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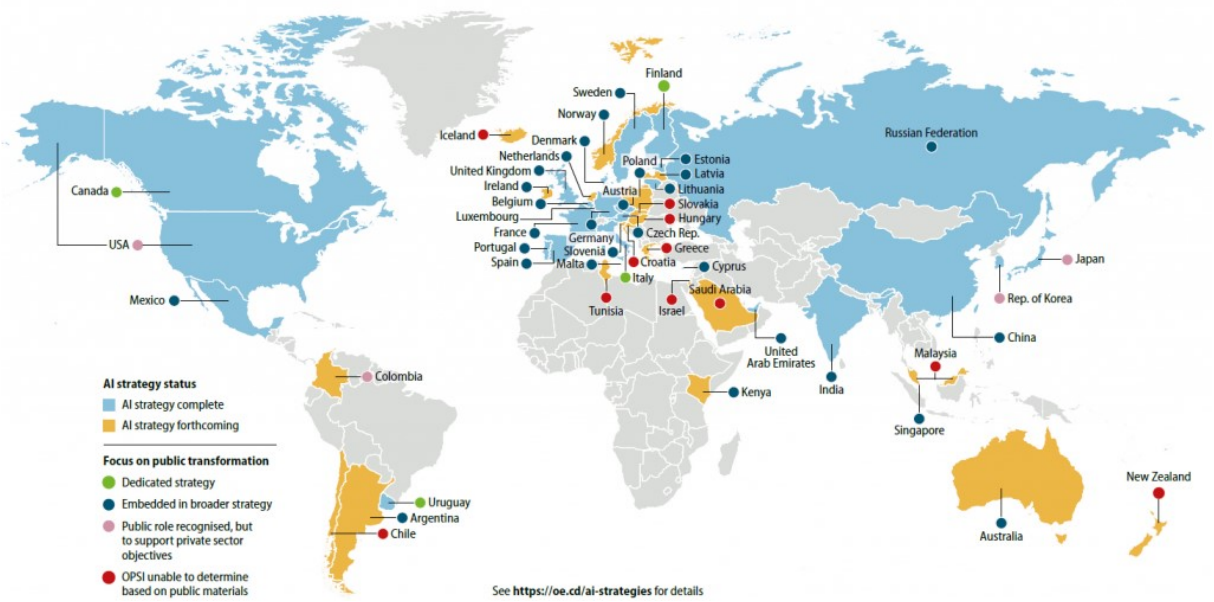
Overview of National AI-Strategies

(53 Nations)



Source OECD (Organisation for Economic Cooperation and Development)

Argentina

The Argentinian Secretary of Government of Science and Technology is drafting the "National Plan of Artificial Intelligence" (ARGENIA) to cover the years 2020-2030 (see **article**). The plan seeks to position the country as a regional leader in the field, and maximize the generation and use of knowledge with the ultimate goal of improving the competitiveness of the private sector and modernising the management of the State to provide better services to citizens. It includes participation of government, academia, civil society and the private sector.

As discussed in the OECD report on the *State of the Art in the Use of Emerging Technology in the Public Sector,* Argentina is in the process of establishing a national AI Innovation Hub. The Hub will implement projects in various thematic groups, each of which will be governed by a steering group charged with defining goals and metrics to measure progress.

See additional details on Argentina on the OECD **AI Policy Observatory**.

Australia

In November 2019, Australia issued its an ***Artificial Intelligence: Solving problems, growing the economy and improving our quality of life*** (AI Roadmap) to help develop a national AI capability to boost the productivity of Australian industry, create jobs and economic growth, and improve the quality of life for current and future generations.

Subsequently, in March 2020, the Australian government relased the ***Artificial Intelligence Standards Roadmap: Making Australia's Voice Heard***, which was developed by Standards Australia and commissioned by the Australian Department of Industry, Science, Energy & Resources. The document provides recommendations to help Australia effectively support Artificial Intelligence (AI) and its future across the globe.

Australia's 2018-2019 budget sets aside AUS 29.9 million over four years to fund government initiatives to catalyze AI innovation in the broader economy. This includes funding cooperative research centers, scholarships for AI educational and PhD programs, and developing an AI technology roadmap, standards and ethics frameworks.

Australia's Tech Future (2018) strategy seeks to achieve strong, safe, and inclusive digital economy, including using emerging technologies such as AI. Digital government is a sub-focus of the strategy, with goals to make it easy and safe to interact with government online, and to ensure ICT infrastructure promotes modern, future-proof digital services.

The government's 2025 Digital Transformation Strategy (**Vision 2025**) does not explicitly promote the exploration of AI, but it does include specific initiatives or processes that currently include or will necessitate AI to make them a reality.

As discussed the Department of Industry, Science, Energy, and Resources **website**, Australia also developing a voluntary **AI Ethics Framework.**

While all of these items help to position Australia to seize the potential for AI, there has been no indication that any of them in themselves (or in combination) formally represent Australia's national AI strategy.

See additional details on Australia on the OECD **AI Policy Observatory**.

Austria

In June 2019, the government of Austria issued *Artificial Intelligence Mission Austria 2030* (**AIM AT 2030**) as Austria's current strategy for AI. The strategy outlines seven fields for which AI will be critical:

1. Research and innovation
2. Society, ethics and labour market
3. Qualification and training
4. AI governance, security and law
5. AI in the public sector
6. Infrastructure for industrial leadership positions
7. AI in the economy

The strategy pledges funding and investment in these areas. Specific for the public sector, AIM AT 2030 promotes streamlining operations and creating new services for citizens. It also promotes the public sector's role in serving as first-time adopters, which helps to illustrate to businesses how AI can improve performance.

Belgium

In March 2019, Belgium launches its national AI strategy, "**AI 4 Belgium**". The strategy includes seven objectives for action:

1. Policy support on ethics, regulation, skills and competences
2. Provide Belgian AI cartography
3. Co-animate Belgian AI community
4. Collect EU funding and connect EU ecosystems
5. Propose concrete action for training in AI
6. Contribute to the uptake of AI technologies by the industry
7. Make new products and services based on AI technologies emerge

To achieve these objectives, AI 4 Belgium provides a series of recommendations. Several of these are particularly relevant to public sector transformation.

- **Develop a responsible data strategy** — providing an updated and robust legal framework, fostering a robust cross-sector data ecosystem, and reinforcing open government data policies.
- **Improve public service and boost the ecosystem** — encourage government organisations to experiment with AI, and to rethink their roles and move towards a government-as-a-platform approach. Also calls for giving public organisations tools and other resources to help

experimentation (e.g., rolling funds, easier procurement, etc.) The strategy proposes at least EUR 1 billion in this area by 2030.

Brazil

Brazil's digital transformation strategy (**E-Digital**), published on March 2018, harmonises and co-ordinates different governmental initiatives on digital issues, including AI, to advance the Sustainable Development Goals in Brazil.

In December 2019, the Government of Brazil's Ministry of Science, Technology, Innovation and Communications (MCTIC) launched a **public consultation** to help inform the development of a Brazilian Artificial Intelligence Strategy. The consultation posed a series of questions to citizens on a number of areas. In particular, there were six topic areas ("vertical axes"):

1. Education and training
2. Workforce
3. Research, development, innovation and entrepreneurship
4. Application by the government
5. Application in the productive sectors
6. Public security

For each of these topic areas, participants we able to address three types of questions:

1. Legislation, regulation and ethical use
2. International aspects
3. AI governance

The consultation period ended on 31 January 2020. The final version has not yet been released.

See additional details on Brazil on the OECD **AI Policy Observatory**.

Canada

Canada was the first to launch a national AI strategy, in 2017. The **Pan-Canadian Artificial Intelligence Strategy** is a five-year, CAD 125 million (EUR 88.3 million) strategy to enhance AI-related talent and research capabilities. One of the goals of the strategy seeks to translate research discoveries into value in the private and public sectors. Besides this, the public sector is not addressed.

As a strategy specific for the public sector, the Treasury Board has developed the "**Responsible use of artificial intelligence**" for the public sector as a living digital resource in order to help public servants explore AI in a way that is "governed by clear values, ethics, and laws." Components of the strategy include:

- A set of **guiding principles** to ensure effective and ethical AI.
- A series of updates and blog posts to help guide public servants.

- A range of **private sector vendors** that have been pre-qualified to help streamline the procurement process.
- A Directive on Automated Decision-Making and associated Algorithmic Impact Assessment tool to that set up guidelines for a risk-based approach to AI.

In November 2019, Canada and France announced the formation of a Global Partnership on Artificial Intelligence (GPAI), which will will facilitate international collaboration in a multistakeholder manner with the scientific community, industry, civil society, related international organizations, and governments to become a global point of reference for understanding and sharing research results on AI issues and best practices, as well as convening substantive project-based work on priority AI themes.

See additional details on Canada on the OECD **AI Policy Observatory**.

China

The 2017 "**New Generation of Artificial Intelligence Development Plan**" seeks to make China the leading country for AI by 2030. This comprehensive AI includes a focus on "smart government", and it calls for:

- The development of AI platforms for digital services and decision-making, as well as the digital infrastructure needed to support them.
- Promoting the use of AI for programme design and major strategic decisions, such as in policy evaluation, emergency mitigation and response, and public safety.
- Integrating government data to develop personalised, anticipatory services and promote seamless public engagement.
- Providing a platform for open government data to help catalyse AI innovation both inside government and externally.

To achieve this strategy, in 2018 the Chinese government published a three-year **action plan** covering 2018-2020. Relevant to the public sector, the plan calls for the development of "public service robots" for innovative applications, such as in inspection and firefighting. It also calls for strengthened collaboration and synergies across the central government, across levels of government, and across sectors. Notably, it calls for government to be in a leadership position by being among the first to use AI to improve efficiency and effectiveness of services.

See additional details on China on the OECD **AI Policy Observatory**.

Colombia

On 13 November 2019, the Government of Colombia published its national strategy, ***National Policy for Digital Transformation and Artificial Intelligence*** (in Spanish). It is designed to be a starting point to boost Colombia as one of the leaders in the region in AI markets.

The strategy is broader than just AI and includes components that promote digital transformation of the public sector and of the broader economy. As it relates to AI, the strategy mostly focuses on the

creation of an AI market lead by private entrepreneurs, where the Government's role appears to be more of a regulator, facilitator, and customer of these services.

The strategy includes four key strategic objectives:

1. Reduce the barriers that prevent the incorporation of digital technologies into the private sector and in the public sector to facilitate the digital transformation of the country.
2. Create enabling conditions for digital innovation in the public sectors and private with the purpose of being a mechanism for the development of the transformation digital.
3. Strengthen the competences of human capital to face 4RI in order to ensure the required human resource.
4. Develop enabling conditions to prepare Colombia for changes economic and social that AI entails.

To achieve these, the strategy lays out a an action plan with four clusters of activities and 14 lines of action:

1. Reduce the barriers that prevent the incorporation of digital technologies in the private sector and in the public sector, to facilitate the digital transformation of the country
    - Reduce barriers related to lack of culture and ignorance to address the adoption and exploitation of the digital transformation in the private sector.
    - Develop regulatory and institutional adjustments to favor the adoption of digital transformation in key components of business productivity.
    - Improve the performance of digital government policy, to address the adoption and exploitation of digital transformation in the public sector.
2. Create enabling conditions for digital innovation in the public and private sectors, with the purpose of being a mechanism for the development of digital transformation
    - International alliances for innovation.
    - Design and execute initiatives to promote entrepreneurship and digital transformation.
    - Promote ICT-based innovation in the public sector.
    - Execute high impact initiatives supported by digital transformation.
3. Strengthen the competences of human capital to face the 4RI, in order to ensure the required human resource
    - Generate enabling conditions that favor the development of digital skills during the educational career, corresponding to the challenges of technological transformations
    - Develop skills and competencies to enhance the interaction of the educational community with emerging technologies to take advantage of the opportunities and challenges of the 4RI or industry 4.0.
    - Configuration of innovation ecosystems aimed at generating appropriation of the innovative culture to encourage social and economic development.

   - International alliances for talent training.
   - Education preparation, with priority in AI, to contribute to the development of competencies for the 4RI.

4. Develop enabling conditions to prepare Colombia for the economic and social changes that AI entails and promote other 4RI technologies.
   - Generate the enabling conditions to boost the development of AI in Colombia.
   - Promote the development of digital technologies for 4RI in Colombia.

1. Creating a Market.
2. Prioritize market-creating innovations.
3. Evidence-based policies and design of impact metrics.
4. Regulatory experimentation.
5. Data infrastructure for AI.
6. AI Market as a tool to achieve social equality and inclusion.
7. Ethical framework for Artificial Intelligence and safety.
8. Credible commitments and consensus building.
9. Education and talent policies based on experimentation.
10. Strategic role of academic research in the development of an AI market.
11. Attract international talent and skilled labor.
12. Evidence-based policies on the future of labor.
13. Government as a facilitator and consumer of AI systems.
14. Effective implementation of the AI strategy.
15. Continuous interaction with the international community and global experts.

There is no direct mention in the initial draft of AI for public sector innovation and transformation.

Croatia

- According to an **interview** with Ratko Mutavdžić, a member of the Croatian Employers' Association (HUP)-ICGT association, Croatia is drafting a national strategy and that a draft is with the National Digital Economy Council's Working Group for development.

Cyprus

Cyprus released *National Strategy AI: Actions for the use and development of AI in Cyprus* (**link**, in Greek) in October 2019 after a public consultation process.

The strategy includes four pillars, each with defined action items. These pillars are:

1. Maximizing investments through covenants.
2. Creating national data areas.
3. Cultivating talents, skills and lifelong learning.
4. Developing ethical and trustworthy AI.

As part of pillar 1, the strategy includes a dedicated focus on the public sector. It calls to human-centred, transparent, and AI-enabled digital services for citizens.

Czech Republic

The ***National Artificial Intelligence Strategy*** *o*f the Czech Republic was launched in May 2019 with the main objective to make the Czech Republic an innovation leader. The strategy seeks to:

- Concentrate research on developing responsible and trusted AI
- Promote digital transformation, especially among SMEs
- Enhance economic development and ensure equitable distribution of AI benefits

Within the ***National Artificial Intelligence Strategy***, recognition for the potential of AI for public sector innovation and transformation is discussed in a section on "AI in industry, services and public administration." This section calls for introducing AI applications in the public sector (both central and municipal levels) in areas such as health care and transportation. It also calls for creating an open data policy for creating data standards and opening government data for AI use in all sectors. Longer-term objectives include implementing "ground-breaking AI projects in public administration to simplify life for citizens and businesses and streamline activities and increase the added value of public administration."

Denmark

The March 2019 **National Strategy for Artificial Intelligence** has four key objectives, including that "Denmark should have a common ethical and human centred basis for [AI]" for all sectors, and that the "public sector should use artificial intelligence to offer world-class services". For the latter, Denmark goal is to become the leading European country in using data and AI for targeted public services, government organisations frameworks and systems for data-driven, responsible, and optimised development and use of AI. The strategy sets forth 24 key initiatives, including several directly related to the public sector. Examples include:

- Developing principles for the development and use of AI, including for the responsible and transparent use of AI by the public sector.
- Identifying and opening five government datasets that may be most important for AI progress in all sectors.
- Launching signature public sector and projects in healthcare, social and employment areas, and cross-sector case processing.

Estonia

In May 2019, Estonian Artificial Intelligence experts, led by government CIO Siim Sikkut, produced a document for accelerating the development of AI in Estonia. It was later presented to the government in June and adopted as the Estonian National AI Strategy in July 2019.

The "**Kratts**" strategy covers the period suggests taking an agile approach to strategy development with, first, the rollout of a biannual action plan, and second a longer-term strategy building up on that base and evolving as AI implementation progresses.

The strategy has four key pillars:

1. Advancing the update of AI in the public sector.
2. Advancing the uptake of AI in the private sector.
3. Developing AI R&D and education.
4. Developing a legal environment for the uptake of AI.

For Pillar 1 on the public sector, the strategy includes a number of action items, responsible agencies, and deadlines for enhancing the awareness of, skills for, and adoption of AI across the public sector.

From a public sector perspective, the development of AI participates to the broader efforts made by the Estonian government to create an e-state and information society. The public sector has a major role to play by creating demand for AI solutions, ensuring the availability of quality data and supporting the launch of several pilot projects in different areas of the public sector to create learning opportunities instead of restricting itself to specific applications. The development of pilot projects would benefit from more flexible public funding and the creation of "sandboxes" to test and develop solutions. The report also places a strong emphasis on education for AI-related skills and applied research.

The legal analysis carried out finds no current need for a separate law on AI but does suggest changes needed in the current legislation for instance regarding liability in implementing AI solutions.

As of August 20, 2019, there are 22 projects associated with AI running in the Estonian public sector.

More information will be made available in English at the following **link**.

European Union

The European Commission (EC) "**Communication on Artificial Intelligence**" puts forth a European Initiative on AI as an overarching approach to AI in Europe. It seeks to boost AI capacity and use in both the private and public sector, among other things. It also calls for join efforts, such as public-private partnerships across sectors at national and international levels. It provides several concrete action items, including:

- Providing an AI toolbox focusing on companies and public administrations.
- Creating a support centre with legal and technical support for data sharing to facilitate business and public sector AI applications.
- Promoting the opening of data and research results.
- Updating a Directive on public sector information.

To help actualize this strategy, the EC issued the "**Coordinated Plan on Artificial Intelligence**" in December 2018. This action plan focuses largely on promoting public and private investments in AI. It also focuses on:

- sharing government data across EU borders and opening government data for public consumption,
- aggregating such data in "data spaces" to make it easy to use and find for all sectors,
- developing joint procurement and cybersecurity solutions.

The EC's High-Level Expert Group on Artificial Intelligence has also issued **Ethics Guidelines for Trustworthy AI** to provide guidance on how to design and implement AI systems in an ethical and trustworthy way. These guidelines are discussed in-depth as a case study in the draft OECD OPSI **working paper** *Hello, World: Artificial Intelligence and its Use in the Public Sector*.

In February 2020, the EU issued the white paper ***On Artificial Intelligence – A European approach to excellence and trust*** to build upon the European strategy. The paper has the objective to set out policy options on how to achieve promoting the uptake of AI and of addressing the risks associated with certain uses of this new technology; to "enable a trustworthy and secure development of AI in Europe, in full respect of the values and rights of EU citizens". The paper has two key components, or "building blocks":

- A policy framework to align efforts across Europe, including building a cross-sector "ecosystem of excellence".
- Elements of a future regulatory framework to enable an "ecosystem of trust".

As it related to the public sector specifically, the white paper calls for mobilising public sector investments, opening of government data, establishing public-private partnerships, and promoting the adoption of AI by the public sector (especially in the areas of healthcare and transport). As the building blocks note, it also calls on members states to work together to align visions, efforts, and regulations.

The Commission invites for comments on the proposals set out in the White Paper through an open public consultation available at **https://ec.europa.eu/info/consultations_en**. The consultation is open for comments until 19 May 2020.

Finland

Finland's AI strategy is discussed in-depth as a case study in the draft OECD OPSI **working paper** *Hello, World: Artificial Intelligence and its Use in the Public Sector*.

In May 2017, Finland's Ministry of Economic Affairs and Employment created an Artificial Intelligence Programme and a Steering Group to develop a national vision for AI. The group leveraged a broad network of experts to explore key questions about how best to support the public and private sectors in producing AI-based innovation, how to position government data as resources for economic development, how AI will affect society and what the public sector should do to move Finland towards an AI-driven future. Because of this work, the Steering Group issued two key reports that set forth Finland's approach to AI. ***Finland's Age of Artificial Intelligence*** (December 2017) and ***Leading the Way into the Age of Artificial Intelligence*** (June 2019) collectively lay out 11 key actions covering all sectors to help Finland achieve its ambitious goal.

1. Enhance business competitiveness through the use of AI.
2. Effectively utilise data in all sectors
3. Ensure AI can be adopted more quickly and easily.
4. Ensure top-level expertise and attract top experts.
5. Make bold decisions and investments.
6. Build the world's best public services.
7. Establish new models for collaboration.
8. Make Finland a front runner in the age of AI.
9. Prepare for Artificial Intelligence to change the nature of work.
10. Steer AI development in a trust-based, human-centred direction.
11. Prepare for security challenges.

While number six is the action with the clearest implications for the public sector, there is a strong sub-focus on the public sector throughout the document. It envisions a government that provides anticipatory and personalised services to all citizens at all stages of their life in order to support a well-functioning society. Uniquely, when compared to other national strategies, Finland's approach places efficiency of the public sector and the effectiveness of its services on a par with economic growth.

The ***Age of AI*** report calls for the government to establish Aurora, a network of different smart services and applications to "allow [the] public administration to better anticipate and provide resources for future service needs" and to allow citizens to access high-quality 24/7 digital services.

Since the initial concept for Aurora was released, it has been expanded significantly into the **AuroraAI National AI Programme**. AuroraAI seeks to provide a holistic set of personalised AI-driven government services for citizens and businesses in a way that is human-centric and works towards their wellbeing as its ultimate goal. AuroraAI, as a broader concept, is intended to enable citizens to access the wide range of services available from various government and cross-sector service providers in a seamless way.

The AuroraAI programme seeks to re-orient the provision of services around citizens and businesses by combining data from multiple domains and building a network of AI citizen-focused applications that provide services when they are needed – around various business activities or life stages and events such as childbirth, buying a home or retirement.

France

In March 2018, President Emmanuel Macron presented the **country's vision and strategy to make France a leader in AI**. The strategy has three core commitments: (1) bet on French talent, (2) pooling our assets, especially through opening government data, and (3) establishing an ethical framework. The strategy also pledges EUR 1.5 billion in funding for AI research, companies, and projects. While the public sector will certainly have a role in executing the strategy, the objectives of the strategy are focused generally on economic growth and not on public sector innovation and transformation.

The strategy was informed by the March 2018 report, *For a **Meaningful Artificial Intelligence: Towards a French and European Strategy***. It was authored by Cédric Villani, Mathematician and Member of French Parliament by request of the French Prime Minister. The report touches on public sector reform in a number of areas. In particular, the report has a dedicated section on "Transformation of the State: Leading by Example". This section states that, "together with businesses, the State must undertake a transformation in order to be capable of integrating AI into public policy management." Specific action items include:

- Appointing an Inter-ministerial Coordinator to implement France's AI strategy, including public sector AI transformation efforts, and serving as an interface between the public and private sectors.
- Creating a Joint Centre of Excellence for AI at the State level to help recruit AI talent and to serve as an advisor and lab for public policy design.
- Integrating AI with France's Digital Government Strategy to ensure digitalisation efforts are done with future AI uses in mind.

In addition, some recognition of public sector transformation is woven throughout the rest of the report. For instance, the report states that:

- Public authorities must be a driver of AI, and adopt materials and human resources to factor AI into policymaking and pursuing modernisation.
- Public procurement practices should be reviewed to better permit innovation.
- Governments must open valuable data to enable AI in all sectors.
- It may be useful to create a group of certified public experts with the capability to audit algorithms and test methods to ensure ethical AI use and design.
- Public authorities need to support AI initiatives for social programmes, as they such programs receive little private investment.
- It is the role of the public sector to connect data holders in both the public and private sectors with those who may be able to use the data for AI solutions.
- It is important for government organisations and private sector businesses to collaborate and partner on AI solutions that can benefit citizens.
- The government should build capacity to evaluate and audit AI and associated algorithms, but to also open itself to such review by civil society.

While the report does provide a good bit of emphasis on AI for public sector innovation and transformation, the report of not considered part of the official strategy. However, the government may seek to pursue the report's findings in to fulfill the strategy.

In November 2019, France and Canada announced the formation of a Global Partnership on Artificial Intelligence (GPAI), which will will facilitate international collaboration in a multistakeholder manner with the scientific community, industry, civil society, related international organizations, and governments to become a global point of reference for understanding and sharing research results on AI issues and best practices, as well as convening substantive project-based work on priority AI themes.

See additional details on France on the OECD **AI Policy Observatory**.

Germany

Germany published its **Artificial Intelligence Strategy**, dubbed "AI Made in Germany" in November 2018. It is based on the results of a national consultation and focuses on strengthening Germany as a centre for AI research, funding private sector AI applications, and providing guidance on ethical, legal, and cultural considerations for using AI in Germany. This includes adapting the legal and regulatory framework, as appropriate, to promote economic growth through AI and improving the talent pipeline.

The strategy includes a sub-focus on using AI in the public sector to provide information and services that are more targeted, tailored, and accessible. Like many other strategies, a main element of the public sector component is a focus on opening government data as fuel for AI applications in all sectors. To facilitate this, the strategy includes exploring funding to improve data management across central government organisations. With a focus on private sector data, the strategy calls for exploring creating trusted infrastructure for data sharing by the private sector, which could help all sectors. The German strategy also calls for exploring the use of AI for emergency response and for maintaining internal and external security.

See additional details on Germany on the OECD **AI Policy Observatory**.

Greece

In September 2019, Greece's Minister of Governance stated in a **letter** that the country is developing a national AI strategy, and that is supports numerous international European AI efforts.

Hungary

In October 2018, the government and a number of academic institutions and companies joined forces to create the **Artificial Intelligence Coalition**. The Coalition is working on developing a national strategy and positioning Hungary as a leader in AI, among other things.

In October 2019, Hungary announced an AI Action Plan, which may serve as one of the first pillars of a national AI strategy (see details **here**).

A full strategy is expected in 2020.

India

India's June 2018 **National Strategy for Artificial Intelligence** – #AIforAll seeks to build a "vibrant AI ecosystem" to strengthen both economic growth and social inclusion. Its overarching objectives are to help India obtain the right skills and capabilities, invest in initiatives and projects that can achieve both economic growth and inclusion, and scale Indian AI solutions internationally. The strategy identifies government's role across these areas.

Relevant specifically AI for public sector innovation and transformation, the strategy identifies "public sector undertaking" (state-owner companies) and the government itself as two of three "major market segments", with the other being the private sector. The "**Artificial Intelligence in the Governance Sector in India**" report provides details on projects and the potential for AI in governance in India.

For government, it seeks to "improve process efficiency, reduce human discretion, eliminate middlemen, advance prediction, proactive and predictive service delivery to citizens". The report makes a series of recommendations across these market segments. For the public sector, these include:

- Spreading awareness on the advantages AI offers, including senior government officials. This can be done through workshops and live demos, as well as a digital platform with information on AI experts and projects.
- Improving the quality and openness of government data in order to promote AI in all sectors, and facilitating sharing and access to data from other sectors.
- Creating a National AI Marketplace (NAIM) to help all sectors come together to share data and collaborate, as well as look for solutions that can be purchased and used.
- Holding challenges and crowdsourcing initiatives to improve government data (e.g., crowdsourcing could have obtain annotation for valuable datasets).
- Creating an AI fund to promote government AI projects.

The government, according to press **coverage**, has stated that near finalisation for mechanisms to implement India's national AI strategy.

See additional details on India on the OECD **AI Policy Observatory**.

Indonesia

Indonesian **press** reported in November 2020 on government statements indicating that Indonesia was developing a national strategy for AI, with a targeted completion date in 2020.

In February 2020, press also reported that the government's Assessment and Application of Technology Agency was charged with developing the strategy, and that it was aiming for a July 2020 issuance. It also reported that the strategy, "will be focused on public services that are hoped to have a major impact on society. One program currently developed by the BPPT that adopts the manmade intelligence is to handle forest fires."

Other **coverage** has indicated that the strategy will include "advances in specific sectors in Indonesia such as the national defense industry" and supporting "local industrial integration of technologies in fields such as big data analytics and data sciences".

See additional details on Indonesia on the OECD **AI Policy Observatory**.

Ireland

Ireland's Department of Business, Enterprise and Innovation is currently preparing a National Artificial Intelligence Strategy which is expected to be published by the end of 2019.

On 16 October 2019, Ireland published **public consultation** related to the strategy, welcoming "views on the key areas and issues that should be addressed by the strategy as well as the guiding principles that should drive the design, development and deployment of AI in Ireland". The consultation closed on 7 November 2019.

Israel

A July 2019 **article** in Science|Business identified that the government was in the process of developing national AI strategy. OPSI was not able to find many details about this forthcoming strategy.

Italy

In August 2019, the Italian Ministry of Economic Development published for public comments a draft ***National Strategy on Artificial Intelligence***. The draft lists a number of principles and objectives, which ar egenerally geared towards the private sector. However, one of the principles is to "Make public administration, policies and services more digital and, therefore, efficient", and lists the public sector as a "priority sector". A fuller OECD analysis of the draft (in English) can be found on **LinkedIn**.

Prior to the development of a more comprehensive national srtrategy, Italy had put in place a national strategy focused on the public sector. In March 2018, **Italy's AI Task Force**, led by the Agency for Digital Italy (AGID), published the white paper ***Artificial Intelligence at the Service of Citizens***. Similar to Finland, but fairly uncommon among national strategies, the white paper looks specifically at how the public sector can best use AI technologies to serve both people and business, and to improve the efficiency and user satisfaction of public services. The white paper discusses nine key challenges related to implementing AI in the public sector, and makes a series of ten recommendations on how the government can overcome these challenges:

1. **Ethics**. Ensuring AI serves citizens and not the other way around; ensuring principles of equity, freedom, and human rights; data quality and neutrality; responsible use of algorithms; transparency and accountability, and privacy.
2. **Technology**. Making AI functionality more similar to how humans relate to the world, personalisation and adaptively of algorithms, and improving public sector effectiveness.
3. **Skills**. Education and training to help citizens and public servants understand how AI and algorithms are used in the public sector and how to interact and coexist with machines.
4. **Role of Data**. Obtaining and providing broad, open access to quality, bias-free data.
5. **Legal context**. Reconciling transparency and openness with privacy and intellectual property; appropriateness and accountability for automated decision-making; and compliance with GDPR.
6. **Adoption of AI in the public sector**. Training public employees on the functioning, benefits, and ethical and technical implications using AI in the public sector. Supporting employees without replacing them.
7. **Preventing inequality**. Developing inclusive, accessible, transparent, non-discriminatory, and bias-free solutions.
8. **Measuring the impact**. Conducting multi-disciplinary research to measure different aspects of how AI affects (1) citizens' quality of life and satisfaction with government services, and (2) public sector efficiency and effectiveness.

9. **The human being**. Experiments in the fields of design, arts, psychology, anthropology and sociology that can close the gap between research, industry, and society.

The 10 associated recommendations consist of:

1. Promote a national platform dedicated to the development of AI solutions, as related to quality data, code, and models; testing AI systems pre-release, providing computing resources for experimentation.
2. Disclose the results of AI algorithms to facilitate reproducibility, evaluation, and verification.
3. Provide open resource in the Italian language.
4. Develop adaptive customisation and recommendation systems to facilitate services to citizens based on their specific needs.
5. Promote the creation of a National Competence Centre to support AI in the public sector, which, among other things, would produce a manifesto for using AI in the public sector.
6. Facilitate skills by promoting an AI certification and establishing training paths.
7. Provide a "Public Administration 4.0" plan to encourage public investments in AI.
8. Support cross-sector and cross-Europe collaboration.
9. Establish a Trans-disciplinary Centre on AI to promote debate and reflection on AI ethics, and to involve experts and citizens in the considerations needed to develop regulations, standards, and solutions.
10. Define guidelines for secure-by-design AI, and facilitating data sharing on cyber-attacks across Europe.

The white paper also provides a set of Italy-specific next steps that the government could take to actualise these recommendations and move forward with AI in the public sector.

Japan

Japan was the second country to develop a national AI strategy, after Canada. The March 2017 ***Artificial Intelligence Technology Strategy***. The strategy includes three phases:

1. **Now**: Utilization and application of data-driven AI developed in various domains.
2. **Approximately 2020**: Public use of AI and data developed across various domains.
3. **Approximately 2025-2030**: Ecosystem built by connecting multiplying domains.

"Public use" from phase 2 does not generally mean public sector, however, and refers to the use of AI in multiple sectors, especially industry. Japan has created a Strategic Council for AI Technology, which manages five public sector National Research and Development Agencies. These agencies promote research and development for private industry. The strategy notes that the agencies are also moving forward with "social implementation of AI technology" which may indicate, but is not explicit about, AI for the transformation of the public sector. Besides the opening of government data, which could benefit all sector, the strategy does not explicitly discuss public sector transformation.

The government also published ***Social Principles of Human-Centric AI*** to help guide AI design and development in the country.

Officials from the government of Japan, in interviews with OPSI, have indicated that Japan is increasingly exploring and using AI in the public sector. Interestingly, the approach so far has been for the central government to fund city-level AI experiments, rather than experimenting at the central government level. Cities serve as testbeds for AI experimentation, which could potentially be scaled to others, according to the officials. Efforts so far have initially been done with through robotic process automation, but there are plans to delve further into machine learning. The officials stated that they are exploring the development of a new strategy that is more tailored for the public sector will be released in the near future.

In June 2019, the government of Japan issued its AI Strategy 2019 ***AI for Everyone: People, Industries, Regions and Governments***. The purpose of the strategy is to "specify the environment and measures conducive to effective future utilization of AI for the purposes of contributing to the solution of global issues through realization of Society 5.0 and overcoming the issues facing Japanese society. It contains a series of objectives and goals for achieving this.

One of the objectives call for bringing about an "AI Era Digital Government". This includes the items below, each with sub-goals for achieving them:

- Promotion of complete digital government transformation, improved efficiency and convenience through the utilization of AI, and the realization of inclusion.
- Implementation of administrative and policy planning based on appropriate data collection and analysis.
- Promotion of cost reduction, work efficiency improvement, and advancement by utilizing AI and robotics in the local government administration field, and to secure sustainable public services

See additional details on Japan on the OECD **AI Policy Observatory**.

Kenya

The Government of Kenya announced a task force in January 2018 to create a five-year **strategy on national use of emerging technologies**. The strategy has not yet been published, but it is expected that public sector innovation will be a significant focus.

Korea

Korea has launched **a five-year strategy** with associated R&D investment funding totalling KRW 2.2 trillion (EUR 1.7 billion) in order to position itself as a leader in AI. The strategy has three objectives:

1. Securing AI talent, such through establishing training programmes and AI graduate schools.
2. Developing AI technology, such as through funding major projects in health, public safety, and defense.
3. Investing in infrastructure, such as through creating AI semiconductors to enable things like **autonomous vehicles**.

While there is some focus on domains in which government is involved (health, public safety, defense), this strategy and subsequent announcements have generally focused efforts on economic development in the private sector, with little focus on AI for public sector innovation and transformation. Recent reports indicate that the country will release a new AI strategy in 2019, focused on building up **AI-focused manufacturing**.

See additional details on Korea on the OECD **AI Policy Observatory**.

Latvia

On 11 July 2019, the Government of Latvia announced a draft Latvian AI Strategy announced at a meeting of the State Secretaries. The draft was **published** for consultations between public bodies. The government intends for these public consultations to allow it to collect the necessary feedback to move ahead with its national strategy. The draft provides an an action plan with nine steps:

1. Promote the role of AI in education and science.
2. Making data available.
3. Using AI in the public sector.
4. Increasing AI related expenditure.
5. Establishing an assessment system.
6. Developing an appropriate legal framework for AI.
7. Promote the adoption of AI in the economy.
8. Actively engage in international cooperation.
9. Developing a unified communication system.
10. Integrate automation and AI in all sector strategies.

Lithuania

In April 2019, the government of Lithuania published ***Lithuanian Artificial Intelligence Strategy: A vision of the future*** in order to "modernize and expand the current AI ecosystem in Lithuania and ensure that the nation is ready for a future with AI."

The strategy include several provisions that recognise the importance for AI in the public sector. In particular, it recognises that AI has unique advantages for the public sector and that it can be used to improve wellbeing. It states that AI can be used in the public sector for things such as crime prediction, developing better services for citizens, and improving internal government processes. To help achieve the potential of AI, the strategy provides for a series of mechanisms to:

- Adopt a culture of innovation that promotes developing and testing AI solutions.
- Create a regulatory sandbox that will allow the use and testing of AI systems in the public sector.
- Assist public institutions in implementing AI systems that help benefit citizens and improve workflow.

- Establish a Lithuanian Artificial Intelligence Advisory Board that will assist government in decisions on future AI policy.
- Create public-partnerships that create better conditions for development of AI system.

The strategy also calls for the public sector to adopt a "unified approach to data management" and to open public sector data to help fuel AI progress in all sectors. To help achieve this, the strategy calls for funding a public sector data team to oversee open government data initiatives.

Luxembourg

In May 2019, the government of Luxembourg launched ***Artificial Intelligence: a strategic vision for Luxembourg***. The document is to be seen as a living strategy that will be updated regularly. The present version seeks to achieve three ambitions:

1. To be among the most advanced digital societies in the world, especially in the EU.
2. To become a data-driven and sustainable economy.
3. To support human-centric AI development.

One of seven focus areas is "AI for the public sector." In this area, it provides a series of key actions:

- Building a comprehensive overview of potential AI projects.
- Engaging with other EU members for sharing learnings, best practices, experiences, and data.
- Developing AI solutions for more efficient and effective public services.
- Supporting digital by default with AI tools that can help provide customer-oriented, tailored services.
- Fostering research and innovation that assess AI for the public sector, disseminating results and questions to the public.
- Studying the creation of a structured public database ecosystem to ease AI use.

The strategy also calls for relaunching the government's open data policy to better provide data as fuel for AI innovation for all sectors. The next step for Luxembourg is to hold public consultations in late 2019 to help inform future AI policies.

Malaysia

In October 2017, the government of Malaysia **announced that it would develop a National AI Framework**. The government expects that the framework will be complete by the end of 2019. It is unclear whether the framework will have a focus on the public sector.

Malta

The Government of Malta has launched the initiative **Malta.AI** in order to "transform the potential of Artificial Intelligence into a new contributor to Malta's economic growth in digital innovation".

As part of this initiative, the government formed an AI task force made up of entrepreneurs, academics and experts in the field to develop a national strategy. The final strategy, ***Malta the***

Ultimate AI Launchpad: A Strategy and Vision for Artificial Intelligence in Malta 2030 was issued in October 2019.

The strategy identifie three “strategic pillars” for AI in Malta, as well as three key “enablers:. The pillars are:

1. Investment, start-ups and innovation.
2. Public sector adoption
3. Private sector adoption.

And the enablers are:

1. Education and workforce.
2. A legal and ethical framework.
3. Ecosystem infrastructure.

Regarding public sector adoption, as stated by the Strategy, the pillar related to public sector adoption explores how AI can be deployed widely across the public administration to improve citizens’ experiences, expand access to public services, and directly improve well-being.

Six AI pilot projects covering traffic management, education, health, customer service, tourism, and utilities will be undertaken over the coming three years. Details and timeframes for these projects are included in the strategy document.

Mexico

In June 2018, the government of Mexico published the study ***Towards an AI Strategy in Mexico: Harnessing the AI Revolution***, serves as a foundation for building full AI strategy. The study focuses its analysis and provides recommendations across five areas:

1. Government and public services
2. Data & digital infrastructure
3. Research and development
4. Capacity, skills & education
5. Ethics

Under the area of government and public services, which is most relevant for this guide, its recommendations consist of:

1. Set a clear strategic direction.
2. Appoint Emergent Technology Innovation teams in selected ministries.
3. Government should act as a champion.
4. Develop guidelines for smart AI procurement.
5. Create a multi-stakeholder steering group to develop and promote Mexico’s AI strategy.

6. Create a network of AI practitioners from all sectors and disciplines, including national and local actors, to develop a multi-sector 2030 AI road map.
7. Create an AI working group in Congress.
8. Take a lead role in the global debate.

A number of recommendations relevant to AI in the public sector are also included under the other focus areas, including:

- Creating a national centre for AI research, modelled on The Alan Turing Institute in the UK (note: The Alan Turing Institute is discussed in-depth as a case study in the draft OECD OPSI **working paper** *Hello, World: Artificial Intelligence and its Use in the Public Sector*).
- Maintain a resilient open government data infrastructure.

The study provides timeline and lists those responsible for implementing the recommendations.

The government of Mexico website published the **official policy** and stated that it, in conjunction with the *Artificial Intelligence Strategy of Mexico 2018* (IA-MX 2018), constitutes the country's full AI strategy.

OPSI was unable to locate an IA-MX 2018 document; however, the government website states that it includes:

- Developing an AI subcommittee to promote multi-sectoral dialogue and approaches.
- Map the uses and needs in the industry and identify best practices in government.
- Promote the international leadership of Mexico in the matter, with special emphasis on the OECD and D7 [**now D9**]
- Publish the recommendations made by the report to public consultation.
- Work with experts and citizens through the AI Subcommittee to achieve the continuity of these efforts during the next administration.

Since the study and IA-MX 2018 document was announced, Mexico has held an election and a new government has formed. It is not clear whether the new administration will carry out further implementation; however, it did submit the strategy to the AI Policy Observatory as a national strategy instrument in early 2020.

See additional details on Mexico on the OECD **AI Policy Observatory**.

The Netherlands

Public-private partnership AINED has started the process of developing a Dutch AI strategy. In November 2018, it published a **roadmap** (in Dutch) (**this article** explains it in English) for developing a full strategy, which also discussed the potential for AI in the Netherlands now and in the future. The roadmap focuses on building up AI talent, taking a human-centric approach to AI design and implementation, integrate ethics in AI frameworks, R&D investment, and balancing the role of man and machine. The AINED and the government are working on creating action plans for developing the AI strategy.

Relevant for public sector innovation, the roadmap explicitly calls out the government's role as an AI user, among its other roles of a regulator and stimulator. It promotes small-scale AI experimentation within government, which can result in improved accuracy and time savings. The document advocates for systemic introduction of AI to government services, and for overcoming governmental challenges such as accessing and using data, securing talent, avoiding bias, and protecting privacy.

New Zealand

In March 2018, the **AI Forum of New Zealand**–an independent organisation that brings together NZ AI experts and stakeholders from all sectors, including government–published the report ***Artificial Intelligence: Shaping a Future New Zealand***. The report provided an overview the status of AI strategies, investments, and initiatives around the world, and discussed how AI may impact New Zealand. Finally, it provided a series of recommendations on what key actors in NZ should do to help maximize the potential for AI. One of the recommendations was that government needs to coordinate a national AI strategy as part of New Zealand's wider Digital Strategy in order to help remedy a challenge of AI in New Zealand being "disconnected and sparsely deployed." For more information check the report from the AI Forum entitled, **Government Use of Artificial Intelligence in New Zealand**.

As a response to the report, in May 2018, the New Zealand government stated exploring the creation of an **AI action plan and ethical framework**.

Nordic-Baltic Region

Some countries have opted to band together for a regional, collaborative approach to AI. ***The Declaration on AI in the Nordic-Baltic Region*** was issued in May 2018 by the countries of: Denmark, Estonia, Finland, the Faroe Islands, Iceland, Latvia, Lithuania, Norway, Sweden, and the Åland Islands. In the declaration, the countries commit to collaborating on:

- Improving opportunities for skills development
- Enhancing access to data
- Developing ethical and transparent guidelines, standards, principles, and values
- Ensuring standards for infrastructure, hardware, and software that enable privacy, security, and trust.
- Ensuring AI gets a prominent place in European discussions of the Digital Single Market.
- Avoiding unnecessary regulations
- Utilising the Nordic Council of Ministries to facilitate collaboration.

The declaration is not detailed enough to state whether any of the commitments has a specific focus on the public sector. As seen in this section several of these countries also have their own AI strategy.

Norway

In January 2020, Norway issued its ***National Strategy for Artificial Intelligence***.

In February 2019, the government of Norway announced that it would develop a coordinated **strategy for AI** in Norway. The strategy is expected to be launched by the end of 2019, and it will include focuses on:

- Building up expertise through education, research, and innovation.
- Enabling Norway to adopt AI, including using AI in the public sector.
- Exploiting commercial opportunities, including enablers such as regulation and data access.
- Infrastructure and enabling technologies (e.g., 5G, high performance computing)
- Ethical guidelines, data protection, and security

The announcement indicates that the use of AI for public sector transformation will be explicitly address as part of the broader strategy, as well as international collaboration through organisations such as the OECD and EU.

Poland

The government of Poland has not yet published an AI strategy, but it is in the process of developing one. **This timeline** describes the "Polish Road to an AI Strategy." The government has held a series of roundtables with government officials, academics, and industry representatives to discuss the development of the strategy. **The first was held in May 2018**. The Minister of Science and Higher Education stated that the eventual strategy would include focuses on the future of health care, public administration, education and cybersecurity.

In November 2019, the Ministry of Digitization published ***Assumptions for the AI strategy in Poland*** as an action plan towards developing an AI strategy. It includes provisions for the management and opening of government data, participation of public sector companies in the development of AI projects. It is not clear when the final strategy will be issued.

Portugal

In February 2019, the Portuguese government launched ***AI Portugal 2030***, which seeks strengthen economic growth, scientific excellence, and human development using with AI. The strategy includes a number of focus areas, each with associated objectives and specific actions. These areas include the "public administration and its modernisation". The overarching goal is to better inform public policies and decision-making processes, as well as to make public services more anticipatory.

To achieve these goals, the public sector focus area has objectives to:

- Make government data open for all sectors, while respecting security and privacy.
- Foster collaboration between public sector entities for AI.
- Promote innovative solutions for administrative simplification.
- Reinforce public sector skills and capabilities in AI and data science.
- Ensure the ethical use of AI in government.

The strategy calls for developing a national data infrastructure, funding collaborative project, creating a "Collaborative Laboratory"(CoLab) for AI, reinforcing government AI skills, and including public sector organisations in the governments ethics committee for AI.

In addition to the strategy, the Portuguese government is backing 19 new Data Science and AI projects for public services. They are funded by the Foundation for Science and Technology, at €4.3 million and are the result of cooperation between scientific institutions and Public Administration entities. The funding of the projects are part of the government's mission to employ more artificial intelligence in Portuguese public services. The following projects aim to promote knowledge linked to innovation and modernization of public services and the development of scientific research, in order to implement public policies for the benefit of citizens:

- Predicting the risk of long-term unemployment
- Detecting abnormal patterns of antibiotic prescription
- Selecting economic agents for targeted inspection
- Help entrepreneurs deal with bureaucracy and legal compliance
- Use of Artificial Intelligence to enhance the Teledermatological Screening
- Intelligent Water Data System
- Neuroimaging Biomarkers for Diagnosis of Neuropsychiatric Diseases, using Artificial Intelligence
- Identification and Prediction of Demand for Hospital Emergencies
- Data2Help: Data Science for Optimization of Emergency Medical Services
- Early detection of failures of public transport vehicles in an operating environment
- Modeling and prediction of road accidents in the district of Setúbal
- IPSTERS – Land Recognition System of IPSentinel
- Modeling the flow of students in the Portuguese education system
- Understanding the Determinants of Academic Performance: Evidence from the
- Portuguese Higher Education System
- iLU: Advanced Learning in Urban Data with Situational Context to Optimize Mobility in Cities
- EPISA-Entity and Property Inference for Semantic Archive
- Detection of patterns of addiction in online play
- Preventing the risk of complications of surgical treatment and defining the prognosis in cancer patients through the integration of clinical and pathological data

Russian Federation

On 10 October 2019, Russia published its ***National Strategy for the Development of Artificial Intelligence by 2030***. The Strategy will serve as the basis for development and enhancement of state

programmes and projects as well as strategic documents of state-owned corporations and companies that support AI development in Russia.

While not yet available in English, Twitter user **Oleg Shakirov** provided an analysis of the document in English. Through the strategy, Russia seeks "to become one of the international leaders in the development and use of AI technologies."

The goals of the strategy are to:

- Ensure the growth of welfare and quality of life.
- Ensure national security and law and order.
- Achieve sustainable competitiveness of the economy, including leading positions in the world in the field of AI.

The strategy includes a number of key principles:

- Protection of human rights and freedoms.
- Security.
- Transparency.
- Technological sovereignty
- Innovation cycle integrity (linking R&D and the economy).
- Rational thrift (priority to implementation and adaptation of existing measures.
- Support of competition.

To achieve the strategy's goals, it calls for developing an AI infrastructure composed of:

- R&D.
- AI-based software.
- Quality & availability of data.
- Availability of hardware.
- Talent and public awareness.
- Regulatory frameworks.

The strategy outlines development and use of AI across sector, including education, healthcare, and government services.

See additional details on the Russian Federation on the OECD **AI Policy Observatory**.

Saudi Arabia

In 2016, the Kingdom of Saudia Arabia (KSA) government issued ***Vision 2030***, which expresses KSA's long-term goals and expectations and guides its future developments and initiatives.

Pursuant to the goals of Vision 2020, the KSA government is drafting a national AI strategy that aims to build an innovative and ethical AI ecosystem in the country by 2030. (see OECD **AI in Society** report).

Also pursuant to Vision 2030, in August 2019, the government of Saudi Arabia created the Saudi Authority for Data and Artificial Intelligence (SDAIA) by Royal Decree. Through the same decree, the government created two offices: (1) The National Centre for Artificial Intelligence, and (2)The National Data Management Office.

See additional details on Saudi Arabia on the OECD **AI Policy Observatory**.

Serbia

In January 2020, Serbia published their ***Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period 2020-2025*** (condensed version available **here**).

The strategy defines national objectives and measures for the development of AI across the Serbian economy, including the use of AI for improving services provided by the public sector. Specific to government, the strategy identifies three key areas where AI can contribute significantly to public welfare and higher-quality services:

1. Public Administration: Using business intelligence to better decision making, building conversational user interfaces (e.g., chatbots). personalised services, and accelerating routine processes. The strategy also specifically states that user privacy and data protection must be ensured.
2. Healthcare and medicine: Using AI to enhance diagnostics, ensure availability of resources and equipment and optimise their use, and contribute to the quality and efficiency of health services.
3. Traffic, road infrastructure and mobility in urban environments: Leveraging AI to improve traffic planning, enable optimisation of signaling, and give real-time conditions to allow for rapid response to traffic situations.

The strategy also calls for:

- Optimising the country's legal and regulatory framework to better promote AI adoption in all sector.
- Opening government data to and providing incentives to the private sector to open private sector data.
- Providing the infrastructure needed for AI, such as high-performance computing resources.

Going forward, the strategy states that Serbia will issue national ethics guidelines based on the ***Ethics Guidelines for Trustworthy Artificial Intelligence*** created by the Expert Group appointed by the European Commission.

Singapore

In May 2017, Singapore launched "**AI Singapore**" (AI.SG) as its national programme in AI in order "**to catalyse, synergise and boost Singapore's AI capabilities to power [its] future, digital economy**."

AI.SG is a government-wide partnership, with the Digital Government Office as one of the leading agencies, which also brings together research institutions and the private sector. It commits SGD 150 million (EUR 97.4 million) over five years to facilitate three objectives:

1. Use AI to address major challenges that affect society and industry.
2. Invest in deep capabilities to catch the next wave of scientific innovation.
3. Broaden adoption and use of AI and machine learning within industry.

The AI.SG launch press release specifically refers to the "better provision of public services" as a goal. **Singapore's Digital Government Blueprint** makes a solid push for AI in government, and commits to developing a set of guidelines on the use of AI to manage risk. The Blueprint's key performance indicators call on all ministries to have at least one AI project by 2023. Like other countries, the government is also working to open government data to help fuel AI in all sectors.

Slovakia

In June 2019, a collaboration of government organisations, academic institutions, and industry representatives launched the Slovak Center for Artificial Intelligence Research – **slovak.AI**. The website states that the Slovak Center aims to 'turn Slovakia into a country of excellence in the use of technology with AI elements for the well-being of its citizens."

OPSI was able to find very little information related to a national AI strategy for Slovakia. However, the AI Hub Europe **website** indicates the the country is in the process of developing one.

Slovenia

According to officials from the Government of Slovenia, based on coordinated EU approach, Slovenia has started preparation of national AI strategy and organised an intergovernmental working group, including experts from academia and industry to drive all the activities.

Public sector transformation will be included as a focus area in a broader AI strategy.

Spain

In March 2019, the government of Spain's Ministry of Science, Innovation and Universities launched the **RDI Strategy in Artificial Intelligence**. It establishes six priorities and seven recommendations to align government to support progress in AI across sectors. The RDI Strategy is intended to serve as the initial "embryo" for developing a fuller *National Strategy for Artificial Intelligence"* in the future.

These priorities are to:

1. Achieve an organizational structure that allows the development of an AI RDI system and to measure its impact.
2. Establish strategic areas in which it is necessary to focus the efforts of RDI activities.
3. Facilitate the transfer of knowledge and its return to society.
4. Plan training and professionalization actions in the field of AI.

5. Develop a digital data ecosystem and enhance the available infrastructures.
6. Analyse the AI ethics from the perspective of RDI.

The recommendations are to:

1. Launch a National AI Strategy that allows the development and implementation of specific measures aimed at national strategic sectors.
2. Take advantage of AI to achieve the objectives set out in the Agenda 2030.
3. Design and implement specific actions promoting the transfer of knowledge to the socioeconomic environment.
4. Launch or adapt vocation promotion programs, not limited to R&D, as well as the attraction, retention and recovery of talent aimed at AI.
5. Use AI to ensure an optimal use of open data. To create a National Data Institute to plan and define governance over data from different levels of government.
6. Detect the needs of adjustment and improvement of competences in the different levels of our educational system.
7. Ensure that all the activities and initiatives derived from the strategic frameworks focused on the development of AI, as well as their results, comply with the ethical, legal and social commitments of our country and our European environment.

The RDI Strategy includes a specific focus on the public sector, calling AI "catalyst for the transformation of the activity and digital presentation of the public administration." It calls a number of actions, including:

- Leveraging machine learning to gain better insights using government data.
- Developing applications to better interact with citizens (e.g., chatbots)
- Using AI for cheaper and more personalised services in key areas (e.g., healthcare, education).
- Using AI to reinforce the National Security Strategies (e.g., though unifying data criteria and better sharing data).

It also calls for opening up government data, as well as data and software code derived from government-funded research.

Sweden

Sweden's May 2018 ***National Approach for Artificial Intelligence*** put forth the country's strategic priorities for AI and establishes a high-level framework for aligning AI stakeholders from all sectors to help make Sweden "a leader in harnessing the opportunities that AI can offer, with the aim of strengthening Sweden's welfare and competitiveness". The document is intended to serve as a foundation for future priorities and strategies.

To achieve its full potential in AI, the document has determined that Sweden needs to:

- Develop rules, standards, norms, and ethical principles to guide AI use.

- Promote international standards and regulations that promote AI while mitigating risk.
- Continually review digital infrastructure needs.
- Make data available.
- Actively participate in EU efforts to promote digitization and AI.

The document explicitly notes that AI has considerable potential to contribute to a more effective and relevant public sector and improve public services, and it has a significant role in helping the public sector to succeed in address future societal challenges. It calls for public sector stakeholders to support opening data and creating a national digital infrastructure. It also calls on public organisations to collaborate with academia through things like joint projects and staff exchanges to strengthen public sector capacities. It also stresses that ethics in AI is critical, especially in the public sector. Thus, algorithms must be transparent and understandable, and AI use must consider legal and moral issues.

In the same month, **Vinnova**, the Swedish government's innovation agency published ***Artificial Intelligence in Swedish Business and Society*** as an analysis of the development and potential of AI in Sweden, including the public sector. Uniquely, this report expressed that AI can contribute to Sweden's efforts in achieving the Sustainable Development Goals (SDGs). It also calls for a "concerted effort to boost Sweden's AI development". Such an effort should include:

- A targeted and powerful national strategy based on an inclusive process that includes most policy areas and public organisations.
- Mutual collaboration across sectors
- A focus on a number of strategic areas: drivers, cooperation, education, research investments, regulatory development, infrastructure development, and labour market development.

As part of this concerted effort, the Vinnova report calls for the government to generate initiatives to build or improve education programmes, collaborate environments, data access, experimentation testbeds, and guidance to help bring about responsible, ethical AI.

Tunisia

The government of Tunisia kicked off an effort to develop a national AI strategy at a UNESCO-hosted event on "**National AI Strategy: Unlocking Tunisia's capabilities potential**". The Secretary of State for Research created a task force to create an action plan and oversee the development of the strategy.

The government anticipated that the final AI strategy would be published in January 2019; however, it has yet to be released as of July 2019. It is unclear when the final strategy will be released, or the extent to which will include provisions for using AI for public sector innovation and transformation. However, a **slide deck** from the strategy launch event indicates that e-government will be a subject for one of five strategy development working groups.

Turkey

According to data submitted to the OECD AI Policy Observatory by Turkey, the country in 2019 developed priority areas, and it is developing an upcoming technology roadmap in AI.
Press **coverage** of an event in 2019 indicate that Turkey's Scientific and Technological Research Council of Turkey (TÜBİTAK) Informatics and Information Security Research Center (BİLGEM) is responsible for developing this roadmap.

In September 2019, the country also held a **focus group** of Turkish scientists abroad dedicated to horizontally scan the artificial intelligence landscape. Current global trends and international collaboration models in artificial intelligence were discussed among Turkish scientists, which will pave the way for future planning in this area.

In March 2020, the governement Presidency's Digital Transformation Office more clearly stated that a national strategy was being developed. See article **here**.

See additional details on Turkey on the OECD **AI Policy Observatory**.

United Arab Emirates (UAE)

The UAE is the only country in the world to have a Ministry for Artificial Intelligence. It was launched in October 2017 alongside the country's **UAE Strategy for Artificial Intelligence** (AI). The main goal for the strategy is to improve government performance and efficiency, and one of it key objectives is to "boost government performance at all levels". Other objectives include creating a new vital market with high economic value, and making the UAE the first in the field of AI investments in key areas. The strategy includes five key action themes:

1. The formation of the UAE AI Council.
2. Workshops, programmes, initiatives and field visits to government bodies
3. Developing capabilities and skills of all staff operating in the field of technology and organise training courses for government officials.
4. Providing all services via AI and the full integration of AI into medical and security services.
5. Launching leadership strategy and issue a government law on the safe use of AI.

Since then, in April 2019 the UAE adopted the **UAE Artificial Intelligence Strategy 2031**, which "aims at positioning the UAE as a global leader in artificial intelligence by 2031, and to develop an integrated system that employs artificial intelligence in vital areas in the UAE". **The strategy** includes objectives as well as a number of AI initiatives, including several for government services. The goals relate to:

- Making the UAE more competitive and making it a global AI hub.
- Establishing an AI incubator.
- Employing AI in customer service to improve quality of life.
- Attracting and training talent for jobs of the future.
- Building lead research capabilities.
- Providing a data-driven infrastructure for experimentation.

- Optimising AI governance and regulations.

United Kingdom

The UK government issued the ***AI Sector Deal*** in April 2018 (updated in May 2019). The strategy is borne from the **UK's Industrial Strategy**, which identified AI and data as one of four "**Grand Challenges**" in which the UK has the potential to lead the world. It reinforces five "foundations" that were first laid out in the industrial strategy. These foundations are listed below, alongside a selection of strategy action items that are relevant for public sector innovation and transformation:

1. **Ideas**: Investing in programmes applying AI to improve different areas to productivity, including digital service delivery in the public sector.
    1. Create a GBP 20 million (EUR 22.4 million) GovTech Fund to support businesses in providing the government with innovative solutions for enhanced public services.
    2. Increase spending across all sectors by 2.4% by 2027, a 3% long-term. Obtain some industry matching funds for key areas, including the public sector.
2. **People**: Improving skills and AI expertise; attracting global AI talent.
    1. Develop a Turing Fellowship programme, and use The Turing Institute reviews to inform approaches to AI adoption in both industry and government.
3. **Infrastructure**: Address barriers to sharing both public and private sector data for fair, equitable, secure, and accountable data sharing.
    1. Publish more quality, re-usable data.
    2. Collaborate with developers on a framework for data interoperability.
4. **Business environment**: Establish an AI Council to convene industry and academia, supported by a new Office of AI in government. Create a new Centre for Data Ethics and Innovation to guide progress.
5. **Places**: Help businesses around the UK grow by backing the expansion of **Tech City UK** and **Tech North** into a national network "Tech Nation". Scaling up academic focus on AI through more university partners for the Alan Turing Institute (note: The Alan Turing Institute is discussed in-depth as a case study in the draft OECD OPSI **working paper** *Hello, World: Artificial Intelligence and its Use in the Public Sector*).

The Sector Deal charges the new **Office of AI** (OAI) with governance of the Deal and reviewing progress on the objectives. Since its creation, this office and the Government Digital Service (GDS) have jointly issued a **guide to using artificial intelligence in the public sector** in January 2020 to help actualise the Sector Deal. The guide is a collection of resources that help public servants understand how:

- To assess if using AI will help you meet user needs.
- The public sector can best use AI.
- To implement AI ethically, fairly and safely.

In addition to the Sector Deal, the UK launched the **Government Technology Innovation Strategy** in June 2019 to set out how government will use emerging technologies, including AI, to build better public services. The Strategy is structured around the themes of people, process, and data and technology.

United States

In February 2019, the United States launched the **American AI Initiative**, in the form of an executive order. This "whole-of-government strategy" aims at focusing federal government resources for:

- **Investing in AI research and development**, generally by prioritising spending on cutting-edge ideas.
- **Unleashing AI resources**, especially as related to opening government data, models, and computer resources.
- **Setting AI governance standards**, through developing guidance for AI development and use, and for creating technical standards for reliable, trustworthy, secure, and interoperable AI systems.
- **Building the AI workforce**, such as through prioritising fellowship, training, and educational programmes to help workers gain AI skills.
- **International engagement and protecting the US AI advantage**, through promoting open markets and requirement government agencies to develop action plans to maintain the US's potion in AI leadership.

Following up on the American AI Initiative executive order, the US issued the ***National Artificial Intelligence Research and Development Strategic Plan: 2019 Update***, which, among other things, calls for developing shared public datasets and environments for AI training and testing (this item was established in the 2016 R&D strategic plan, and it remains in the 2019 update). As well as expanding public-private partnerships to accelerate advances in AI (this was new for the 2019 update). The Initiative was also considered in the development of the US's new Federal Data Strategy and associated **Action Plan**, which includes an action item to "improve data resources for AI research and development". The Federal Data Strategy and Action Plan are discussed in-depth as a case study in the OECD OPSI **working paper** *Hello, World: Artificial Intelligence and its Use in the Public Sector*.

To help actualise this initiative and to help people identify the different AI work areas underway, the White House launched AI.gov, ***Artificial Intelligence for the American People***.

While there are many connected facets to the US approach to AI, they are generally focused on economic development and R&D. The extent to which the Initiative and its associated strategies and practices seek to innovate upon and transform the public sector itself is not specified.

Uruguay

In April 2019, AGESIC, the eGovernment agency in the President's Office, published a draft for public consultation of Uruguay's ***Artificial Intelligence Strategy for the Public Administration***. In a related effort, Transform Uruguay issued a ***Roadmap for Data Science and Machine Learning***.

The draft strategy is focused on building better digital services improving public sector back-office processes. The draft strategy includes four pillars:

1. Governance of AI.
2. Capabilities of public servants.
3. Efficient use of AI.
4. Educating citizens.

A final strategy is expected by the end of 2019.

**Content adapted from OECD (Organisation for Economic Cooperation and Development)*

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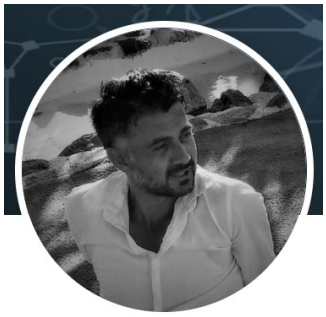

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