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| USING ARTIFICIAL INTELLIGENCE (AI) AND IMT-2020 (5G) NETWORKING TECHNOLOGIES FOR THE COMMON GOOD | |

**1. Introduction**

Artificial Intelligence (AI) and technologies related to IMT-2020 (5G) can find a wide variety of ways to apply in almost all segments of the economy, including critical industries (energy, engineering, construction, etc.) and in the field of telecommunications and information and communication technologies (ICT). Considering both the high capabilities of AI systems and applications, and at the same time the high risks lead using such systems/applications, it is necessary to study the issues of regulation of the use of AI. These issues have not yet been sufficiently explored, and regulation practice just started. No doubt that in order to use AI for the common good, it is necessary to develop relevant regulations and laws now, in order to avoid the uncontrolled consequences of the widespread adoption of AI. Artificial intelligence is already intensively generating new significant challenges (and there will be more of them with the development and implementation of IMT-2020 (5G) networks), which are associated with complex risks and multivariate, and creates unprecedented many uncertainties.

The regulatory framework for the use of AI systems should take into account the main feature of such systems - the ability to make executive decisions without human intervention.

Given the scope of ITU's responsibility and the competence of specialists, it makes sense to consider sectoral legal challenges in the field of telecommunications/ICT both in the current and in the future new regulation related to AI technologies. Many countries have already implemented AI regulatory initiatives (see Appendix). Many ITU Member States are interested in considering this issue and exchanging best practices in order to prepare relevant research materials, guidelines and, if necessary, recommendations and/or other CWG-Internet output documents.

**2. Discussions**

First of all the IT should be understood how the current legislation in the field of telecommunications/ICT at the national and international level applicable for legal regulation of AI. On this depends the answer to the question regarding need for special public polices of AI. The cross-border nature of services for which AI is used is one of the most important aspects to consider approaches for AI regulation, which requires interaction and coordination of States and all stakeholders at the international level.

AI technologies are intensively growing, due to the development of stable neural networks and cloud computing infrastructures, technologies of fuzzy logic, swarm intelligence, evolutionary computing, implementation of IMT-2020 (5G) networks, etc. At the same time global problem is the problem of almost complete absence of normative legal framework and technical regulation of the foundations, conditions and features of the development, launch, operation and integration AI technologies into other ICT systems. The variety of AI applications leads to different directions and forms of its regulation, while the AI systems used in the field of telecommunications/ICT don’t require a comprehensive understanding of all the ethical, technical and economic aspects of AI.

To modernize the regulatory framework in connection with the prospects for the use of AI, it is necessary to create a system for assessing the compliance of intelligent technologies with human capabilities. Such a system should include technical standardization committees, certification bodies, as well as testing laboratories, which directly assess the capabilities of the developed technologies. Some of this work can be done by ITU and on test sites organized by ITU.

The implementation of an effective international public policy for AI in telecommunications/ICT are necessary to ensure the sustainable development and improvement of telecommunication/ICT services, while engaging security, protection of personal data, privacy, intellectual property rights and cybersecurity.

**3. Proposals**

Russian Administration would like to support the activity conducted by ITU-T on various aspects related to AI based ICT services and IMT-2020 (5G) network/system technologies, as well as the work carried out at ITU-D to assist developing countries in these areas.

We propose to organize a discussion of issues related to aspects of regulation at the national and international level in the field of development and use of AI driven by CWG-Internet:

1. to organize a wide discussion driven by CSG-Internet and develop, if necessary, proposals/recommendations to the ITU Council on the role of the state in ensuring the regulation of AI at the international level;

2. to invite states to share AI legislative practices in the field of telecommunications/ICT;

3. to identify ways and methods of accumulation of technical knowledge in the field of AI in telecommunication/ICT and create a knowledge base on this issue in the ITU;

4. to discuss opportunities for ITU to participate in interdisciplinary research on the impact of AI systems on society and economy;

5. to discuss the need and feasibility studies on legal issues: liability, privacy, information security, intellectual property etc. in relation to AI in the telecommunication/ICT;

6. to identify necessary and sufficient measures for the regulation of AI, taking into account the use of new technologies in telecommunications/ICT and the impact of the development and increasing use of the Internet on international public policy;

7. to develop a plan for international cooperation in the development of regulations for AI in the field of telecommunications/ICT;

8. to discuss the need and develop, if necessary, proposals for monitoring system of the AI safety usage at the international level and a dynamic system for assessing the risks and consequences of the introduction of AI.

**Annex**

**Examples of Artificial Intelligence regulatory practice**

**As of 1 September 2019**

**Introduction**

In 2017, the race for national leadership in the development of Artificial Intelligence began. In 2017 five States adopted national AI strategies, and within 2018-2019 thirty states adopted such strategies with relevant “roadmaps”, indicating AI as a priority in their activities. Different countries set different goals in the national strategy. General goals are set in the strategies of two countries: the United States of America and the People’s Republic of China. The USA has set a goal - to keep leadership in the field of AI, China - to become a leader in this field by 2030. The rest of the countries set the task of becoming one of the leaders in the technology development, or becoming leaders in some of the AI aspects. We see that national AI regulation is becoming the dominant trend. At the same time, there are no two identical strategies; each of them is focused on different aspects of AI development: advanced scientific research, developing talents/skills/education, ethics principles, national standards and legal regulation, data infrastructure, practical application in the public/private sector.

**NATIONAL AI REGULATION AND RELEVANT INITIATIVES**

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| **Country** | **Year** | **Regulation/Relevant initiative** | **Description** |
| **Canada** | 2017 | [Pan-Canadian Artificial Intelligence Strategy](https://www.cifar.ca/assets/pan-canadian-artificial-intelligence-strategy-overview/) | Canada was the first country to release a national AI strategy. Detailed in the 2017 federal budget, the [Pan-Canadian Artificial Intelligence Strategy](https://www.cifar.ca/assets/pan-canadian-artificial-intelligence-strategy-overview/) 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](https://www.cifar.ca/) leads the strategy in close partnership with the Canadian government and the three new AI Institutes: the [Alberta Machine Intelligence Institute](https://www.amii.ca/) (AMII) in Edmonton, the [Vector Institute](http://vectorinstitute.ai/) in Toronto, and [MILA](https://mila.quebec/) 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. |
| **Japan** | 2017 | * [Artificial Intelligence Technology Strategy](http://www.nedo.go.jp/content/100865202.pdf) * [New Robot Strategy](http://www.meti.go.jp/english/press/2015/pdf/0123_01b.pdf) | 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](https://japan.kantei.go.jp/97_abe/actions/201604/12article6.html) 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.  https://miro.medium.com/max/500/1*q4fg_NHXrCdrRcbXdXKaFg.png  **Japan’s three-phase development plan for AI**  The plan, the [Artificial Intelligence Technology Strategy](http://www.nedo.go.jp/content/100865202.pdf), 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](https://www.japan.go.jp/abenomics/_userdata/abenomics/pdf/society_5.0.pdf) 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. |
| **Australia** |  | [Australia 2030: Prosperity Through Innovation](https://industry.gov.au/Innovation-and-Science-Australia/Documents/Australia-2030-Prosperity-through-Innovation-Full-Report.pdf) | 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](https://www.computerworld.com.au/article/640926/budget-2018-government-seeks-boost-australian-ai-capabilities/) 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](https://industry.gov.au/Innovation-and-Science-Australia/Documents/Australia-2030-Prosperity-through-Innovation-Full-Report.pdf), the government announced that it will prioritize AI in the government’s forthcoming Digital Economy Strategy. |
| **China** | 2017 | * [A Next Generation Artificial Intelligence Development Plan](http://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm) * [Three-Year Action Plan to Promote the Development of New-Generation Artificial Intelligence Industry](http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757016/c5960820/content.html) | China announced its ambition to lead the world in AI theories, technologies, and applications by the year 2030 in its [A Next Generation Artificial Intelligence Development Plan](http://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm). At the same time, the intention to adopt the first laws in this regard by 2020 is announced.  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](http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757016/c5960820/content.html). 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](http://www.scmp.com/tech/china-tech/article/2120913/china-recruits-baidu-alibaba-and-tencent-ai-national-team) to develop research and industrial leadership in specific fields of AI and will build a [$2.1 billion technology park](https://www.technologyreview.com/the-download/609892/beijing-is-getting-a-21-billion-ai-district/) for AI research in Beijing. |
| **Denmark** | 2018 | [National Strategy for Artificial Intelligence](https://eng.em.dk/media/13081/305755-gb-version_4k.pdf) | Denmark is to be a front-runner in responsible development and use of artificial intelligence.  Objectives for artificial intelligence:   1. Denmark should have a common ethical and human centered basis for artificial intelligence 2. Danish researchers should research and develop artificial intelligence 3. Danish businesses should achieve growth through developing and using artificial intelligence 4. The public sector should use artificial intelligence to offer world-class services   Denmark’s [Strategy for Denmark’s Digital Growth](https://em.dk/english/news/2018/01-30-new-strategy-to-make-denmark-the-new-digital-frontrunner), 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. |
| **European Union (supranational initiatives)** | 2018 | * [Communication on Artificial Intelligence for Europe](https://ec.europa.eu/digital-single-market/en/news/communication-artificial-intelligence-europe). * [A European approach to Artificial Intelligence](https://ec.europa.eu/digital-single-market/en/artificial-intelligence) * European Civil Law Rules in Robotics | In April 2018, the EU Commission adopted the “[Communication on Artificial Intelligence](https://ec.europa.eu/digital-single-market/en/news/communication-artificial-intelligence-europe)”: 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;  (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 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 (AI HLEG)](https://ec.europa.eu/digital-single-market/en/high-level-group-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.  AI HLEG acts as the governing body and prepares draft ethical guidelines for consideration by Member States. The main mission of the AI HLEG is to maximize the impact of investments at both the EU and national levels, to promote interaction and cooperation within the EU, share best practices and jointly determine ways to move forward so that the EU can compete in the global market.  One year after its establishment in June 2018, AI HLEG developed:  • AI Ethics Guidelines.  The document is currently under revision; a revised document will be published in early 2020.  • Policy and investment recommendations.  These are recommendations for sustainability, growth, and competitiveness.  The European Parliament has also considered the European Civil Law Rules in Robotics draft. It consists of several sections: general considerations on robots and their classification, responsibility issues and some definitions of the ethics code for robotics developers. |
| **Finland** |  | * [Finland’s Age of Artificial Intelligence](http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/160391/TEMrap_47_2017_verkkojulkaisu.pdf?sequence=1&isAllowed=y) * [Work in the Age of Artificial Intelligence](https://tem.fi/julkaisu?pubid=URN:ISBN:978-952-327-311-5) | 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](http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/160391/TEMrap_47_2017_verkkojulkaisu.pdf?sequence=1&isAllowed=y), 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](https://fcai.squarespace.com/) (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](https://tem.fi/julkaisu?pubid=URN:ISBN:978-952-327-311-5), 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** | 2018 | National Artificial Intelligence Programme | President Emmanuel Macron unveiled [France’s €1.5 billion plan](https://www.gouvernement.fr/en/artificial-intelligence-making-france-a-leader) to transform France into a global leader in AI research, training, and industry at the end of the [AI for Humanity Summit](https://www.aiforhumanity.fr/en/) in Paris. The plan draws heavily from the report, [For a Meaningful Artificial Intelligence: Towards a French and European Strategy](https://www.aiforhumanity.fr/pdfs/MissionVillani_Report_ENG-VF.pdf), in which 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. |
| **Germany** | 2018 | [Artificial Intelligence Strategy](https://ec.europa.eu/knowledge4policy/publication/germany-artificial-intelligence-strategy_en) | Germany’s federal cabinet released a paper in July 2018 that [outlines the goals of the strategy.](https://www.bmwi.de/Redaktion/DE/Downloads/E/eckpunktepapier-ki.pdf?__blob=publicationFile&v=4) 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 strategy, Germany 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](http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/artificial-intelligence-committee/artificial-intelligence/oral/75597.html). The flagship program has been [Industry 4.0](https://www.bmbf.de/pub/HTS_Broschuere_eng.pdf), but recently the strategic goal has shifted to [smart services](https://www.gtai.de/GTAI/Navigation/EN/Invest/Industries/Industrie-4-0/Smart-service-world/industrie-4-0-smart-service-world-what-are-they.html), 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](https://www.humboldt-foundation.de/web/home.html), which promotes academic cooperation and attracts scientific talent to work in Germany, and the [Plattform Lernende Systeme](https://www.plattform-lernende-systeme.de/home-en.html" \t "_blank), 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](https://www.bundestag.de/dokumente/textarchiv/2018/kw26-de-enquete-kommission-kuenstliche-intelligenz/560330) 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](https://www.bmvi.de/SharedDocs/EN/publications/report-ethics-commission.pdf?__blob=publicationFile) in June 2017). |
| **India** | 2018 | [National AI Strategy](http://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf) | India has taken a unique approach to its [national AI strategy](http://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf) by focusing on how India can leverage AI not only for economic growth, but also for social inclusion.  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.  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.  https://miro.medium.com/max/481/1*6PlLKJuIVtT1zhqevQpUkg.png  The strategy 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** | 2018 | [Artificial Intelligence: At The Service of Citizens](https://ai-white-paper.readthedocs.io/en/latest/) | 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](https://ai-white-paper.readthedocs.io/en/latest/), was created by a [task force](https://ia.italia.it/en/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](https://www.consorzio-cini.it/index.php/it/laboratori-nazionali/artificial-intelligence-and-intelligent-systems) (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. |
| **Russia** | 2019 | * National AI Development Strategy (Draft) * [Model Convention on Robotics and AI (Draft)](http://robopravo.ru/modielnaia_konvientsiia) | Russia does not have yet its own national AI strategy.  In February 2019 the President Vladimir Putin gave instructions to the government regarding development of the national AI strategy.  On May 30, 2019, it was announced that the development of AI in Russia would become a separate federal project within the national program “Digital Economy”. The project is planned to require financing appr. up to 90 billion RUB for 6 years.  Currently the draft document contains the following provisions:  • Support for research in the field of algorithms and mathematical methods in the field of AI;  • By 2024, setting up of a hardware-software platform for the domestic AI system should begin in Russia. Creating software for AI in five classes: computer vision systems, natural language processing, speech recognition and synthesis, recommendation systems and intelligent decision systems and systems based on promising methods of technology development;  • By 2030, the first data center is planned to be set up for AI tasks using russian processors. Development of domestic high-speed and energy-efficient microprocessors that are optimal for AI tasks;  • Increasing the number and quality of training (development of programs for cultivating AI skills within school education, introduction of a training system in the field of data analysis at universities);  • Creating a regulatory framework for the application of artificial intelligence technologies.  In addition to its own funds, the Russian Direct Investment Fund plans to attract $2 billion from international partners, including the UAE.  The Research Center for Robotics Regulation Issues introduced the Model Convention on Robotics. The Convention aims to combine the main approaches to regulation and initiate the adoption of the first international act on this matter. The document proposes the rules for the development, creation and use of robots of all categories, regardless of their purpose, degree of danger, mobility or autonomy.  It also calls for the adoption of a supranational regulatory institution at the UN level. |
| **Sweden** | 2018 | [National Approach for Artificial Intelligence](https://t.co/s2vUaaacdl) | Sweden released its strategy, [National Approach for Artificial Intelligence](https://t.co/s2vUaaacdl), 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](https://www.vinnova.se/contentassets/55b18cf1169a4a4f8340a5960b32fa82/vr_18_08.pdf) of Sweden’s capabilities and potential in AI. |
| **UAE** | 2017 | National AI Strategy | The UAE national AI strategy is aimed at implementing AI in different aspects: transport, education, research, space, industry.  For the first time in the world the UAE Ministry of Artificial Intelligence was established and appointed the first Minister of AI - the 27-year-old Omar Ben Sultan Al-Olama.  The national AI strategy is the initiative of the larger UAE Centennial Plan 2071, and its main goal is to use AI to improve public administration processes. The government will invest in AI technologies in nine aspects: transport, healthcare, space exploration, renewable energy, water, technology, education, environment and traffic. |
| **United Kingdom** | 2018 | [Artificial Intelligence Sector Deal](https://www.gov.uk/government/publications/artificial-intelligence-sector-deal) | The British government released the [AI Sector Deal](https://www.gov.uk/government/publications/artificial-intelligence-sector-deal) in April 2018. It is part of the government’s larger [industrial strategy](https://www.gov.uk/government/topical-events/the-uks-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](https://www.turing.ac.uk/), 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.  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?](https://publications.parliament.uk/pa/ld201719/ldselect/ldai/100/100.pdf) 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](https://www.parliament.uk/business/committees/committees-a-z/lords-select/ai-committee/news-parliament-2017/government-response-to-report/) to the House of Lords that comments on each of the recommendations in the report. |
| **USA** | 2016  2019 | * [US Department of Defense’s National AI Strategy](https://media.defense.gov/2019/Feb/12/2002088963/-1/-1/1/SUMMARY-OF-DOD-AI-STRATEGY.PDF) * Report [“Preparing for the Future of Artificial Intelligence”](https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf) * Report [“National Artificial Intelligence Research and Development Strategic Plan”](https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/national_ai_rd_strategic_plan.pdf) * Report [“Artificial Intelligence, Automation, and the Economy”](https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/Artificial-Intelligence-Automation-Economy.PDF) | During the final months of Barack Obama’s presidency (the end of 2016), the White House laid the foundation for a US strategy in three separate reports:   * The first report [“Preparing for the Future of Artificial Intelligence”](https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf) made specific recommendations related to AI regulations, public R&D, automation, ethics and fairness, and security. * The second report [“National Artificial Intelligence Research and Development Strategic Plan”](https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/national_ai_rd_strategic_plan.pdf) outlined a strategic plan for publicly funded R&D in AI. * The third report [“Artificial Intelligence, Automation, and the Economy”](https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/Artificial-Intelligence-Automation-Economy.PDF) examined in further detail the impact of automation and what policies are needed to increase the benefits of AI and mitigate its costs.   Michael Kratsios, Deputy Assistant to the President for Technology Policy, [outlined the President’s approach to AI](https://www.whitehouse.gov/wp-content/uploads/2018/05/Summary-Report-of-White-House-AI-Summit.pdf). He announced the government has four goals:  (1) maintain American leadership in AI,  (2) support the American worker,  (3) promote public R&D,  (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.  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.  In 2019, [the US Department of Defense’s National AI Strategy](https://media.defense.gov/2019/Feb/12/2002088963/-1/-1/1/SUMMARY-OF-DOD-AI-STRATEGY.PDF) was published, which sets the following priorities:   * Ensuring AI endures competitive military advantage; * Partnering with leading private sector technology companies, academia, and global allies and partners; * Leading in military ethics and AI safety; * Recruiting and cultivating world-class AI talents in order to accumulate expertise to use the capabilities of AI; * Establishing new accelerated learning experiences in AI across the Department of Defense at all levels of professional education and training. |