وزارة التحول الرقمي والابتكار وعصرنة الإدارة

The Ministry of Digital Transformation, Innovation and Modernization of Administration

The National Artificial Intelligence Strategy of Mauritania

2024-2029

DRAFT

1. Foreword

Draft

by

The **M**inistry of **D**igital **T**ransformation,

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The strategy for integrating Artificial Intelligence (AI) in Mauritania for the period **2024-2029** focuses on **5** strategic priorities, **12** objectives, and **30** measures aimed at:

1. Developing human skills in Artificial Intelligence (AI) and Data Science through the creation of training and certification programs, expanding the range of training offerings at various academic levels, and supporting the professional integration of AI and Data Science experts.

2. Promoting research and innovation in AI by funding equipment for universities, providing public support for AI and technological entrepreneurship initiatives, and establishing sustainable financing mechanisms for research and innovation.

3. Enhancing regional and international collaborations by facilitating exchanges of students and experts, developing rules for data sharing, and participating in global data governance and responsible AI initiatives.

4. Establishing data governance for AI by aiming to collect and secure datasets, enhancing skills in data management, and creating robust governance to support AI research.

5. Addressing ethical issues of AI by adopting policies compliant with data protection regulations and enhancing cooperation for AI regulation.

This overarching strategy aims to position Mauritania as a key player in the field of AI by developing its human resources, fostering research and innovation, promoting international collaborations, ensuring effective data governance, and advocating for the ethical use of technology.

In addition to these strategic priorities, Mauritania plans to implement several concrete projects to apply artificial intelligence in key sectors of its development. These projects include initiatives in **healthcare**, **education**, **agriculture**, **fishing**, **transport**, **energy**, and **defence**, highlighting the use of AI to address crucial issues.

In healthcare, AI will enable early disease detection and monitoring of chronic illnesses. In education, an adaptive platform and teacher tracking system will enhance learning. For agriculture, water management and agricultural yield estimation will be optimized. Fishing will benefit from catch forecasts and marine area monitoring. By integrating AI into transportation, Mauritania advances its digital transformation, unlocking new opportunities and boosting global competitiveness. Additionally, using AI to optimize energy production enhances resource efficiency and reduces greenhouse gas emissions. By incorporating AI into defense operations, Mauritania proactively safeguards its national interests while bolstering sustainable regional security efforts. These projects aim to modernize and improve the management of resources and essential services for Mauritania's sustainable development.

3. Introduction

The national artificial intelligence strategy of Mauritania represents a crucial step in the country's digital transformation and economic development. In response to the challenges and opportunities posed by the advent of artificial intelligence (AI), this strategy aims to position Mauritania as a key player in technological innovation and to fully harness the potential of AI for the well-being of its citizens.

This strategy holds paramount importance for Mauritania as it aims to catalyze economic growth, drive innovation, optimize public services, and enhance the competitiveness of the private sector. By strategically investing in the field of artificial intelligence, the country is committed to modernizing its infrastructure, streamlining the use of its resources, and fostering the emergence of an ecosystem conducive to the development of startups and innovative technology companies. This approach is based on a foundation of essential principles including strengthening skills in AI and Data Science, fostering research and innovation in AI, promoting both regional and international cooperation, establishing data governance standards specifically tailored to artificial intelligence, and finally, advocating for and promoting ethics in all AI applications.

The implementation of this strategy is based on an ambitious vision and clear objectives, supported by a firm commitment to digital inclusion and sustainable development. Through this initiative, Mauritania aims to seize the opportunities offered by the technological revolution while ensuring that its benefits accrue to the entire society.

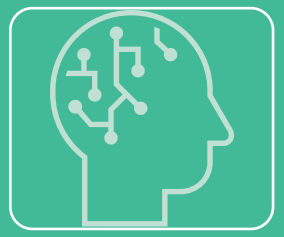
3.1 What is AI ?

Artificial intelligence (AI) is transforming every aspect of our lives. It influences how we work and play. It promises to help solve global challenges like climate change and access to quality medical care. Yet AI also brings real challenges for governments and citizens alike. OCDE

Ability of a machine to use algorithms to analyse their environment, learn from data and use what has been learnt to take actions and make decisions – with some degree of autonomy – to achieve specific goals. CEDEFOP

The systems of AI can be classified into two broad categories:

Narrow AI (Weak AI): This type of AI is designed to perform a specific task or a narrow range of tasks. Examples include voice recognition systems, recommendation algorithms, image recognition software, and autonomous vehicles. Narrow AI systems excel in their specific tasks but do not possess general intelligence or consciousness.



General AI (Strong AI): General AI refers to machines that exhibit intelligence similar to humans across a wide range of tasks and domains. These hypothetical systems would have the ability to understand and learn from diverse experiences, apply knowledge to new situations, engage in complex reasoning, and demonstrate creativity. General AI remains an ongoing subject of research and development, and such systems do not currently exist.

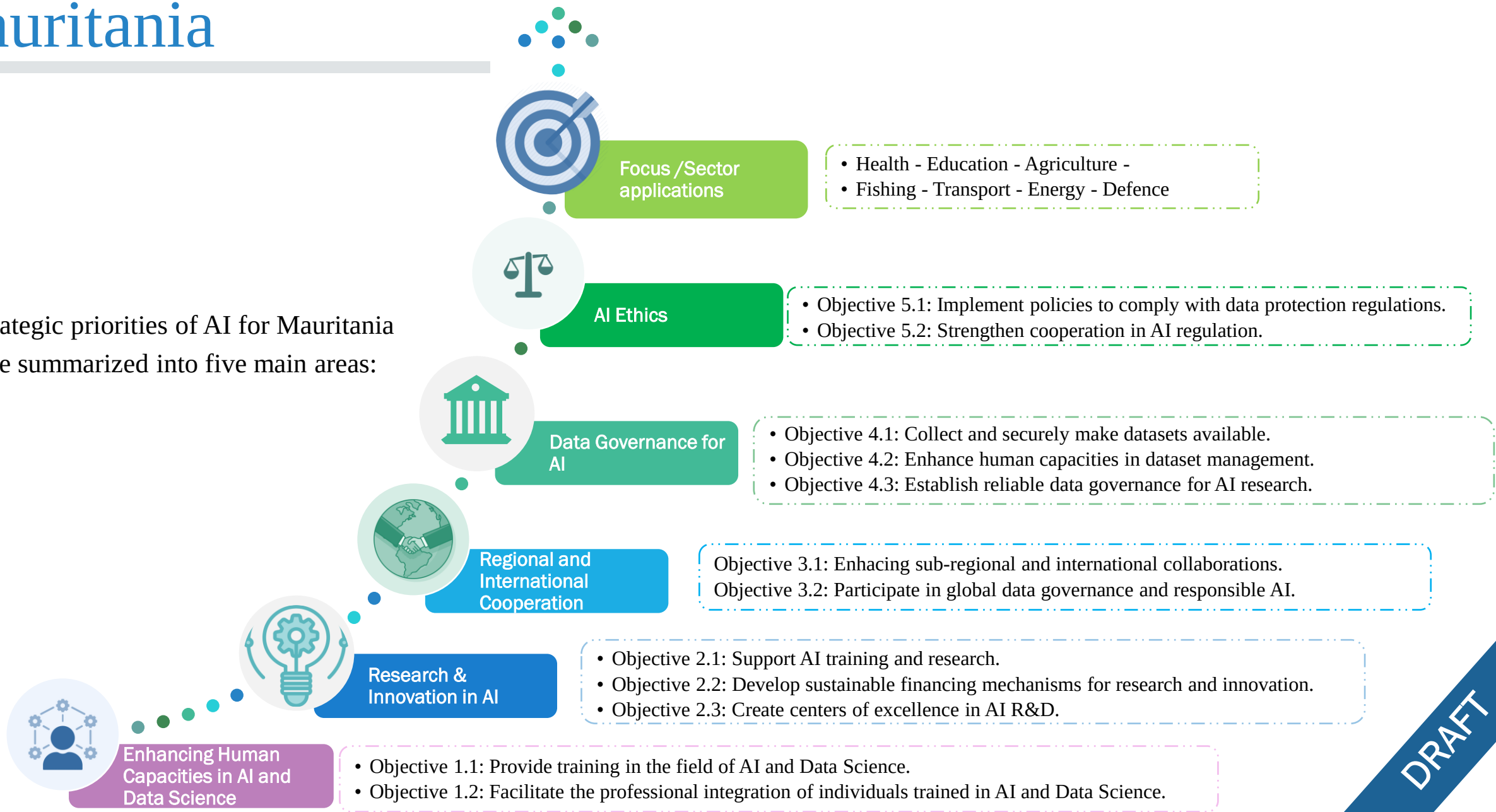
4. Current Situation in Mauritania

Mauritania stands at a crucial crossroads in its technological and economic development, as evidenced by its scores in key indices such as the e-Government (e-Gov) Index , the Global Competitiveness Index (GCI), and the Global Innovation Index (GII). With an e-Gov score of 0.31 in 2022, placing the country at 172nd out of 193 evaluated countries, Mauritania demonstrates untapped potential in the field of e-governance. Similarly, its GCI score of 18.94 in 2022 and its ranking at 133rd highlight the need to strengthen economic competitiveness. Regarding innovation, Mauritania presents a score of 13.52 in the 2023 GII, ranking 127th, indicating a need for impetus in the field of innovation.

These figures highlight the importance for Mauritania to quickly integrate into the world of artificial intelligence (AI). By strengthening its capacity in e-government, economic competitiveness, and innovation, the country can create an environment conducive to the adoption and effective utilization of AI. AI offers significant opportunities to improve government services, boost the competitiveness of Mauritanian businesses in the global market, and encourage innovation in various sectors. Therefore, by leveraging AI, Mauritania can accelerate its economic and technological development while enhancing its position on the international stage.

5. Strategic priority of Mauritania

The strategic priorities of AI for Mauritania can be summarized into five main areas:



1 Enhancing Human Capacities in AI and Data Science

We aim to develop skills and expertise in the field of AI and Data Science by investing in training and professional integration of individuals to meet the growing needs of the sector and foster innovation.

Objective 1.1: Provide training in the field of AI and Data Science

Objective 1.2: Facilitate the professional integration of individuals trained in AI and Data Science

1 Objective 1.1 : Provide training in the field of AI and Data Science

Measures :

- Implementation of learning platforms to provide an interactive and accessible learning environment for all learners interested in AI and Data Science.
- Increasing the number of AI courses at various academic levels (post-secondary, Bachelor's, and Master's) to meet the growing demand for qualified professionals in these fields.
- Expanding AI-focused projects in doctoral programs to encourage research and innovation in specialized areas of AI.
- Organizing training and certification programs in the public sector to enable public sector professionals to acquire skills in AI and Data Science and remain competitive in the job market.

1 Objective 1.2 : Facilitate the professional integration of individuals trained in AI and Data Science

Measures :

- Organization of recruitment forums and specific job fairs to connect individuals trained in AI and Data Science with potential employers and facilitate their professional integration.
- Implementation of corporate internship programs to foster the acquisition of practical skills and provide learners with the opportunity to apply their knowledge in a professional environment.
- Establishment of interdisciplinary university curricula linked to sectoral needs to ensure that AI and Data Science training meets the requirements of the job market and technological advancements.

2 Research & Innovation in IA

The main objective of this strategic priority is to support research and innovation in AI by promoting the development of advanced technological solutions and encouraging collaborations between academic and industrial stakeholders.

Objective 2.1: Support training and research in AI

Objective 2.2: Develop sustainable financing mechanisms for research and innovation

Objective 2.3: Create centers of excellence in AI R&D

2 Objective 2.1 : Supporting training and Research in AI

Measures :

- Equipping universities and promoting partnerships in AI to ensure an environment conducive to research and learning.
- Prioritized public support for AI and tech entrepreneurship to stimulate innovation and the emergence of startups specialized in AI.
- Establishment of funding to attract talent and encourage individuals to engage in research and innovation activities in AI.
- Encouragement of academia-industry collaboration to foster collaboration between the academic and industrial sectors in the field of AI.

2 Objective 2.2 : Develop sustainable financing mechanisms for Research and Innovation

Measures :

- Grants and incentives for AI technology funds to financially support research and innovation projects in AI.
- Enhancement of institutional support for entrepreneurship and innovation structures to foster the emergence of new players and the growth of innovative AI companies.
- Support for research and development projects leveraging data to encourage the effective use of data in AI research and innovation activities.

2 Objective 2.3 : Create centers of excellence in AI R&D

Measures :

- Creation of clusters and centers of excellence in AI to bring together key stakeholders in the field, promote exchange of expertise, and stimulate innovation.
- Mechanisms for temporary detachment of academics to AI centers of excellence to encourage knowledge sharing and collaboration between researchers and practitioners.
- Establishment of an Artificial Intelligence Institute to concentrate resources and efforts on cutting-edge research and development projects in AI.

3 Regional and International Cooperation

This priority aims to strengthen regional and international collaborations and exchanges to facilitate the sharing of knowledge, resources, and best practices in AI.

Objective 3.1: Enhacing sub-regional and international collaborations

Objective 3.2: Participate in global data governance and responsible AI

3 Objective 3.1 : Enhacing sub-regional and International Cooperation

Measures :

- Promotion of student, expert, and academic exchanges to facilitate the sharing of knowledge and the development of diversified expertise in AI on a global scale.
- Development of regulations and infrastructure for data sharing to facilitate collaboration and access to data necessary for AI research and innovation.
- Enhancement of institutional cooperations and collaborations to encourage strategic partnerships between academic, industrial, and governmental actors in the field of AI.

3 Objective 3.2 : Participate in global data governance and responsible AI

Measure :

- Encouraging active participation of national experts in international studies to contribute to the development of responsible standards and practices in AI and data management globally.

4 Data Governance for AI

This priority aims to ensure secure collection, storage, and sharing of data to support research and innovation in AI.

Objective 4.1: Collect and securely make datasets available

Objective 4.2: Enhance human capacities in dataset management

Objective 4.3: Establish reliable data governance for AI research

4 Objective 4.1 : Collect and securely providing datasets

Measures :

- Definition and implementation of procedures for collecting and providing data to ensure their integrity, security, and accessibility to authorized parties.
- Sharing data infrastructures to promote collaboration and exchange of information while ensuring the protection of sensitive data.
- Utilization of encryption technologies and data protection to enhance the security and confidentiality of stored and exchanged information.

4 Objective 4.2 : Enhance human capacities in dataset management

Measures :

- Establishment and implementation of a capacity-building program to train professionals in the effective and ethical management of big data.
- Offering training sessions and workshops on data management to develop the technical and strategic skills necessary for optimal use of datasets.

4 Objective 4.3 : Establish reliable data governance for AI Research

Measures :

- Creation of a public data space for secure information sharing among AI research stakeholders, thus fostering collaboration and innovation.
- Implementation of specific cloud platforms tailored to sectoral needs to facilitate storage, processing, and access to data in a secure and scalable environment.

5 AI Ethics

This strategic priority aims to ensure that the development and use of artificial intelligence adhere to rigorous ethical and legal standards, including the protection of personal data and compliance with relevant regulations.

Objective 5.1: Implement policies to comply with data protection regulations

Objective 5.2: Strengthen cooperation in AI regulation

5 Objective 5.1 : Implement policies to comply with data protection regulations

Measure :

- Training employees in privacy management practices to raise awareness and accountability among internal stakeholders regarding the protection of personal data and the importance of compliance with regulations.

5 Objective 5.2 : Strengthen cooperation in AI regulation

Measure:

- Participating in the development of common standards and ethical frameworks through international working groups to contribute to the establishment of shared ethical guidelines and principles globally.

6 Focus /Sector applications

Mauritania is positioning itself at the forefront of innovation by integrating artificial intelligence (AI) strategies into key sectors of its development. This strategic direction encompasses a diverse range of areas, including **healthcare, education, agriculture, fishing, transport, energy, and defence**. Each of these sectors will benefit from specific AI projects designed to enhance services, optimize processes, and stimulate the country's economic growth.

6.1 Healthcare

In the field of healthcare, Mauritania's artificial intelligence strategy unfolds along three major axes. Firstly, it focuses on **early disease detection through the analysis of medical images**, providing precise tools to identify conditions at their earliest stages. Secondly, **a system for monitoring and predicting chronic diseases** is established, enabling proactive and personalized management of long-term pathologies. Lastly, **telemedicine and remote care** become essential components, facilitating access to healthcare services in remote regions and improving the relevance of medical interventions conducted remotely.

6.1.1 Early disease detection through the analysis of medical images

Implementation of an AI system for early detection of signs of diseases from medical images such as X-rays, MRIs, and CT scans, including:

- Spotting anomalies or precursors of heart diseases.
- Detecting early stages of cancer.
- Identifying neurological disorders at an early stage.

6.1.2 System for monitoring and predicting chronic diseases

A project aimed at developing an AI system for real-time monitoring of medical data from patients with chronic diseases such as diabetes, hypertension, cardiovascular diseases, or pulmonary diseases. The AI will analyze this data to:

- Identify trends in health parameters.
- Predict acute episodes or potential complications.
- Recommend personalized interventions for each patient.

For example, the system would alert doctors and patients in case signs of decompensation are detected, thus enabling proactive disease management and reducing emergency hospitalizations.

6.1.3 Telemedicine and relevant remote care

The virtual medical consultations project aims to improve accessibility to healthcare. It is divided into two main axes:

- **Online Consultations**: Patients will have the opportunity to consult with doctors and other healthcare professionals via teleconsultation platforms. They can discuss their symptoms, receive advice, and prescriptions if necessary.
- **Remote Monitoring of Chronic Diseases**: This aspect of the project will enable patients with chronic diseases to benefit from regular remote monitoring. Connected devices will be used to monitor their vital parameters such as blood pressure and blood sugar levels, and this data will be shared with their doctors for appropriate follow-up. For example, the project includes the implementation of an AI system to analyze this data and recommend personalized interventions if necessary, thereby reducing the risks of complications and emergency hospitalizations.

6.2 Education

Mauritania is firmly committed to integrating artificial intelligence (AI) into the field of education, with targeted initiatives aimed at benefiting all stakeholders in the education system. On one hand, AI will be used to enhance student learning by offering personalized tools, interactive resources, and programs tailored to their specific needs, thereby promoting their academic success. On the other hand, teachers will also benefit from AI, which will assist them in creating innovative educational content, analyzing student performance, and personalizing teaching based on individual learner progress.

At the institutional level, AI will be employed in educational institutions to optimize resource management, course planning, and decision-making based on precise data and in-depth analyses. Additionally, a crucial aspect of AI intervention in education in Mauritania will be the development of multilingual translation solutions. This initiative aims to promote linguistic cohesion by facilitating communication and access to educational resources in the various languages spoken in the country, thus contributing to a more inclusive and equitable education for all learners.

6.2.1 AI serving students

As part of its commitment to quality education, Mauritania plans to deploy an integrated artificial intelligence (AI) strategy to significantly enhance educational pathways. This ambitious project includes several areas of focus:

- **Personalised Learning**: AI will be deployed to analyse past performance, learning preferences, and specific needs of each student, thereby recommending tailored activities and resources, providing a bespoke educational experience.
- **Online Learning Platform**: An online learning platform will be developed, integrating AI to offer personalised educational content, tailored to the pace and individual needs of each learner.
- **Programming and Continuing Education**: The project will also include the integration of specific programming training and continuous education into the educational system, thus preparing students for essential digital skills.
- **Personalised Support**: Smart tutoring systems using AI will be deployed to provide individualised support to students, thereby promoting their academic success.
- **Facilitated Interaction**: AI-based conversational agents will be implemented to facilitate interaction and assistance for students in their learning.
- **Accurate and Instant Assessment**: Automated formative assessment systems using AI will provide precise and instant feedback to students on their progress and skills.
- **Optimised Coordination**: Lastly, AI-based learning network orchestrators will ensure coordination and optimisation of educational processes on a large scale, thus ensuring overall efficiency in the education system.

6.2.2 AI serving teachers

This project aims to introduce innovative training approaches for teachers, specially designed to address the challenges related to artificial intelligence (AI) in the field of education. These initiatives will include:

- **Personalized training through adaptive learning and assessment**: Helping teachers personalize and enhance each student's learning experience using adaptive learning methods and personalized assessments.
- **Plagiarism detection**: Implementing AI-based tools and techniques to detect plagiarism and promote academic integrity within educational institutions.
- **Classroom monitoring**: Utilizing AI-based monitoring systems to effectively monitor classroom interactions, provide real-time feedback, and enhance student engagement.
- **Classroom orchestration**: Developing classroom orchestration solutions that integrate AI elements to optimize the organization of pedagogical activities, time management, and collaboration among students.

6.2.3 AI serving institutions

This project aims to harness artificial intelligence (AI) technologies to strengthen the capacities of educational institutions and empower them in the adoption and effective use of AI systems. Here are the various aspects of the project:

- **Admissions**: Utilizing AI to enhance student selection processes during admissions by identifying candidates best suited to the institution's specific criteria.
- **Course and schedule planning**: Developing AI programs to optimize course planning, scheduling, and timetable programs, thus enabling efficient management of resources and academic activities.
- **School security**: Implementing AI systems to enhance school security, particularly through intelligent monitoring of infrastructures and access points.
- **Early identification of at-risk students**: Using AI to detect early signs of struggling or at-risk students, to implement appropriate preventive interventions.
- **e-Proctoring**: Deploying AI-based e-Proctoring solutions to ensure effective and secure monitoring of remote exams, ensuring the integrity of assessments.
- **Teacher assignments**: Proposing teacher assignments based on their skills, aptitudes, and institutional choices, through AI-driven analyses for optimal allocation of human resources.

6.2.4 Multilingual translation for linguistic cohesion in Mauritania

This project aims to leverage advances in artificial intelligence to facilitate translation between Mauritania's national languages (Hassaniya, Pulaar, Soninke, and Wolof) to Arabic and French. Using advanced natural language processing techniques, such as pretrained language models and neural networks, the automatic translation system will enable speakers of local languages to communicate more effectively in various contexts, from public administration to business exchanges. The goal is to create an intuitive user interface that provides accurate and fluent translations, thereby enhancing linguistic and cultural cohesion within Mauritania while promoting better understanding and harmonious communication among the country's diverse linguistic communities.

6.8 Agriculture

The Mauritanian agriculture sector is poised for a major transformation through the integration of artificial intelligence (AI) in various strategic areas. One of the key focuses of this technological revolution is the implementation of an intelligent water management system for the Senegal River. This initiative aims to optimize the real-time use of water resources by integrating meteorological data, forecasting models, and IoT sensors for precise and efficient irrigation.

Another significant advancement is the creation of an AI-based agricultural yield estimation platform. This platform analyzes vast datasets, including historical, meteorological, and soil data, to accurately predict crop yields. This allows farmers and policymakers to adopt more efficient farming practices and plan their activities accordingly.

In parallel, an AI system dedicated to early detection of plant diseases is under development. Using machine learning techniques and computer vision, this system can quickly identify signs of diseases or stress in crops, enabling early intervention to mitigate crop losses.

Finally, the use of AI for predicting resource availability such as water, soils, inputs, etc., as well as for production planning based on market demand, offers new opportunities for sustainable and profitable agriculture. These advancements position Mauritania at the forefront of smart agriculture, contributing to enhancing food security and stimulating the country's economic development.

6.3.1 Intelligent management system for the Senegal river's water

Within this approach, artificial intelligence will be leveraged for real-time monitoring of the hydrological parameters of the river, including flow rate, water levels, weather forecasts, and other relevant data. This system will have the capability to:

- Optimize the management of hydraulic infrastructures such as dams, irrigation canals, and reservoirs by adjusting water flows effectively and sustainably, based on the needs identified by AI.
- Predict seasonal fluctuations such as periods of flooding and drought, thereby enabling early planning and judicious use of the river's water resources for activities such as agriculture, livestock farming, provision of drinking water, and other essential needs.

6.3.2 Agricultural yield estimation platform

This project aims to radically transform the agricultural sector by providing farmers with accurate and tailored yield forecasts. Leveraging real-time updated climate data, soil quality information, and plant health data, it harnesses machine learning algorithms to analyze large datasets and extract relevant and useful insights.

The advantages of this project :

- Empowers farmers to make data-driven decisions
- Optimize resource allocation
- Increase crop yields
- Leading to improved productivity and profitability in agriculture

6.3.3 AI system for early detection of plant diseases

This groundbreaking project will have a significant impact on farmers and the entire agricultural sector in terms of operational efficiency, cost reduction, and yield improvement.

- **Increased operational efficiency**: With early detection of plant diseases by the AI-based system, farmers will be able to intervene quickly to limit the spread of diseases and reduce crop losses. This will result in more efficient crop management and better protection of yields.
- **Cost reduction**: By identifying diseases early on, the project will enable farmers to reduce costs associated with excessive or unnecessary agricultural treatments. Furthermore, by optimizing the use of resources such as pesticides and fertilizers, overall expenses can be reduced.
- **Yield improvement**: By limiting crop losses due to plant diseases, farmers will see a significant improvement in their yields. Proactive disease management will also help maintain crop quality, which can translate into higher selling prices in the market.

6.3.4 Forecast and agricultural planning for optimal resource management

This project aims to enhance the management of agricultural resources using advanced technologies to predict the availability of resources such as water, soils, agricultural inputs, etc. It includes the following actions:

- **Soil Component Detection**: The project incorporates innovative methods to detect and analyse key soil components, thus allowing for a better understanding of its composition and properties.
- **Water Quantity Prediction for Irrigation**: Using predictive models and climate data, the system will accurately estimate water requirements for crop irrigation, thus promoting optimal use of this valuable resource.
- **Estimation of Fertilizer Requirements**: By integrating data on crops, soils, and desired yields, the project will provide accurate estimates of fertilizer quantities needed to achieve production goals, while minimizing losses and environmental impacts.

6.4 Fishing

The integration of artificial intelligence (AI) in the fisheries sector in Mauritania will be a major step towards more efficient and sustainable management of marine resources. This progress will rely on key areas such as fish catch prediction systems, monitoring and management of marine protected areas, as well as satellite monitoring for detecting fishing fleets. Through these advancements, AI will accurately predict optimal fishing zones, monitor and protect sensitive marine ecosystems, and detect illegal fishing activities, thus ensuring a more sustainable and responsible exploitation of Mauritania's marine resources.

6.4.1 Fish catch prediction system

This project to develop an AI-based system for predicting fish catches in specific maritime zones brings significant benefits to the fishing sector in Mauritania:

- **Optimization of fishing operations**: By accurately predicting the areas where fishermen are most likely to make successful catches, the system allows for the optimization of fishing operations. This will enable fishermen to concentrate their efforts and resources where they are most likely to succeed, thereby improving their efficiency and profitability.
- **Reduction of costs associated with fish searching**: By guiding fishermen to predicted catch zones, the system helps to reduce the costs associated with searching for fish schools. This reduction in search costs will result in better profitability for operators in the fishing sector.
- **Sustainable management of marine resources**: By targeting catch zones more precisely, the system promotes more sustainable management of marine resources by avoiding overfishing in certain areas. This helps preserve fish stocks and ensures the long-term sustainability of fishing activities.
- **Improvement of yields and productivity**: By maximizing fishermen's chances of success, the system contributes to improving yields and productivity in the fishing sector in Mauritania. This can also have a positive impact on the local economy by stimulating growth and competitiveness in the fishing sector.

6.4.2 Surveillance and management of marine protected areas

This project of implementing an artificial intelligence (AI) system for monitoring and managing marine protected areas will bring several key benefits and contributions:

- **Proactive monitoring of marine activities:** Through the use of innovative technologies such as marine drones, underwater cameras, and IoT sensors, the system will collect real-time data on marine activities, biodiversity, critical habitats, and fishing practices. This will enable proactive monitoring and a deep understanding of the marine environment.
- **Detection of abnormal behaviors:** The system will be designed to detect abnormal behaviors, allowing for the rapid identification of suspicious or non-compliant activities in marine protected areas. This will help prevent illegal fishing, pollution, and other practices harmful to the marine ecosystem.
- **Monitoring of fish populations:** By monitoring fish populations, the system will contribute to more effective management of marine resources by identifying trends of overfishing or underfishing. This will help take appropriate conservation and management measures to ensure the sustainability of fish populations.
- **Reporting unauthorized human activities:** The system will be able to report unauthorized human activities, allowing competent authorities to intervene promptly to preserve the integrity of marine protected areas and enforce regulations.

6.4.3 Satellite surveillance for fishing fleet detection

This project focused on using satellite data and artificial intelligence techniques to monitor and detect fishing fleet activities brings several notable benefits and contributions:

- **Identification and tracking of fishing vessels**: The system can identify and track fishing vessels, enabling continuous and accurate monitoring of their activities at sea.
- **Detection of intensive fishing areas**: By analyzing satellite data and using artificial intelligence algorithms, the system can detect areas where fishing is particularly intensive, helping to understand the pressures on marine resources.
- **Analysis of fleet movement patterns**: The system analyzes the movement patterns of fishing fleets, providing insights into their behaviors and activities in different maritime zones.
- **Effective management of marine resources**: By providing accurate information on fishing fleet activities, the system helps authorities better manage marine resources, make informed decisions for sustainable ocean exploitation, and prevent overfishing.
- **Combatting illegal, unreported, and unregulated fishing**: The system contributes to combating illegal, unreported, and unregulated fishing by identifying vessels operating illicitly, strengthening surveillance and control measures.

6.5 Transport

Mauritania stands at a strategic crossroads where the integration of artificial intelligence (AI) in the transportation sector holds crucial significance for its economic development. Focusing on key projects such as managing inbound and outbound freight flows, clustering logistics data, and temperature detection for hydrocarbon storage, Mauritania demonstrates its commitment to modernize and optimize its transportation infrastructure. These initiatives aim to enhance operational efficiency, reduce logistical costs, and bolster operational security, thereby fostering international trade and ensuring sustainable resource management. By integrating AI into the transportation domain, Mauritania embarks on a digital transformation that paves the way for new opportunities and increased competitiveness on the global stage.

6.5.1 Management of goods flows for import and export

This project for managing goods flows for import and export using AI aims to revolutionize international trade logistics by employing advanced techniques to predict and analyze movements of goods. Key aspects include:

- Prediction of volumes and fluctuations in international markets.
- Assistance in strategic decision-making for businesses and governmental bodies.
- Optimization of inventory, reduction of transportation costs, and enhancement of logistic planning.
- Utilization of AI to optimize truck flows and improve transport operation efficiency.

6.5.2 Clustering of logistic data

The essential contribution of this project lies in its use of logistic data clustering to identify phenomena, patterns, and seasonal and sectoral trends, offering several advantages:

- **Identification of demand patterns**: By clustering logistic data using clustering techniques, the project enables the identification of demand patterns specific to different sectors and seasons. This helps businesses better anticipate demand fluctuations and adjust their strategies accordingly.
- **Stock optimization**: By understanding seasonal and sectoral trends, businesses can optimize their stock levels to more effectively meet fluctuating demand. This reduces the risks of overstocking or stockouts, while minimizing costs associated with stock management.
- **Improvement of logistic planning**: By understanding demand patterns and seasonal trends, the project facilitates better logistic planning. Businesses can optimize their transport routes, reduce waiting times, and improve warehouse management for a more efficient supply chain.
- **Anticipation of market needs**: By identifying sectoral trends, the project allows businesses to better anticipate market needs. This gives them a competitive advantage by enabling them to quickly respond to market developments and offer suitable products and services.

6.6 Energy

The prioritized strategy of Mauritania in the energy sector, focusing on optimizing gas reservoir management and harnessing hybrid wind-solar energy through artificial intelligence (AI), is of paramount importance for several reasons. Firstly, this approach enables the diversification of the country's energy sources, thereby reducing its dependence on fossil fuels and enhancing its energy resilience. Moreover, the use of AI to optimize energy production promotes more efficient utilization of natural resources while contributing to the reduction of greenhouse gas emissions. Finally, this strategy aligns with the modernization of the national energy infrastructure, thereby promoting sustainable development and the adoption of innovative technologies.

6.6.1 Optimization of gas reservoir management

This project aims to significantly improve the management of gas reservoirs using artificial intelligence (AI)-based solutions. The key benefits of this project include:

- **Stock optimization**: AI will enable fine-tuning of gas storage levels, considering demand fluctuations, seasonal trends, and specific user needs. This will avoid unnecessary overstocking while ensuring adequate gas availability.
- **Reduction of losses and waste**: Through real-time monitoring and predictive analysis, the project will help reduce gas losses due to leaks, measurement errors, or improper procedures. This will result in significant financial savings and more sustainable resource use.
- **Enhanced safety and compliance**: Integration of advanced AI-based monitoring systems will enable rapid detection of anomalies, leaks, or potentially hazardous situations in gas reservoirs. This will enhance facility safety and ensure compliance with regulatory standards.
- **Informed decision-making**: Advanced data analytics generated by AI will provide managers with valuable insights for informed decision-making regarding supply planning, preventive maintenance, and strategic adjustments based on market conditions.

6.6.2 Optimisation of hybrid wind-solar energy production

This project aims to optimize the production of electrical energy from a hybrid system combining wind and solar energy using artificial intelligence techniques. The main objectives are as follows:

- **Predictive weather analysis**: Using machine learning models to predict local weather conditions, including wind speed and direction, sunlight, cloud cover, etc.
- **Resource allocation optimization**: Based on weather forecasts, automatically optimize the distribution of production between wind turbines and solar panels to maximize total energy production and profitability.
- **Intelligent storage management**: Integrating energy storage systems (batteries) and using AI algorithms to control the flow of energy, store excess energy during periods of high production, and release stored energy when production is low.
- **Predictive maintenance**: Using AI to monitor the performance of equipment (wind turbines, solar panels, batteries) in real time and predict potential failures, allowing for planned preventive maintenance and reduced downtime.
- **Continuous optimization**: Applying machine learning algorithms to continuously adjust management strategies based on real-time data, past performance, and energy production goals.

6.7 Defence

Mauritania places strategic importance on the integration of artificial intelligence (AI) in the defence sector, as evidenced by its projects focused on the development of autonomous ISR (Intelligence, Surveillance, and Reconnaissance) systems for surveillance and reconnaissance, as well as on criminal detection via digital media. These initiatives mark a significant advancement in strengthening the country's defence capabilities, emphasizing the use of cutting-edge technologies to ensure national security. Autonomous ISR systems will enable advanced surveillance and increased responsiveness to emerging threats, while criminal detection via digital media will contribute to combating illegal activities and virtual threats. By integrating AI into these strategic areas, Mauritania positions itself as a proactive actor in protecting its national interests and promoting sustainable regional security.

6.7.1 Development of autonomous ISR (Intelligence, Surveillance, and Reconnaissance) systems for surveillance and reconnaissance

This project of developing autonomous ISR systems for surveillance and reconnaissance will bring several strategic and operational benefits:

- **Design of Autonomous ISR Systems**: The project aims to design and implement autonomous ISR systems, using drones or autonomous ground vehicles equipped with advanced surveillance capabilities based on artificial intelligence (AI).
- **Real-time Surveillance**: These systems will be deployed to gather real-time intelligence on enemy activities or conflict zones, enabling constant and effective surveillance of situations.
- **Enhancement of Reconnaissance**: By employing advanced AI-based reconnaissance capabilities, autonomous ISR systems will be able to identify and analyze enemy activities with increased precision, facilitating strategic decision-making.
- **Reduction of Risks to Personnel**: By deploying autonomous ISR systems, the project will reduce risks to personnel by avoiding exposing soldiers to dangerous situations during reconnaissance and surveillance missions.
- **Optimization of Military Operations**: By providing real-time intelligence and enhanced reconnaissance, autonomous ISR systems will help optimize military operations by providing accurate information for mission planning and execution.

6.7.2 Criminal detection via digital media

This project of criminal detection via digital media proposes an innovative approach to identifying and geolocating perpetrators of online criminal content. Here are its key strengths:

- **Digital media analysis**: The project analyzes digital media content to detect criminal activity, identifying suspicious behaviors and criminal patterns in online posts.
- **Natural language processing**: It incorporates advanced natural language processing techniques to analyze the text of messages and comments, thereby detecting threats and illicit activities concealed in publications.
- **Author geolocation**: The project implements geolocation methods to trace the origin of criminal content, thereby accurately locating individuals involved in these activities.
- **Support for competent authorities**: By providing accurate information on online criminal activities and geolocating the perpetrators, the project assists competent authorities in taking appropriate actions to combat digital crime.
- **Enhanced prevention and security**: By swiftly identifying threats and locating their perpetrators, the project contributes to enhancing online prevention and security, thus protecting digital media users and society as a whole.

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Appendix

Benchmarking for the national artificial intelligence strategy of **Mauritania** with 8 countries

- France
- Germany
- Turkey
- Qatar
- UAE
- Singapore
- Egypt
- Benin

France

AI strategy 2018-2025

Population	67.97 millions
PIB (2022) / $ USD	2.779 billions
e-Gov (2021)	Rang 19 Score 0.88
GII (2021)	Rang 11 Score 56.02
GCI (2021)	Rang 7 Score 97.6
Government AI Readiness Index (2021)	Rang 6 Score 76.07

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France AI strategy pillars

The AI strategy of France, articulated around six pillars, covers various aspects such as economic policy, research, employment, ethics, and social cohesion.

Data-driven economic policy

- Adoption of Sector Platforms
- Data Governance Strategy
- European Industrial Dynamics in AI
- European infrastructures for AI

Towards an agile research environment

- Creation of 3IA Institutes
- Integration of AI into various research domains.
- Increase in AI Research Investments

Challenges of AI on Work and Employment

- Seeking Complementarity between Human Work and AI
- Artificial Intelligence Training

AI for an Ecological Economy

- Environmental Impacts of Digital Technology
- Promoting Research and Innovation

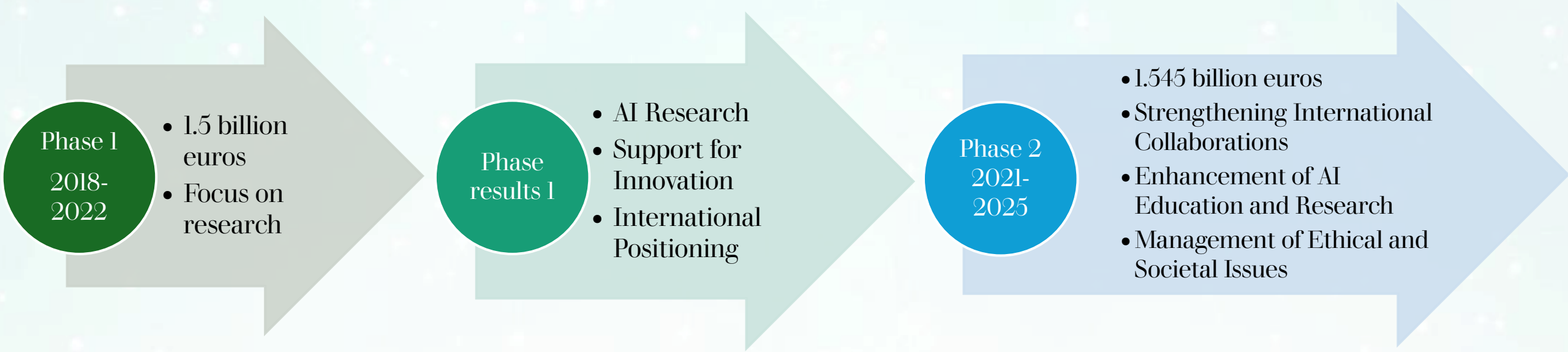
Inclusive and Diverse AI

- Support for Social Innovation in AI
- Promotion of Diversity and Inclusion
- Digital Mediation and Social Innovation

Focus

- Health
- Agriculture
- Transportation
- Defense and Security

France : Evaluation AI strategy



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Germany

Artificial Intelligence Strategy
2019-2025

Population	83.8 millions
PIB (2022) / $ USD	4.082 billions
e-Gov (2021)	Rang 22 Score 0.88
GII (2021)	Rang 8 Score 58.76
GCI (2021)	Rang 13 Score 97.41
Government AI Readiness Index (2021)	Rang 8 Score 75.26

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Germany AI strategy objectives

The German federal government sets the following objectives, all of equal importance (1/2) :

Research

Strengthening research in Germany and Europe to be drivers of innovation

Innovation

Hold innovation competitions and European innovation clusters

Startup

Transfer to businesses, strengthening of the Mittelstand

Favor

Encourage the creation of new businesses and lead them to success

Job

World of work and the job market: shaping structural change

Training

Strengthen vocational training and attract qualified labor/experts

Germany AI strategy objectives

The German federal government sets the following objectives, all of equal importance (2/2) :

Administration

Use of AI for tasks reserved for the State and administrative tasks

Sharing

Make data available and facilitate their use

Frame

Adapt the regulatory framework

Standard

Establish standards

Cooperation

Networking nationally and internationally

Dialogue

Engage in dialogue with society and continue to develop the policy framework

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Germany AI strategy objectives 2020 (Update)

Priority Axes:

Strengthen national research structures

European and international research cooperation

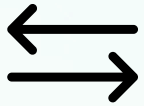
Interdisciplinary research and sustainable use

AI Research for Healthcare and Long-Term Care

Research on AI for environmental and climate protection

Making AI environmentally friendly

Aerospace AI Research



Research on AI for Mobility

AI in agriculture

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Germany AI strategy areas 2020 (Update)

Priority areas included :

Healthcare : 22 projects

- Maximum 36 month
- Period 2020-2023
- Financing of around 50 million euros.
- Projects will investigate the benefits of Smart Sensors, Smart Data Use, Smart Decision Support Systems and Smart Communication in clinically relevant application scenarios.

Agriculture: 36 projects

- Financing of approximately 44 million euros.
- Announced in February 2020.
- The projects aim to develop solutions for Agriculture, Nutrition Health, the Food Chain and Rural Areas.

Turkey

National artificial intelligence strategy 2021-2025

Population	84.98 millions
PIB (2022) / $ USD	907.1 milliards
e-Gov (2021)	Rang 48 Score 0.8
GII (2021)	Rang 39 Score 38.61
GCI (2021)	Rang 10 Score 97.5
Government AI Readiness Index (2021)	Rang 47 Score 60.51

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Turkey AI strategy priorities (1/2)

The National Artificial Intelligence Strategy (NAIS) was designed around 6 strategic priorities in line with both national policies and needs along with the AI strategy recommendations of international organizations

Training AI Experts and Increasing Employment in the Domain

Objective 1.1. Boost AI expert employment per sectoral demands.

Objective 1.2. Enhance university AI capacities and launch new programs.

Objective 1.3. Increase both the quantity and quality of AI students at all levels.

Objective 1.4. Offer pre-university students AI-related training tailored to their skills and interests.

Supporting Research, Entrepreneurship, and Innovation

Objective 2.1. Enhance public support for AI development and implement monitoring systems.

Objective 2.2. Increase both the quantity and quality of original AI initiatives.

Objective 2.3. Establish and expand AI-focused venture capital funds.

Objective 2.4. Create clusters and centers of excellence for advanced AI R&D and innovation.

Facilitating Access to Quality Data and Technical Infrastructure

Objective 3.1. Provide shared access to high-performance computing for AI research.

Objective 3.2. Set up a data governance system for AI and analytics.

Objective 3.3. Develop and share open-source AI software and algorithms.

Objective 3.4. Expand open data sharing.

Turkey AI strategy priorities (2/2)

The National Artificial Intelligence Strategy (NAIS) was designed around 6 strategic priorities in line with both national policies and needs along with the AI strategy recommendations of international organizations

Regulating to Accelerate SocioeconomicAdaptation

Objective 4.1. Implement agile legal harmonization for testing ethical scenarios.

Objective 4.2. Establish governance for fairness, privacy, and ethics in AI.

Objective 4.3. Enhance research on AI's socioeconomic impacts.

Objective 4.4. Improve data capacity for evaluating AI's effects.

Strengthening International Cooperation

Objective 5.1. Ensure active participation in global data governance and trustworthy AI initiatives.

Objective 5.2. Engage in cross-border projects, prioritizing the EU's multi-annual financial frameworks.

Objective 5.3. Conduct joint projects and collaborations with leading international organizations and strategic countries.

Accelerating Structural and Labor Transformation

Objective 6.1. Build a public AI ecosystem and infrastructure for faster analytics in public sectors.

Objective 6.2. Speed up AI adoption transformations in public institutions.

Objective 6.3. Restructure TÜBITAK AI Institute to accelerate AI ecosystem development.

Objective 6.4. Promote sector-specific AI applications and experience sharing.

Objective 6.5. Develop training and certification for new professions with sectoral collaboration.

Turkey AI strategy

Within the framework of these strategic priorities, 24 objectives and 119 measures were formulated. the NAIS aims to achieve several targets:

A contribution of 5% of GDP (Gross Domestic Product) from AI

An increase in employment in the field of AI

An increase in the number of AI graduates

Active participation in international regulatory studies in the field of AI.

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Qatar

National artificial intelligence strategy for qatar 2019-2030

Population	2.695 millions
PIB (2022) / $ USD	236.3 milliards
e-Gov (2021)	Rang 78 Score 0.71
GII (2021)	Rang 50 Score 33.37
GCI (2021)	Rang 27 Score 94.5
Government AI Readiness Index (2021)	Rang 34 Score 63.59

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Qatar AI strategy pillars

The National AI strategy of Qatar has six pillars: education, data access, employment, business, research, and ethics.

Race for Talent in the AI Era

Data Access is Paramount

The Changing Landscape of Employment

New Business and Economic Opportunities

Qatar – AI Focus Areas

Ethics and public policy

Qatar AI strategy focus

Qatar – AI Focus Areas

Arabic Language Processing	Applications in education, media, security, and other areas of strategic importance
National Security	Infer cybersecurity threats to the nation
Precision Medicine and Systems Biology	Transforming healthcare through personalized medicine using Qatar's unique genomic data for medical innovation.
Transportation and FIFA World Cup 2022	Establish an AI-powered infrastructure helping in management of the logistical challenges and improve the experience for fans in the stadium and spectators at home.
Food Security	Using AI-driven precision agriculture for Qatar's food security amidst climate change, necessitating customized solutions and contingency plans.
Oil and Gas	Create niche AI-products in the oil and gas sector

United Arab Emirates

UAE national strategy for artificial intelligence 2031

Population	9.441 millions
PIB (2022) / $ USD	507.1 milliards
e-Gov (2021)	Rang 13 Score 0.9
GII (2021)	Rang 32 Score 43.22
GCI (2021)	Rang 5 Score 98.06
Government AI Readiness Index (2021)	Rang 18 Score 70.42

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UAE AI strategy objectives

There are eight strategic objectives outlined in the AI Strategy, namely

Build a reputation as an AI destination.

Increase the UAE competitive assets in priority sectors through deployment of AI.

Develop a fertile ecosystem for AI.

Adopt AI across customer services to improve lives and government.

Attract and train talent for future job senabled by AI.

Bring world-leading research capability to work with target industries.

Provide the data and supporting infrastructure essential to become a test bed for AI.

Ensure strong governance and effective regulation.

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UAE AI strategy sectors

The current priority sectors are:

RESOURCES & ENERGY

LOGISTICS & TRANSPORT

TOURISM & HOSPITALITY

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Singapore

National artificial intelligence strategy advancing our smart nation journey, 2019-2023

Population	5.637 millions
PIB (2022) / $ USD	466.8 milliards
e-Gov (2021)	Rang 12 Score 0.91
GII (2021)	Rang 5 Score 61.47
GCI (2021)	Rang 4 Score 98.52
Government AI Readiness Index (2021)	Rang 2 Score 81.97

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Singapore National AI Projects

Intelligent Freight Planning : to optimise the movement of freight to improve productivity for businesses and traffic efficiency.

Seamless and Efficient Municipal Services: to make municipal services more responsive, reliable and timely.

Chronic Disease Prediction and Management : to help prevent and better manage chronic diseases.

Personalised Education through Adaptive Learning and Assessment: to help teachers to bettern customise and improve the learning experience for every student.

Border Clearance Operations : to strengthen border security while improving traveller experience.

Singapore: Building the AI Ecosystem

Triple Helix (Partnership) between the Research Community, Industry and Government.

- Key Thrust 1.1 Deepen investments in AI-related R&D across the research ecosystem
- Key Thrust 1.2 Drive partnerships between the research community and industry
- Key Thrust 1.3 Accelerate AI adoption in companies
- Key Thrust 1.4 Establish AI innovation testbeds

AI (Talent and Education) address the shortfall in the quantity and quality of talent across the entire range of AI-related job roles.

- Key Thrust 2.1 Train more Singaporeans for high-quality AI jobs
- Key Thrust 2.2 Teach basic computing skills and computational thinking to all
- Key Thrust 2.3 Attract top-tier global AI talent

enable quick and secure access to high-quality, cross-sectoral datasets.

- Key Thrust 3.1 Establish frameworks for public-private data collaboration
- Key Thrust 3.2 Establish trusted data intermediaries for public-private data exchange

strengthen trust in AI technologies to enable an environment for test-bedding, developing, and deploying AI solutions.

- Key Thrust 4.1 Establish citizens' trust on the responsible use of AI
- Key Thrust 4.2 Provide a top-class IP regime and accelerated patent initiatives for AI

work with international partners to shape the international AI discourse and develop the other horizontal enablers.

- Key Thrust 5.1 Contribute to global standards for AI-related policies and guidelines
- Key Thrust 5.2 Collaborate on multi-national AI projects

Egypt

Egypt national artificial intelligence strategy 2019-2030

Population	111 millions
PIB (2022) / $ USD	476.7 milliards
e-Gov (2021)	Rang 103 Score 0.59
GII (2021)	Rang 86 Score 24.22
GCI (2021)	Rang 23 Score 95.48
Government AI Readiness Index (2021)	Rang 62 Score 52.69

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Egypt AI strategy pillars

The strategy consists of the following four pillars

AI for Government

The rapid adoption of AI technologies through the automation of government processes

AI for Development

Apply AI in different economic sectors Priority sectors for phase 1 include:

- Agriculture/ Environment/ Water Management
- Healthcare
- Arabic Natural Language Processing (NLP)
- Economic Planning and Development
- Manufacturing and Smart Infrastructure Management.

Capacity Building

Prepare the Egyptian population for the age of AI at all levels, from general awareness to school, university and equivalent education, to professional training for technical and non-technical disciplines.

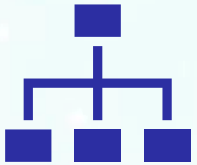
International Activities

Play a key role in fostering cooperation on the regional and international

Egypt AI strategy pillars

Supporting the four pillars are the following four enablers

Governance: including ethics, laws and regulations, tracking and monitoring.



Data: including collection, management and monetization strategies.

Ecosystem: including private sector, research and academia, and civil society.

Infrastructure: including fair access to compute, storage, networking, and other assets

Benin

National Artificial Intelligence and Big Data Strategy 2023-2027

Population	13. 35 millions
PIB (2022) / $ USD	17.4 milliards
e-Gov (2021)	Rang 149 Score 0.43
GII (2021)	Rang 120 Score 16.01
GCI (2021)	Rang 56 Score 80.06
Government AI Readiness Index (2021)	Rang 97 Score 41.37

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Formulation of the Strategic Framework

Strategic orientation 1: infrastructure Services and data

Organization and consolidation of the existing embryonic ecosystem and valorization of its results

Strategic objective 1: Implement use cases and high-impact initiatives

- Carry out preliminary actions
- Implementation of AI solutions

Strategic orientation 2: Specialized training

Development and increased support for the AI ecosystem

Strategic objective 2: Strengthen human capacities on AI and big data management

- Train in the field of AI and Data science
- Strengthening human capabilities on AI
- Strengthen human capacities on big data management

Strategic orientation 3: Research, Innovation and partnership

Promotion of the Beninese ecosystem, knowledge and know-how.

Strategic objective 3: Ensure better support for research, innovation, the private sector and cooperation in the field of AI

- Support training and research
- Develop sustainable funding mechanisms for research and innovation
- Strengthen sub-regional and international cooperation.

Strategic orientation 2: Governance

Development and increased support for the AI ecosystem

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Strategic objective 4: Update the institutional and regulatory framework for AI and big data management

- Adopt a text governing AI in Benin
- Establish a controlled environment development of AI initiatives
- Define and deploy a big data management model.

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Mauritania Artificial Intelligence Strategy Draft Review

https://forms.office.com/r/gp2wV48ZXj?origin=lprLink

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