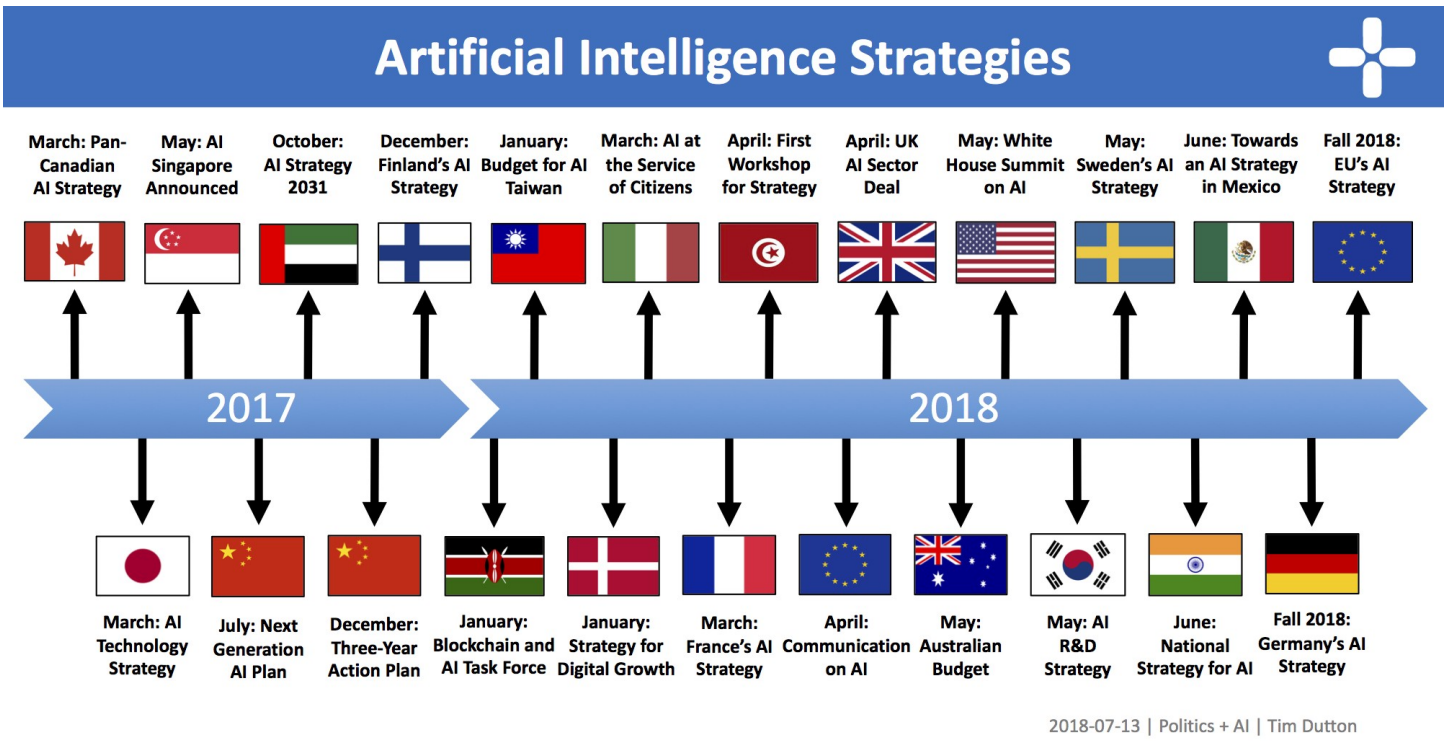
Jun 28 · 25 min read



An Overview of National AI Strategies

The race to become the global leader in artificial intelligence (AI) has officially begun. In the past fifteen months, Canada, China, Denmark, the EU Commission, Finland, France, India, Italy, Japan, Mexico, the Nordic-Baltic region, Singapore, South Korea, Sweden, Taiwan, the UAE, and the UK have all released strategies to promote the use and development of AI. No two strategies are alike, with each focusing on different aspects of AI policy: scientific research, talent development, skills and education, public and private sector adoption, ethics and inclusion, standards and regulations, and data and digital infrastructure.

This article summarizes the key policies and goals of each strategy, as well as related policies and initiatives that have announced since the release of the initial strategies. It also includes countries that have announced their intention to develop a strategy or have related AI policies in place.

I plan to continuously update this article as new strategies and initiatives are announced. If a country or policy is missing (or if something in the summary is incorrect), please leave a comment and I will update the article as soon as possible.

I also plan to write an article for each country that provides an in-depth look at AI policy. Once these articles are written, I will include a link to the bottom of each country's summary.

Update History

June 28: Publication of original article, included Australia, Canada, China, Denmark, EU Commission, Finland, France, Germany, India, Japan, Singapore, South Korea, UAE, US, and UK.

July 13: Added Italy, Kenya, New Zealand, Nordic-Baltic Region, Mexico, Sweden, Taiwan, and Tunisia. New information for Germany, the UK, and the US.

July 25: Added Malaysia, Poland, and Russia. New information for Germany.

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Australia

Australia does not *yet* have an artificial intelligence strategy. However, in the 2018–2019 Australian budget, the government announced a four-year, AU$29.9 million investment to support the development of AI in Australia. The government will create a Technology Roadmap, a Standards Framework, and a national AI Ethics Framework to support the responsible development of AI. The investment will also support Cooperative Research Centre projects, PhD scholarships, and other initiatives to increase the supply of AI talent in Australia. In addition, in the its 2017 innovation roadmap, *Australia 2030: Prosperity Through Innovation*, the government announced that it will prioritize AI in the government's forthcoming Digital Economy Strategy. This report is expected to be released in the second half of 2018.

Canada

Prime Minister Trudeau announcing the Pan-Canadian Artificial Intelligence Strategy | via MP Raj Grewal News

Canada was the first country to release a national AI strategy. Detailed in the 2017 federal budget, the *Pan-Canadian Artificial Intelligence Strategy* is a five-year, C$125 million plan to invest in AI research and talent. The strategy has four goals: (1) increase the number of AI researchers and graduates, (2) establish three clusters of scientific excellence, (3) develop thought leadership on the economic, ethical, policy, and legal implications of AI, and (4) support the national research community on AI. The Canadian Institute for Advanced Research leads the strategy in close partnership with the Canadian government and the three new AI Institutes: the Alberta Machine Intelligence Institute (AMII) in Edmonton, the Vector Institute in Toronto, and MILA in Montreal.

Canada's AI strategy is distinct from other strategies because it is primarily a research and talent strategy. It's initiatives—the new AI Institutes, CIFAR Chairs in AI, and the National AI program—are all geared towards enhancing Canada's international profile as a leader in AI research and training. The CIFAR AI & Society Program examines the policy and ethical implications of AI, but the overall strategy does not include policies found in other strategies such as investments in strategic sectors, data and privacy, or skills development. That is not to say that the Canadian government does not have these policies in place, but that they are separate from, rather than part of, the Pan-Canadian Artificial Intelligence Strategy.

China

China announced its ambition to lead the world in AI theories, technologies, and applications in its July 2017 plan, *A Next Generation Artificial Intelligence Development Plan*. The plan is the most comprehensive of all national AI strategies, with initiatives and goals for R&D, industrialization, talent development, education and skills acquisition, standard setting and regulations, ethical norms, and security. It is best understood as a three step plan: first, make China's AI industry "in-line" with competitors by 2020; second, reach "world-

leading" in some AI fields by 2025; and third, become the "primary" center for AI innovation by 2030. By 2030, the government aims to cultivate an AI industry worth 1 trillion RMB, with related industries worth 10 trillion RMB. The plan also lays out the government's intention to recruit the world's best AI talent, strengthen the training of the domestic AI labour force, and lead the world in laws, regulations, and ethical norms that promote the development of AI. The latter includes the intent to actively participate in and lead the global governance of AI.

Since the release of the Next Generation Plan, the government has published the *Three-Year Action Plan to Promote the Development of New-Generation Artificial Intelligence Industry*. This plan builds on the first step of the Next Generation plan to bring China's AI industry in-line with competitors by 2020. Specifically, it advances four major tasks: (1) focus on developing intelligent and networked products such as vehicles, service robots, and identification systems, (2) emphasize the development AI's support system, including intelligent sensors and neural network chips, (3) encourage the development of intelligent manufacturing, and (4) improve the environment for the development of AI by investing in industry training resources, standard testing, and cybersecurity. In addition, the government has also partnered with national tech companies to develop research and industrial leadership in specific fields of AI and will build a $2.1 billion technology park for AI research in Beijing.

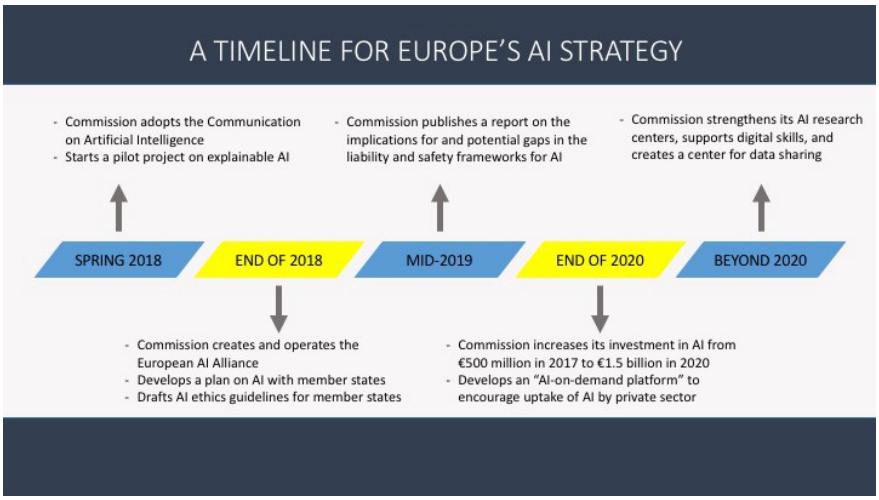
Denmark

Denmark's *Strategy for Denmark's Digital Growth*, released January 2018, aims to make Denmark a leader in the digital revolution and to create growth and wealth for all Danish people. Rather than focusing exclusively on advances in AI, the strategy concentrates on AI, big data, and the Internet of Things. The strategy has three goals: (1) make Danish businesses the best at using digital technologies; (2) have the best conditions in place for the digital transformation of business; and (3) ensure every Dane is equipped with the necessary digital skills to compete. As per funding, a pool of DKK 75 million has been allocated in 2018, followed by DKK 125 million each year until 2025, and DKK 75 million in perpetuity for the implementation of the strategy's initiatives.

In total, the report outlines 38 new initiatives. Major announcements include the creation of Digital Hub Denmark (a public-private cluster for digital technologies), SME:Digital (a coordinated scheme to support the digital transformation of Danish SMEs), and the Technology Pact (a

nationwide initiative to foster digital skills). The government also announced initiatives to further open government data, experiment with regulatory sandboxes, and strengthen cybersecurity.

EU Commission



A timeline for the EU Commission AI strategy | via Tim Dutton

In April 2018, the EU Commission adopted the Communication on Artificial Intelligence: a 20-page document that lays out the EU's approach to AI. The EU Commission aims to: (1) increase the EU's technological and industrial capacity and AI uptake by the public and private sectors; (2) prepare Europeans for the socioeconomic changes brought about by AI; and (3) ensure that an appropriate ethical and legal framework is in place. Key initiatives include a commitment to increase the EU's investment in AI from €500 million in 2017 to €1.5 billion by the end of 2020, the creation of the European AI Alliance (which people can now join), and a new set of AI ethics guidelines to address issues such as fairness, safety, and transparency. A new High-Level Group on Artificial Intelligence will act as the steering group for the European AI Alliance and will prepare the draft ethics guidelines for member states to consider.

The Commission is now working with member states to develop a coordinated plan on AI by the end of 2018. The goal of the forthcoming plan will be to "maximize the impact of investments at EU and national levels, encourage synergies and cooperation across the EU, exchange best practices and collectively define the way forward to ensure that the EU as a whole can compete globally."

Finland

In May 2017, Finland's Minister of Economic Affairs Mika Lintilä appointed a steering group to examine how Finland can become one of the world's top countries at the application of AI technologies. Though the group will not release its final report until April 2019, it has already released two interim reports and the Finnish government has begun to incorporate the group's recommendations into government policy. The first report, *Finland's Age of Artificial Intelligence*, surveyed Finland's strengths and weaknesses in AI and provided eight recommendations to turn Finland into a global leader in the application of AI. Key initiative included the creation of the Finnish Centre for AI (a joint partnership by Aalto and Helsinki Universities to increase AI research, talent, and industry collaboration), an AI accelerator pilot program, and the integration of AI in the public service. A second interim report, *Work in the Age of Artificial Intelligence*, gives an additional 28 policy recommendations related to four aspects of the future of work: growth and employment; labour market; learning and skills; and ethics.

France

President Emmanuel Macron unveiled France's €1.5 billion plan to transform France into a global leader in AI research, training, and industry at the end of the AI for Humanity Summit in Paris. The plan draws heavily from the report, *For a Meaningful Artificial Intelligence: Towards a French and European Strategy*, in which Cédric Villani, France's famed mathematician and Deputy for the Essonne, and the other members of the "Villani Mission" outlined a number of policies and initiatives for the government to consider.

The plan consists of four components. First, Macron announced several initiatives to strengthen France's AI ecosystem and attract the international talent. Key among them was the announcement of the National Artificial Intelligence Programme, which will create a network of four or five research institutes across France. Second, France will develop an open data policy to drive the adoption and application of AI in sectors where France already has the potential for AI excellence, such as healthcare. Third, the government will create a regulatory and financial framework to support the development of domestic "AI champions." Finally, the government will development regulations for ethics to ensure that the use and development of AI is transparent, explainable, and non-discriminatory.

In total, the government will invest €1.5 billion in AI by the end of the current five-year term. Details for the following have not be released, but €700 million will go towards research, €100 million this year to AI startups and companies, €70 million annually through France's Public

Investment Bank, and $400 million to industrial projects in AI. The Villani report recommended focusing on four sectors (healthcare, transportation, environment, and defence), but Macron did not reference this recommendation. Instead, he only talked about the potential of AI for healthcare and transportation.

President Macron delivering his speech during the AI For Humanity Conference | via Reuters

Germany

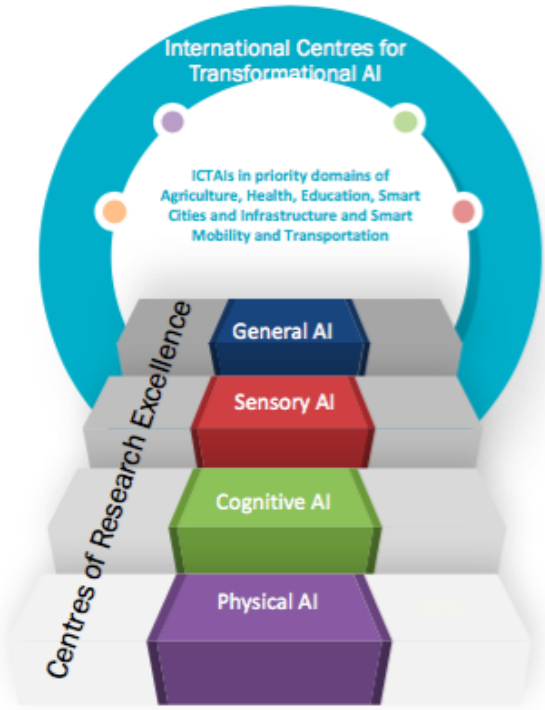
Prior to releasing its AI strategy, which will be published at the Digital Summit 2018 in Nuremberg (December 3–4), Germany's federal cabinet released a paper in July 2018 that outlines the goals of the strategy. In short, the government wants to strengthen and expand German and European research in AI and focus on the transfer of research results to the private sector and the creation of AI applications. Proposed initiatives to achieve this include new research centres, Franco-Germany research and development collaboration, regional cluster funding, and support for SMEs and start-ups. The proposed plan is quite comprehensive and also includes measures to attract international talent, respond to the changing nature of work, integrate AI into government services, make public data more accessible, and promote the development of transparent and ethical AI. Overall, the government wants "AI made in Germany" to become a globally recognized seal of quality.

In addition to its forthcoming strategy, Germany already has a number of related policies in place to develop AI. Principally, the government, in partnership with academia and industry actors, focuses on integrating AI technologies into Germany's export sectors. The flagship

program has been Industry 4.0, but recently the strategic goal has shifted to smart services, which relies more on AI technologies. The German Research Centre for AI (DFKI) is a major actor in this pursuit and provides funding for application oriented research. Other relevant organizations include the Alexander von Humboldt Foundation, which promotes academic cooperation and attracts scientific talent to work in Germany, and the Plattform Lernende Systeme, which brings together experts from science, industry, politics, and civic organizations to develop practical recommendations for the government. The government has also announced a new commission to investigate how AI and algorithmic decision-making will affect society. It consists of 19 MPs and 19 AI experts and is tasked with developing a report with recommendations by 2020 (a similar task force released a report on the ethics of autonomous vehicles in June 2017).

India

India has taken a unique approach to its national AI strategy by focusing on how India can leverage AI not only for economic growth, but also for social inclusion. NITI Aayog, the government think tank that wrote the report, calls this approach #AIforAll. The strategy, as a result, aims to (1) enhance and empower Indians with the skills to find quality jobs; (2) invest in research and sectors that can maximize economic growth *and* social impact; and (3) scale Indian-made AI solutions to the rest of the developing world.



Proposed integration of COREs and ICTAIs | via NITI Aayog

NITI Aayog provides over 30 policy recommendations to invest in scientific research, encourage reskilling and training, accelerate the adoption of AI across the value chain, and promote ethics, privacy, and security in AI. Its flagship initiative is a two-tiered integrated strategy to boost research in AI. First, new Centres of Research Excellence in AI (COREs) will focus on fundamental research. Second, the COREs will act as technology feeders for the International Centres for Transformational AI (ICTAIs), which will focus on creating AI-based applications in domains of societal importance. In the report, NITI Aayong identifies healthcare, agriculture, education, smart cities, and smart mobility as the priority sectors that will benefit the most socially from applying AI. The report also recommends setting up a consortium of Ethics Councils at each CORE and ICTAI, developing sector specific guidelines on privacy, security, and ethics, creating a National AI Marketplace to increase market discovery and reduce time and cost of collecting data, and a number of initiatives to help the overall workforce acquire skills. Strategically, the government wants to establish India as an “AI Garage,” meaning that if a company can deploy an AI in India, it will then be applicable to the rest of the developing world.

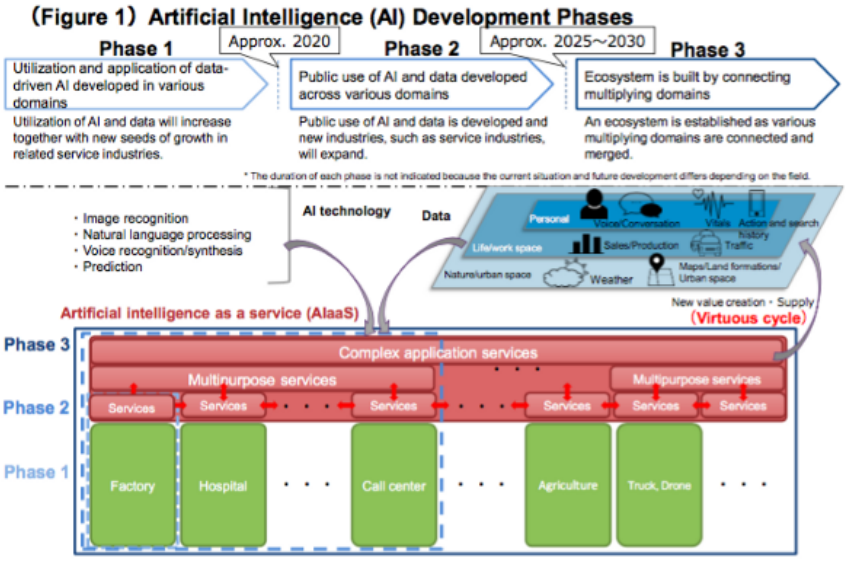
Italy

Italy released a white paper on AI in March 2018. Unlike other strategies, which focus on research and development or private sector uptake, the white paper exclusively focuses on how the government can facilitate the adoption of AI technologies in the public administration. The white paper, *Artificial Intelligence: At The Service of Citizens*, was created by a task force for the Agency for Digital Italy. Given its focus, the paper devotes a significant amount of time to the challenges of integrating AI into government services. This includes concerns over ethics, the availability of skilled employees, the role of data, and legal implications. Taking these challenges into account, the paper concludes with a set of 10 recommendations for the government to consider. Recommendations included the creation of a National Competence Centre and a Trans-disciplinary Centre on AI, a national platform to promote the collection of annotated data, and measures to disseminate AI-related skills through the public administration. It is unclear whether Italy's new government will implement and fund these recommendations.

In July 2018, a consortium of universities and research centres in Italy united to create a new national laboratory for AI. CINI-AIIS Lab (Artificial Intelligence and Intelligent Systems Lab) aims to strengthen Italy's basic and applied research in AI, support the country's ICT industry by promoting technology transfer from research to entrepreneurship, and promote the adoption of AI solutions in the public administration.

Japan

Japan was the second country to develop a national AI strategy. Based on instructions from Prime Minister Abe during the Public-Private Dialogue towards Investment for the Future in April 2016, the Strategic Council for AI Technology was established to develop "research and development goals and a roadmap for the industrialization of artificial intelligence." The 11-member council had representatives from academia, industry, and government, including the President of Japan's Society for the Promotion of Science, the President of the University of Tokyo, and the Chairman of Toyota.



Japan's three-phase development plan for AI | via the Industrialization Roadmap

The plan, the *Artificial Intelligence Technology Strategy*, was released in March 2017. The strategy is notable for its Industrialization Roadmap, which envisions AI as a service and organizes the development of AI into three phases: (1) the utilization and application of data-driven AI developed in various domains, (2) the public use of AI and data developed across various domains, and (3) the creation of ecosystems built by connecting multiplying domains. The strategy applies this framework to three priority areas of Japan's Society 5.0 initiative—productivity, health, and mobility—and outlines policies to realize the industrialization roadmap. These policies include new investments in R&D, talent, public data, and start-ups.

Kenya

In January 2018, Kenya's government announced a new task force to create a strategy that encourages the development and adoption of new technologies such as blockchain and AI. Two months later, the government formally unveiled the 11-person task force. Chaired by Bitange Ndemo, the former Permanent Secretary in the Ministry of Information and Communication, the task force's goal is to provide recommendations on how the government can leverage new technologies in the next five years. The task force will also provide milestones for 2027 and 2032 and situate the strategy in the areas of financial inclusion, cybersecurity, land tilting, election process, single digital identity, and overall public service delivery. The strategy is not strictly about AI, but the technology is one of the many technologies that the government wants to harness in the coming years.

Malaysia

As part of a larger effort to accelerate the adoption of digital technologies, Malaysia's former Prime Minister, Najib Razak, announced in October 2017 a plan to develop a National AI Framework for Malaysia. Little information has been released since, but it was reported that the Prime Minister said that the framework would be an expansion of the National Big Data Analytics Framework, and will be led by Malaysia Digital Economy Corporation (MDEC). Malaysia's new government has not yet given an update on the National AI Framework.

Mexico

Towards an AI Strategy in Mexico: Harnessing the AI Revolution is a white paper that lays out the foundations for a national AI strategy in Mexico. Released in June 2018, it was commissioned by the British Embassy in Mexico, funded by the UK's Prosperity Fund, and developed by Oxford Insights and C Minds in close collaboration with the Mexican Government. The report surveys the current state of AI in Mexico, details relevant policies already in place, and describes potential use cases for AI at the national and regional levels. Based on evidence from over 60 interviews with local AI experts, the report concludes with a set of recommendations grouped into five categories: (1) government and public services, (2) data and digital infrastructure, (3) research and development, (4) capacity, skills and education, and (5) ethics.

The current status of the strategy is unclear. In March, the government made an announcement about the report, thereby making it official government policy. But, due to Mexico's summer election, the government has not started to implement the strategy. It is also unclear, as of the time of writing, whether Mexico's new President will implement the report's recommendations.

New Zealand

New Zealand's Minister of Broadcasting, Communications and Digital Media Clare Curran announced that her government is exploring the development of an AI action plan after a major third-party group called upon the government to develop one. AI Forum of New Zealand is an independent organization that brings together people from academia, industry, and government to advance New Zealand's AI ecosystem. In May 2018, the organization released a report titled, "Artificial Intelligence: Shaping a Future New Zealand." The report surveys the global AI landscape, examines the potential impact of AI on New Zealand's economy and society, and concludes with a set of recommendations for policymakers.

With the goal of "fostering an environment where AI delivers inclusive benefits for the entire country," the organization recommends that the government should focus on: (1) developing a coordinated national AI strategy, (2) creating awareness and understanding of AI in the public, (3) assisting the public and private sectors adopt AI technologies, (4) increasing access to trusted data, (5) growing the local AI talent pool, and (6) examining how AI affects laws and ethics. AI Forum NZ has also started two working groups to advance these goals: one focuses on fairness, transparency, and accountability in AI, while the other focuses on AI's economic and labour impact.

Nordic-Baltic Region

In May 2018, the Ministers responsible for digital development from Denmark, Estonia, Finland, the Faroe Islands, Iceland, Latvia, Lithuania, Norway, Sweden, and the Åland Islands released a *Declaration on AI in the Nordic-Baltic Region*. The countries agreed to collaborate in order to "develop and promote the use of artificial intelligence to serve humans." They specified that they will collaborate on: (1) improving opportunities for skills development, (2) enhancing access to data, (3) developing ethical and transparent guidelines, standards, principles, and values, (4) developing standards for hardware and software that enable privacy, security, and trust, (5) ensuring AI gets a prominent role in European discussions of the Digital Single Market, (6) avoiding unnecessary regulations, and (7) using the Nordic Council of Ministries to facilitate policy cooperation.

Poland

Poland's government held its first roundtable on the development of a Polish AI strategy in May 2018. Attended by the Vice-President of the Council of Ministers, the Minister of Science and Higher Education Jarosław Gowin, the Deputy Minister of Digital Affairs Karol Okoński, and representatives of the scientific community and related institutions, the roundtable focused on the policies and tools needed to foster an environment conducive to the creation of AI technologies in Poland. It is unclear when the government will release its strategy, but Prime Minister Jarosław Gowin stressed that is government is aware of the need to create a strategy and that Poland's plan will include AI solutions for the future of health care, public administration, education and cybersecurity.

Russia

President Putin's assertion that "whoever becomes the leader in this sphere will become the ruler of the world" is frequently used by

observers as evidence of a global AI arms race. But Putin's statement is often quoted without context and, as a result, vastly overstates Russia's AI capabilities. Speaking to students during a national "open lesson" on the first day of the school year in September 2017, Putin was asked a question about AI. He responded with the above quote, but also stated that "it would not be very desirable that this monopoly be concentrated in someone's specific hands. That's why, if we become leaders in this area, we will share this know-how with the entire world." Putting aside whether or not Russia would actually share its AI technology with the world, this part of the quote is a crucial omission of Russia's AI capabilities. "If we become leaders in this area" confirms that Russia is far from being a leader in the global AI race and is instead hustling to catch up. As Samuel Bendett reports for Defense One, "Russia's annual domestic investment in AI is probably around 700 million rubles ($12.5 million)—a paltry sum next to the billions being spent by American and Chinese companies."

In March 2018, Russia's Ministry of Defence, the Ministry of Education and Science, and the Russian Academy of Sciences hosted a conference titled, "Artificial Intelligence: Problems and Solutions—2018." As a result of the conference, the Ministry of Defence released a list of 10 policies that the conference recommended. While the list is not an official strategy for the Russian government, it does lay the foundation for a national AI strategy. Key recommendations include creating a state system for AI education and talent retainment, establishing a national center for AI, and hosting war games to study the impact of AI on military operations.

Singapore

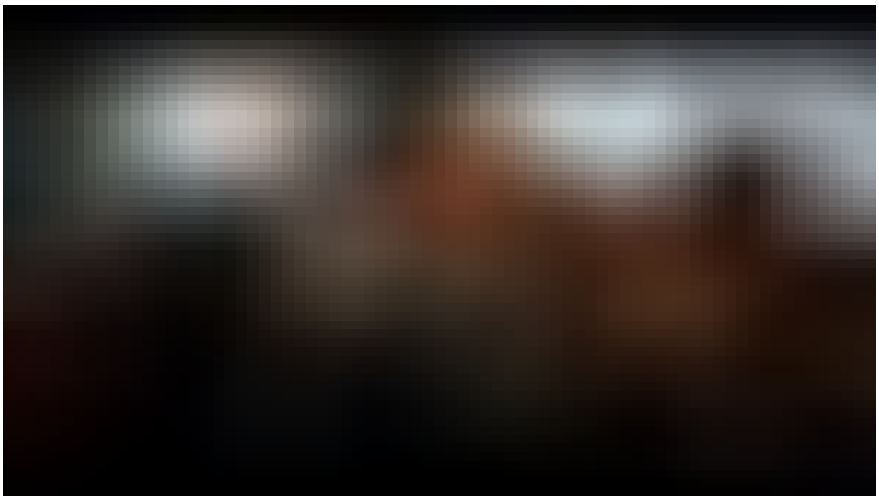
Launched in May 2017, *AI Singapore* is a five-year, S$150 million national program to enhance Singapore's capabilities in AI. It is a government-wide partnership involving six different organizations. Its goals are to invest in the next wave of AI research, address major societal and economic challenges, and broaden adoption and use of AI within industry.

Overview of Singapore's AI strategy | via AI Singapore

The program consists of four key initiatives. First, Fundamental AI Research funds scientific research that will contribute to the other pillars of AI Singapore. Second, Grand Challenges supports the work of multi-disciplinary teams that provide innovative solutions to major challenges Singapore and the world faces. Currently the program focuses on health, urban solutions, and finance. Third, 100 Experiments funds scalable AI solutions to industry-identified problems. Finally, AI Apprenticeship is a 9-month structured program to foster a new cohort of AI talent in Singapore.

In June 2018, the government announced three new initiatives on AI governance and ethics. Principally, the new Advisory Council on the Ethical Use of AI and Data will help the Government develop standards and governance frameworks for the ethics of AI.

South Korea



Trailer for AlphaGo | Via YouTube

South Korea's Sputnik moment came when DeepMind's AlphaGo defeated Go's world champion and Korean-native, Lee Sedol. In a six-day tournament in Seoul, watched by over 100 million people around the world, DeepMind's AI-program AlphaGo bested Lee by a stunning 4 games to 1. Just two days after the competition concluded, South Korea's government announced a ₩1 trillion investment in AI research over the next five years.

Two years later, the South Korean government has announced a new five year, ₩2.2 trillion investment to strengthen the country's R&D in AI. The strategy is divided into three parts. First, to secure AI talent, the government will establish six graduate school in AI by 2022 with the goal of training 5,000 AI specialists (1,400 AI researchers and 3,600 data management specialists). The government also announced an initiative to train 600 people in AI to address the immediate short term need for AI talent. The second area of focus is development of AI technology. The government will fund large scale projects in national defence, medicine, and public safety and will start an AI R&D challenge similar to DARPA. Finally, the government will invest in infrastructure to support the development of AI start-ups and SMEs. This includes funding for the creation of an AI semiconductor by 2029 and an AI-oriented start-up incubator to support emerging AI businesses.

Sweden

Sweden released its strategy, *National Approach for Artificial Intelligence*, in May 2018. It does not include specific policy announcements, but instead acts as a guiding document for all actors in Sweden to align towards. It outlines the strategic priorities for AI in Sweden and will serve as reference for all upcoming government decisions related to AI. Overall, the government wants to lead in the

realization of AI benefits for competitiveness and welfare. To do this, the strategy argues that Sweden needs to train more skilled AI-professionals, increase basic and applied research in AI, and develop a legal framework to ensure the development of sustainable AI (AI applications that are ethical, safe, reliable, and transparent).

Since the launch of the strategy, the government has begun to rollout new policy initiatives. This includes funding for AI-training for professionals, an AI Science Park, and AI-related innovation projects through Vinnova (the government's innovation agency). Prior to the release of the strategy, Vinnova also released an extensive review of Sweden's capabilities and potential in AI (an English executive summary is available here).

Taiwan

Premier William Lai announced Taiwan's four-year "Taiwan AI Action Plan" in January 2018. As part of the Executive Yuan's larger strategy to use Taiwan's information technology and semiconductor industries to develop new smart technologies, the AI Action Plan, which has an annual budget of NT$10 billion over four years, has five key initiatives. First, the AI Talent Program aims to cultivate 1,000 advanced AI researchers and 10,000 AI-related professionals by 2021. The government will also actively recruit global AI talents and make it easier for them to start work in Taiwan. Second, the government plans to implement new pilot project based of the DARPA in the US and SIS in Japan in order to focus R&D into niche advantages for industrial development. Third, a new AI International Innovation Hub is being constructed with the aim of fostering 100 AI-related startups. Fourth, policymakers are testing open data fields and flexible regulations to support development of intelligent applications. The final initiative involves integrating AI technologies into the government's larger 5 + 2 industrial innovation initiative.

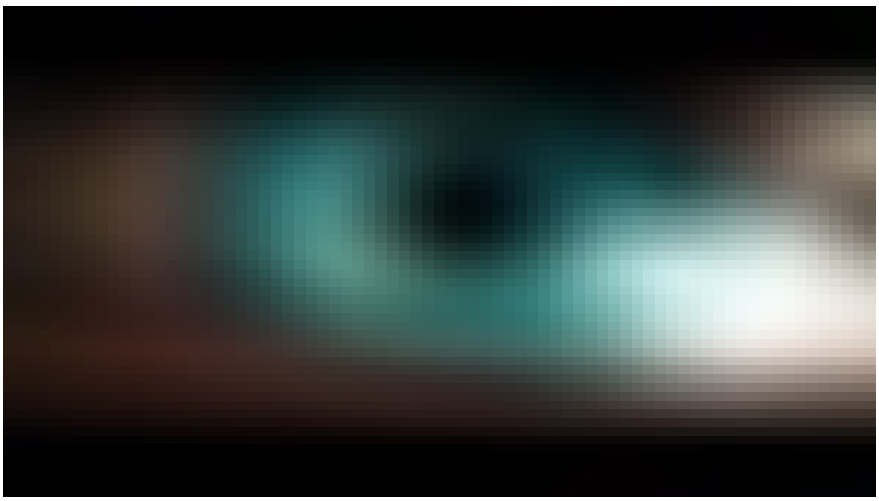
Tunisia

Tunisia's Secretary of State for Research has created a task force and a steering committee to develop a National AI Strategy for Tunisia. The strategy is currently scheduled to be published in the first quarter of 2019. The primary goal will be to facilitate the emergence of an AI ecosystem that acts as a strong lever for equitable and sustainable development and job creation.

The development of the strategy was officially launched in April 2018 during a workshop hosted by the UNESCO Chair on Science,

Technology and Innovation Policy, in partnership with the National Agency for Scientific Research Promotion-ANPR. Titled "National AI Strategy: Unlocking Tunisia's capabilities potential," the objective of the workshop was to share and discuss the task force's framework and methodology for development of the strategy. Currently, the task force is establishing thematic and multi-stakeholder working groups to help identify priority areas and policies to be included in the strategy.

UAE



Promotional video for the UAE's AI strategy | via YouTube, UAEai 2031

The UAE government launched its AI strategy in October 2017. It is the first country in the Middle East to create an AI strategy and the first in the world to create a Ministry of Artificial Intelligence. The strategy is the first initiative of the larger UAE Centennial 2071 Plan and its primary goal is to use AI to enhance government performance and efficiency. The government will invest in AI technologies in nine sectors: transport, health, space, renewable energy, water, technology, education, environment, and traffic. In doing so, the government aims to cut costs across the government, diversify the economy, and position the UAE as a global leader in the application of AI.

United Kingdom

The British government released the *AI Sector Deal* in April 2018. It is part of the government's larger industrial strategy and aims to position the UK as a global leader in AI. It is quite comprehensive, with policies to boost public and private R&D, invest in STEM education, improve digital infrastructure, develop AI talent, and lead the global conversation on data ethics. Major announcements include over £300 million in private sector investment from domestic and foreign

technology companies, the expansion of the Alan Turing Institute, the creation of Turing Fellowships, and the launch of the Centre for Data Ethics and Innovation. The Centre in particular is a key program of the initiative, as the government wants to lead the global governance of AI ethics. A public consultation and a call for the chair of the Centre was launched in June 2018.

Ten days before the release of the sector deal, the UK's House of Lords' Select Committee on AI published a lengthy report titled, *AI in the UK: ready, willing, and able?* The report is the culmination of a ten-month inquiry that was tasked with examining the economic, ethical, and social implications of advances in AI. The report outlines a number of recommendations for the government to consider, including calls to review the potential monopolization of data by technology companies, incentivize the development of new approaches to the auditing of datasets, and create a growth fund for UK SMEs working with AI. The report also argued that there is an opportunity for the UK to lead the global governance of AI and recommended hosting a global summit in 2019 to establish international norms for the use and development of AI. In June 2018, the government released an official response to the House of Lords that comments on each of the recommendations in the report.

United States

Unlike other countries, the US government does not have a coordinated national strategy to increase AI investment or respond to the societal challenges of AI. During the final months of Barack Obama's presidency, the White House laid the foundation for a US strategy in three separate reports. The first report, *Preparing for the Future of Artificial Intelligence*, made specific recommendations related to AI regulations, public R&D, automation, ethics and fairness, and security. Its companion report, *National Artificial Intelligence Research and Development Strategic Plan,* outlined a strategic plan for publicly funded R&D in AI, while the final report, *Artificial Intelligence, Automation, and the Economy*, examined in further detail the impact of automation and what policies are needed to increase the benefits of AI and mitigate its costs.

President Trump's White House has taken a markedly different, free market-oriented approach to AI. In May 2018, the White House invited industry, academia, and government representatives to a summit on AI. In a speech at the conference, Michael Kratsios, Deputy Assistant to the President for Technology Policy, outlined the President's approach to AI. He announced the government has four goals: (1) maintain

American leadership in AI, (2) support the American worker, (3) promote public R&D; and (4) remove barriers to innovation. To achieve these objectives, Kratsios announced a new Select Committee on Artificial Intelligence to advise the White House on interagency AI R&D priorities and to consider the creation of Federal partnerships with industry and academia. He also specified that the government will focus on removing regulatory barriers to innovation so that American companies have the flexibility to innovative and grow.

It is unclear how much the government invests in AI R&D. In the 2016 Research and Development Strategic Plan, the report specified that the government invested $1.1 billion in unclassified AI-related R&D projects in 2015. The summary document that the White House released after the May Summit announced that the Government's investment in unclassified R&D for AI and related technologies has grown by over 40% since 2015, but it is unclear where the growth in R&D has come from. One likely answer is the military. According to a report by Govini, in its 2017 unclassified budget, the Pentagon spent approximately $7.4 billion on AI and the fields that support it, such as big data and cloud computing. This is up from $5.6 billion in 2012. The US military also invest billions more in classified R&D, but it is unknown how much this figure is. In June 2018, the Pentagon announced a new Joint Artificial Intelligence Center that will have oversight over the majority of service and defence agency AI efforts.

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