.bund.de/SharedDocs/EN/Articles/DG/act-on-autonomous-driving.html)
188: German Digital Services Act (https://www.bundesregierung.de/breg-en/news/german-digital-services-act-2250564)
189: German Data Ethics Commission (https://www.bmi.bund.de/EN/topics/it-internet-policy/data-ethics-commission/data-ethics-commission-node.html)
190: Opinion of the Data Ethics Commission (https://www.bmi.bund.de/SharedDocs/downloads/EN/themen/it-digital-policy/datenethikkommission-abschlussgutachten-kurz.pdf;jsessionid=E4F787DFB6227696BEC7AED14CA9A833.live871?__blob=publicationFile&v=3)
191: German Standardisation Roadmap on AI (https://www.din.de/resource/blob/772610/8bfea3055c03aa1e2563afc16001b06f/normungsroadmap-en-data.pdf)
192: German AI Seal of Quality (https://ki-verband.de/wp-content/uploads/2019/02/KIBV_Guetesiegel.pdf)
193: BMAS AI Observatory (https://www.bmas.de/DE/Arbeit/Digitalisierung-der-Arbeitswelt/Denkfabrik-Digitale-Arbeitsgesellschaft/denkfabrik-digitale-arbeitsgesellschaft-arbeit-neu-denken.html)
194: Leonardo supercomputer (https://eurohpc-ju.europa.eu/leonardo-inaugurated-europe-welcomes-new-world-leading-supercomputer-2022-11-24_en)
195: Italy, G7 and AI (https://www.g7italy.it/en)
196: Italy G7 Programme – Transport Minister Meeting (https://www.g7italy.it/wp-content/uploads/Media_Handbook_ENG-Milano.pdf)
197: Italy PhD in AI Programme [PhD-AI.it] (https://www.phd-ai.it/en/359-2)
198: Italy Strategic Programme on AI (https://assets.innovazione.gov.it/1637777513-strategic-program-aiweb.pdf)
199: EU Ethics Guidelines for Trustworthy AI (https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai)
200: FAIR Foundation (https://fondazione-fair.it/en)
201: Italy Strategy for Technological Innovation & Digitalisation (https://assets.innovazione.gov.it/1610546390-midbook2025.pdf)
202: Italy AI strategy – European Commission Website (https://ai-watch.ec.europa.eu/countries/italy/italy-ai-strategy-report_en)
203: Italy Data Protection Authority (https://www.garanteprivacy.it/web/garante-privacy-en/press-room)
204: Italy DPA Temporary Ban on ChatGPT in 2023 (https://www.garanteprivacy.it/web/guest/home/docweb/-/docweb-display/docweb/9870847#english)
205: Italy DPA Opens Investigation into OpenAI Sora (https://www.garanteprivacy.it/web/guest/home/docweb/-/docweb-display/docweb/9991867#english
206: Italy Prime Minister at UK AI Safety Summit 2023 – Photos from Italian Government Presidency of the Council of Ministers [under CC Licence CC-BY-NC-SA 3.0 IT] (https://www.governo.it/en/media/ai-safety-summit/24158)
207: US White House Memorandum to Heads of Federal Agencies (https://www.whitehouse.gov/wp-content/uploads/2020/11/M-21-06.pdf)
208: US DoD Recommendation on Ethical AI in Defence (https://media.defense.gov/2019/Oct/31/2002204458/-1/-1/0/DIB_AI_PRINCIPLES_PRIMARY_DOCUMENT.PDF)
209: US FDA Action Plan for AI in Medical Devices https://www.fda.gov/medical-devices/software-medical-device-samd/artificial-intelligence-and-machine-learning-software-medical-device#regulation
210: US FTC Guidance on AI and Algorithms (https://www.ftc.gov/business-guidance/blog/2020/04/using-artificial-intelligence-and-algorithms)
211: US HSS Trustworthy AI Playbook (https://www.hhs.gov/sites/default/files/hhs-trustworthy-ai-playbook.pdf)
212: US White House Blueprint for AI Bill of Rights (https://www.whitehouse.gov/ostp/ai-bill-of-rights)
213: NIST AI Risk Management Framework (https://www.nist.gov/itl/ai-risk-management-framework)
214: NIST AI Risk Management Framework – Characteristics of Trustworthy AI (https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf)
215: US State Legislation on AI (https://www.ncsl.org/technology-and-communication/legislation-related-to-artificial-intelligence)
216: US New York City AI Bias Law (https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=4344524&GUID=B051915D-A9AC-451E-81F8-6596032FA3F9)
217: US Chamber of Commerce AI Recommendations (https://www.uschamber.com/assets/documents/CTEC_AICommission2023_Exec-Summary.pdf)
218: US NTIA AI Accountability Consultation (https://ntia.gov/issues/artificial-intelligence)
219: US President Biden hosts a meeting on AI at the Fairmont Hotel, San Franscico, 20 June 2023 – Official White House Photo by Adam Schultz – White House Flickr – US Government Works – White House Creative Commons Licence 3.0 (https://www.flickr.com/photos/whitehouse/53233832252/in/photostream/)
220: AI Industry agree to US Voluntary AI Safety Measures (https://www.whitehouse.gov/wp-content/uploads/2023/07/Ensuring-Safe-Secure-and-Trustworthy-AI.pdf)

221: US-EU Roadmap on Trustworthy AI & Risk Management (https://digital-strategy.ec.europa.eu/en/library/ttc-joint-roadmap-trustworthy-ai-and-risk-management)
222: US-EU AI Terminology & Taxonomy – 2nd Edition (https://digital-strategy.ec.europa.eu/en/library/eu-us-terminology-and-taxonomy-artificial-intelligence-second-edition)
223: G7 Leaders Communique – May 2023 (https://www.mofa.go.jp/files/100506878.pdf)
224: US Select Committee on AI (https://www.whitehouse.gov/ostp/ostps-teams/nstc/select-committee-on-artificial-intelligence)
225: US National Initiative on AI (https://www.ai.gov)
226: US National AI R&D Strategic Plan (https://www.whitehouse.gov/wp-content/uploads/2023/05/National-Artificial-Intelligence-Research-and-Development-Strategic-Plan-2023-Update.pdf)
227: US CISA Roadmap for AI Cyber Security (https://www.cisa.gov/sites/default/files/2023-11/2023-2024_CISA-Roadmap-for-AI_508c.pdf)
228: US Executive Order on Safe, Secure & Trustworthy Development and Use of AI (https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence)
229: AI in the US Government (https://ai.gov/ai-in-gov)
230: AI in the US Government – Statement (https://www.whitehouse.gov/briefing-room/statements-releases/2024/03/28/fact-sheet-vice-president-harris-announces-omb-policy-to-advance-governance-innovation-and-risk-management-in-federal-agencies-use-of-artificial-intelligence)
231: AI in the US Government – Letter to Federal Agencies (https://www.whitehouse.gov/wp-content/uploads/2024/03/M-24-10-Advancing-Governance-Innovation-and-Risk-Management-for-Agency-Use-of-Artificial-Intelligence.pdf)
232: US Office of Personnel Management Guidance on AI Pay and Flexibility (https://www.chcoc.gov/content/pay-flexibility-incentive-pay-and-leave-and-workforce-flexibility-programs-artificial)
233: US Government use of AI and Use Cases (https://ai.gov/ai-use-cases)
234: US Political Declaration on the Responsible Military use of AI & Autonomy (https://www.state.gov/political-declaration-on-responsible-military-use-of-artificial-intelligence-and-autonomy)
235: US Philanthropic Giving to Advance AI for Public Interest (https://www.fordfoundation.org/wp-content/uploads/2023/10/Philanthropies-Launch-New-Initiative-to-Ensure-AI-Advances-the-Public-Interest-1.pdf)
236:US AI Safety Institute (https://www.nist.gov/artificial-intelligence/artificial-intelligence-safety-institute)
237: US Commerce Secretary & UK Secretary of State sign MOU on AI Safety – Photo from X, @SecRaimondo (https://x.com/SecRaimondo/status/1774972138740408585)
238: US AI Safety Institute Consortium (https://www.nist.gov/artificial-intelligence/artificial-intelligence-safety-institute/aisic-members)
239: US NAIRR Pilot (https://nairrpilot.org)
240:US AI Skills development (https://www.energy.gov/cet/supercharging-americas-ai-workforce)
241: US Dept. of Education Guide on AI & the Future of Teaching & Learning (https://tech.ed.gov/files/2023/05/ai-future-of-teaching-and-learning-report.pdf)
242: US EducateAI Initiative (https://new.nsf.gov/news/nsf-launches-educateai-initiative)
243: Canada AI Strategy (https://ised-isde.canada.ca/site/ai-strategy/en)
244: Edmonton AI Institute (https://www.amii.ca)
245: Montreal AI Institute (https://mila.quebec/en)
246: Toronto AI Institute (https://vectorinstitute.ai)
247: Canadian Public Awareness Working Group of the Advisory Council on AI (https://ised-isde.canada.ca/site/advisory-council-artificial-intelligence/en/public-awareness-working-group/learning-together-responsible-artificial-intelligence)
248: Canada Canadian Personal Information Protection and Electronic Documents Act (https://www.priv.gc.ca/en/privacy-topics/privacy-laws-in-canada/the-personal-information-protection-and-electronic-documents-act-pipeda)
249: Health Canada Guidance on AI in Medical Devices (https://www.canada.ca/en/health-canada/services/drugs-health-products/medical-devices/good-machine-learning-practice-medical-device-development.html)
250: Canada Office of the Superintendent of Financial Institutions Guidance on AI (https://www.osfi-bsif.gc.ca/Eng/fi-if/in-ai/Pages/E-23_let.aspx)
251: Canada Human Rights Commission on AI (https://www.chrc-ccdp.gc.ca/en/resources/law-commission-ontario-ontario-human-rights-commission-and-canadian-human-rights)
252: Canada Quebec Bill 64 Privacy Law (https://m.assnat.qc.ca/en/travaux-parlementaires/projets-loi/projet-loi-64-42-1.html)
253: China AI Development Plan 2017 (https://chinacopyrightandmedia.wordpress.com/2017/07/20/a-next-generation-artificial-intelligence-development-plan)
254: China AI Innovation Zones (http://english.scio.gov.cn/chinavoices/2021-12/07/content_77915232.htm)
255: China Generative AI Draft Proposals (http://www.cac.gov.cn/2023-04/11/c_1682854275475410.htm)
256: China New Generation AI Development Plan – Chinese Original (https://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm)
257: China New Generation AI Development Plan – English Translation (https://digichina.stanford.edu/work/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017)
258: China Governance Principles for New Generation AI – Chinese Original (https://www.most.gov.cn/kjbgz/201906/t20190617_147107.html)
259: China Governance Principles for New Generation AI – English Translation (https://digichina.stanford.edu/work/translation-chinese-expert-group-offers-governance-principles-for-responsible-ai)
260: China Outline for Establishing a Rule-of-Law-Based Society – Chinese Original (https://www.gov.cn/zhengce/2020-12/07/content_5567791.htm)
261: China Outline for Establishing a Rule-of-Law-Based Society – Partial English Translation (https://www.chinalawtranslate.com/en/highlights-of-the-outline-for-constructing-a-rule-of-law-based-society)
262: China New Generation AI Code of Ethics – Chinese Original (https://www.most.gov.cn/kjbgz/202109/t20210926_177063.html)

263: China New Generation AI Code of Ethics – English Translation (https://cset.georgetown.edu/publication/ethical-norms-for-new-generation-artificial-intelligence-released)
264: China Provisions on the Management of Algorithmic Recommendations – Chinese Original (https://www.gov.cn/zhengce/zhengceku/2022-01/04/content_5666429.htm)
265: China Provisions on the Management of Algorithmic Recommendations – English Translation (https://www.chinalawtranslate.com/en/algorithms)
266: China Provisions on the Administration of Deep Synthesis – Chinese Original (https://www.gov.cn/zhengce/zhengceku/2022-12/12/content_5731431.htm)
267: China Provisions on the Administration of Deep Synthesis – English Translation (https://www.chinalawtranslate.com/en/deep-synthesis)
268: China Measures for the Management of Generative AI Services – Chinese Original (http://www.cac.gov.cn/2023-04/11/c_1682854275475410.htm)
269: China Measures for the Management of Generative AI Services – English Translation (https://digichina.stanford.edu/work/translation-measures-for-the-management-of-generative-artificial-intelligence-services-draft-for-comment-april-2023)
270: International Dialogue on AI Safety [Beijing, March 2024] (https://far.ai/post/2024-03-idais-beijing)
271: International Dialogue on AI Safety (IDIAS) & Beijing Academy of AI – Photo (https://idais.ai)
272: Shanghai Regulations on Promoting the Development of the AI Industry (http://english.scio.gov.cn/chinavoices/2022-09/23/content_78435351.htm)
273: Shenzhen Special Economic Zone AI Industry Promotion Regulations (http://www.sz.gov.cn/en_szgov/news/latest/content/post_10211181.html)
274: Japan Society 5.0 – Japan Cabinet Office (https://www8.cao.go.jp/cstp/english/society5_0/index.html)
275: Japan Society 5.0 – Government of Japan (https://www8.cao.go.jp/cstp/english/society5_0/index.html)
276: Fourth Industrial Revolution – Wikipedia (https://en.wikipedia.org/wiki/Fourth_Industrial_Revolution)
277: Japan Social Principles of Human Centric AI (https://www.cas.go.jp/jp/seisaku/jinkouchinou/pdf/humancentricai.pdf)
278: OECD Recommendations on AI (https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449)
279: Japan National AI Strategy – Original Japanese (https://www8.cao.go.jp/cstp/ai/aistrategy2022_bessi.pdf)
280: Japan National AI Strategy – English Translation (https://www8.cao.go.jp/cstp/ai/aistratagy2022en.pdf)
281: AI Governance in Japan v1.1 (https://www.meti.go.jp/shingikai/mono_info_service/ai_shakai_jisso/pdf/20210709_8.pdf)
282: Japan Governance Guidance for the Implementation of AI Principles (https://www.meti.go.jp/shingikai/mono_info_service/ai_shakai_jisso/pdf/20220128_2.pdf)
283: Japan Corporate Privacy Governance Guidebook (https://warp.da.ndl.go.jp/info:ndljp/pid/12232105/www.meti.go.jp/press/2021/02/20220218001/20220218001.html)
284: Japan Guidebook for the Utilisation of Camera Images (https://www.meti.go.jp/english/press/2022/0330_001.html)
285: Japan Contract Guidelines on Utilisation of AI and Data in the Agricultural Sector (https://www.maff.go.jp/e/policies/intel/gl_ai_data.html)
286: Japan Machine Learning Quality Management Guideline (https://www.digiarc.aist.go.jp/en/publication/aiqm)
287: Japan Act on the Protection of Personal Information (https://www.japaneselawtranslation.go.jp/en/laws/view/4241)
288: Japan Financial Instruments & Exchange Act (https://www.japaneselawtranslation.go.jp/ja/laws/view/4405)
289: Japan Instalment Sales Act (https://www.japaneselawtranslation.go.jp/en/laws/view/3942)
290: Japan Road Transport Vehicle Act – US Library of Congress Article (https://www.loc.gov/item/global-legal-monitor/2022-05-16/japan-road-traffic-act-and-road-transport-vehicle-act-amended)
291: Japan Road Traffic Act (https://www.japaneselawtranslation.go.jp/en/laws/view/2962/en)
292: Honda Receives Level 3 Automated Driving Approval in Japan (https://global.honda/newsroom/news/2020/4201111eng.html)
293: 2023 G7 Action Plan for Global Interoperability of Trustworthy AI (https://www.digital.go.jp/assets/contents/node/information/field_ref_resources/efdaf817-4962-442d-8b5d-9fa1215cb56a/f7765a51/20230430_news_g7_results_05.pdf)
294: 2023 G7 Digital & Technology Ministers Declaration (https://www.digital.go.jp/assets/contents/node/information/field_ref_resources/efdaf817-4962-442d-8b5d-9fa1215cb56a/f65a20b6/20230430_news_g7_results_00.pdf)
295: Japan Copyright Act (https://www.japaneselawtranslation.go.jp/en/laws/view/4207#je_ch2sc3sb5at4)
296: Netflix Anime Film – The Boy & the Dog (https://youtu.be/J9DpusAZV_0)
297: Japan Agency for Cultural Affairs – Generative AI Slide Deck – in Japanese (https://www.bunka.go.jp/seisaku/chosakuken/pdf/93903601_01.pdf)
298: Japan Agency for Cultural Affairs – Generative AI 1 Page Summary – in Japanese (https://www8.cao.go.jp/cstp/ai/ai_team/3kai/shiryo.pdf)
299: Fujitsu AI Ethics Impact Assessment Tools (https://www.fujitsu.com/global/about/research/technology/aiethics)
300: Sony AI Ethics Guidelines (https://www.sony.com/en/SonyInfo/csr_report/humanrights/AI_Engagement_within_Sony_Group.pdf)
301: NEC AI & Human Rights Principles (https://www.nec.com/en/press/201904/images/0201-01-01.pdf)
302: Singapore Smart Nation (https://www.smartnation.gov.sg)
303: US AI R&D Investments 2018-2023 (https://www.nitrd.gov/apps/itdashboard/ai-rd-investments/#Chart-1-Federal-Budget-for-AI-RD-FYs-2021-2023)
304: Singapore named 1st in Asia in the Smart City Index - IMB https://www.smartnation.gov.sg/about-smart-nation/our-journey/achievements/#singapore-named-top-asian-city-in-the-2023-imd-smart-city-index
305: Global AI Index – Tortoise Media (https://www.tortoisemedia.com/intelligence/global-ai)
306: Global AI Index Methodology 2023 (https://www.tortoisemedia.com/wp-content/uploads/sites/3/2023/07/AI-Methodology-2306-4.pdf)
307: Singapore IMDA Four Frontier Technologies (https://www.imda.gov.sg/about-imda/research-and-statistics/sgdigital/tech-pillars)
308: AI Singapore (https://aisingapore.org)
309: Singapore Smart Nation Infographic https://www.smartnation.gov.sg/files/press-releases/2023/cos%202023%20infographic%20-%20smart%20nation%20today%20and%20beyond.pdf
310: AI Singapore – 100 Experiments (https://aisingapore.org/innovation/100e)

311: Singapore Advisory Council on the Ethical Use of AI and Data (https://www.imda.gov.sg/resources/press-releases-fact-sheets-and-speeches/archived/imda/press-releases/2018/composition-of-the-advisory-council-on-the-ethical-use-of-ai-and-data)
312: Singapore National AI Strategy (https://www.smartnation.gov.sg/nais)
313: Singapore AI Government Cloud Cluster (https://www.smartnation.gov.sg/media-hub/press-releases/31052023)
314: Singapore Road Traffic Act 1961 (https://sso.agc.gov.sg/act/rta1961)
315: Singapore Road Traffic (Autonomous Vehicles) Rules 2017 (https://sso.agc.gov.sg/SL/RTA1961-S464-2017?DocDate=20170823)
316: Singapore AI Financial Principles (https://www.mas.gov.sg/-/media/MAS/News%20and%20Publications/Monographs%20and%20Information%20Papers/FEAT%20Principles%20Final.pdf)
317: Singapore Veritas (https://www.mas.gov.sg/schemes-and-initiatives/veritas)
318: Singapore Veritas – 5 White Papers (https://www.mas.gov.sg/news/media-releases/2022/mas-led-industry-consortium-publishes-assessment-methodologies-for-responsible-use-of-ai-by-financial-institutions)
319: Singapore Veritas – Online Toolkit (https://github.com/veritas-toolkit)
320: Singapore Model AI Governance Framework – Second Edition (https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGModelAIGovFramework2.pdf)
321: CSET Examining Singapore's AI Progress (https://cset.georgetown.edu/publication/examining-singapores-ai-progress)
322: Singapore AI Implementation & Self-Assessment Guide for Organisations - ISAGO (https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGIsago.pdf)
323: Singapore AI Model Framework – Use Cases Volume 1 (https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGAIGovUseCases.pdf)
324: Singapore AI Model Framework – Use Cases Volume 2 (https://file.go.gov.sg/ai-gov-use-cases-2.pdf)
325: Singapore Guide to Job Redesign in the Age of AI (https://file.go.gov.sg/ai-guide-to-jobredesign.pdf)
326: Singapore AI Verify – Press Release (https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2022/singapore-launches-worlds-first-ai-testing-framework-and-toolkit-to-promote-transparency-invites-companies-to-pilot-and-contribute-to-international-standards-development)
327: Singapore AI Verify – Flyer (https://file.go.gov.sg/aiverify-primer.pdf)
328: Singapore AI Verify – Online Toolkit (https://github.com/IMDA-BTG/aiverify)
329: Singapore AI Verify – Sample Report (https://aiverifyfoundation.sg/downloads/AI_Verify_Sample_Report.pdf)
330: Singapore AI Verify – IBM Case Study (https://aiverifyfoundation.sg/ai-verify-users/ibms-journey-towards-responsible-ai-adoption-with-ai-verify)
331: Singapore AI Verify – Singapore Airlines Case Study (https://aiverifyfoundation.sg/ai-verify-users/how-sia-takes-responsible-ai-implementation-to-the-next-level-with-ai-verify)
332: Singapore IMDA Discussion Paper on Generative AI Trust & Governance – Fact Sheet (https://www.imda.gov.sg/-/media/imda/files/news-and-events/media-room/media-releases/2023/06/7-jun---ai-annoucements---annex-c.pdf)
333: Singapore IMDA Discussion Paper on Generative AI Trust & Governance (https://aiverifyfoundation.sg/downloads/Discussion_Paper.pdf)
334: Singapore AI Verify Foundation – Press Release (https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2023/singapore-launches-ai-verify-foundation)
335: Singapore AI Verify Foundation (https://aiverifyfoundation.sg)
336: Singapore-Australia Digital Economy Agreement [SADEA] (https://www.mti.gov.sg/Trade/Digital-Economy-Agreements/The-Singapore-Australia-Digital-Economy-Agreement)
337: Australia - Switching on Darwin (https://www.darwin.nt.gov.au/transforming-darwin/innovation/switching-on-darwin)
338: Australia – City of Darwin & Singapore Model AI Case Study (https://file.go.gov.sg/ai-gov-use-cases-2.pdf#page=16)
339: Australia AI Action Plan (2021) – Archived (https://www.industry.gov.au/publications/australias-artificial-intelligence-action-plan)
340: Australia Consultation on Safe & Responsible AI (https://consult.industry.gov.au/supporting-responsible-ai)
341: Australia Responsible AI Network (https://www.csiro.au/en/work-with-us/industries/technology/national-ai-centre/responsible-ai-network)
342: Australia Discussion Paper on Safe & Responsible AI 2023 (https://consult.industry.gov.au/supporting-responsible-ai)
343: Australia Rapid Research Report on Generative AI (https://www.chiefscientist.gov.au/GenerativeAI)
344: Australia AI Ethics Framework (https://www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework)
345: Australia AI Ethics Framework – Microsoft Case Study (https://www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/testing-ai-ethics-principles/ai-ethics-case-study-microsoft)
346: Australia AI Ethics Framework – National Australia Bank Case Study (https://www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/testing-ai-ethics-principles/ai-ethics-case-study-national-australia-bank)
347: Australia Ethics Framework Pilot Lessons Learned (https://www.industry.gov.au/publications/australias-artificial-intelligence-ethics-framework/testing-ai-ethics-principles)
348: Australia HRC AI Governance & Leadership White Paper (https://humanrights.gov.au/sites/default/files/document/publication/ahrc_wef_white_paper_online_version_final.pdf)
349: Australia HRC Using AI to Make Decisions : Addressing the Problem of Algorithmic Bias Report (https://humanrights.gov.au/sites/default/files/document/publication/ahrc_technical_paper_algorithmic_bias_2020.pdf)
350: Australia HRC Human Rights & Technology - Report (https://humanrights.gov.au/sites/default/files/document/publication/ahrc_rightstech_2021_final_summary_1.pdf)
351: Australia HRC Human Rights & Technology - Recommendations (https://humanrights.gov.au/our-work/technology-and-human-rights/publications/final-report-human-rights-and-technology)
352: Australia AI & Discrimination in Insurance Pricing and Underwriting (https://humanrights.gov.au/sites/default/files/document/publication/ai_guidance_resource_december_2022.pdf#page=32)
353: Australia Safety by Design Principles (https://www.esafety.gov.au/industry/safety-by-design)
354: Australia AI Roadmap (https://www.csiro.au/-/media/D61/AI-Roadmap-assets/19-00346_DATA61_REPORT_AI-Roadmap_WEB_191111.pdf)
355: Australia Review of Privacy Act (https://www.ag.gov.au/rights-and-protections/publications/privacy-act-review-report)
356: Australia Privacy Act Review – Report (https://www.ag.gov.au/sites/default/files/2023-02/privacy-act-review-report_0.pdf)
357: Australia Privacy Act Review – Summary (https://www.ag.gov.au/sites/default/files/2023-02/report-on-a-page.pdf)

358: Australia AI Standards Roadmap (https://www.standards.org.au/news/standards-australia-sets-priorities-for-artificial-intelligence)
359: Australia NTC Framework for Autonomous Vehicles (https://www.ntc.gov.au/transport-reform/ntc-projects/in-service-safety-AVs)
360: Australia Policy Paper – Regulatory Framework for Autonomous Vehicles (https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Policy%20Paper%20-%20regulatory%20framework%20for%20automated%20vehicles%20in%20Australia.pdf)
361: Australia National AI Centre (https://www.csiro.au/en/work-with-us/industries/technology/national-ai-centre)
362: Australia Next Generation AI & Emerging Technologies Graduate Programme (https://www.csiro.au/en/work-with-us/funding-programs/funding/next-generation-graduates-programs)
363: Australia List of Critical Technologies in the National Interest (https://www.industry.gov.au/publications/list-critical-technologies-national-interest)
364: Australia Critical Technologies Statement (https://www.industry.gov.au/publications/critical-technologies-statement)
365: Australia Critical Technologies – AI (https://www.industry.gov.au/publications/list-critical-technologies-national-interest/ai-technologies)
366: Australia Critical Technologies Supply Chain Principles (https://www.homeaffairs.gov.au/reports-and-publications/submissions-and-discussion-papers/critical-technology-supply-chain-principles)
367: Law Council of Australia - AI Consultation Submission (https://lawcouncil.au/resources/submissions/positioning-australia-as-a-leader-in-digital-economy-regulation---automated-decision-making-and-ai-regulation-)
368: KMPG – AI Consultation Submission (https://kpmg.com/au/en/home/insights/2022/07/automated-decision-making-ai-regulation-kpmg-submission.html)
369: RANZCR Statement on Regulating AI in Medicine (https://www.ranzcr.com/college/document-library/ranzcr-position-statement-on-the-regulation-of-artificial-intelligence-in-medicine)
370: RANZCR Ethical Recommendations for AI in Medicine (https://www.ranzcr.com/college/document-library/ethical-principles-for-ai-in-medicine)
371: Australia's AI Ecosystem Report (https://www.csiro.au/-/media/D61/AI-Ecosystem-Momentum-Report/23-00010_DATA61_REPORT_NAIC-AustraliasAIEcosystem_WEB_230220.pdf)
372: Australia's Generative AI Opportunities Report – Microsoft & Tech Council of Australia (https://techcouncil.com.au/wp-content/uploads/2023/07/230714-Australias-Gen-AI-Opportunity-Final-report-vF4.pdf?utm_source=RAINpg&utm_medium=RAINpg&utm_campaign=RAINresources)
373: Australia NSA AI Have Your Say campaign (https://www.haveyoursay.nsw.gov.au/artificial-intelligence)
374: Australia NSW AI Strategy (https://www.digital.nsw.gov.au/policy/artificial-intelligence/artificial-intelligence-strategy)
375: Australia NSW AI Assurance Framework (https://www.digital.nsw.gov.au/policy/artificial-intelligence/nsw-artificial-intelligence-assurance-framework)
376: Australia NSW Ethical AI Principles (https://www.digital.nsw.gov.au/policy/artificial-intelligence/artificial-intelligence-ethics-policy/mandatory-ethical-principles)

WTTC STRATEGIC PARTNERS

AMERICAN EXPRESS

GLOBAL rescue

وزارة السياحة
Ministry of Tourism
Kingdom of Saudi Arabia

© World Travel & Tourism Council: Global Artificial Intelligence – Strategies, Policies & Regulatory Landscape 2023. All rights reserved.
The copyright laws of the United Kingdom allow certain uses of this content without our (i.e. the copyright owner's) permission. You are permitted to use limited extracts of this content, provided such use is fair and when such use is for non-commercial research, private study, review or news reporting. The following acknowledgment must also be used, whenever our content is used relying on this "fair dealing" exception: "Source: World Travel and Tourism Council: Global Artificial Intelligence – Strategies, Policies & Regulatory Landscape2023. All rights reserved."
If your use of the content would not fall under the "fair dealing" exception described above, you are permitted to use this content in whole or in part for non-commercial or commercial use provided you comply with the Attribution, Non-Commercial 4.0 International Creative Commons Licence. In particular, the content is not amended and the following acknowledgment is used, whenever our content is used: "Source: World Travel and Tourism Council: Global Artificial Intelligence – Strategies, Policies & Regulatory Landscape 2023. All rights reserved. Licensed under the Attribution, Non-Commercial 4.0 International Creative Commons Licence." You may not apply legal terms or technological measures that legally restrict others from doing anything this license permits.