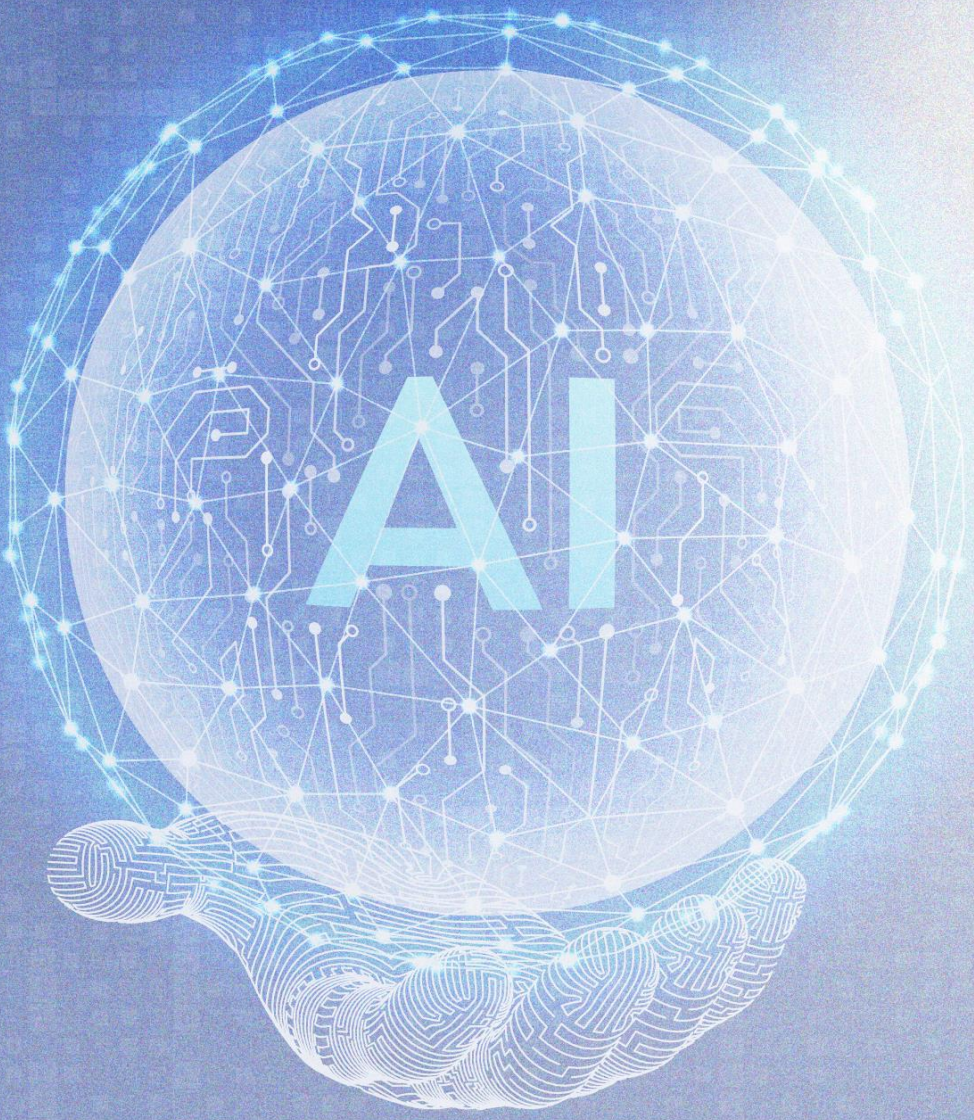
GOVERNMENT
OF REPUBLIC OF MOLDOVA

MINISTRY OF ECONOMIC
DEVELOPMENT AND DIGITALIZATION
OF REPUBLIC OF MOLDOVA

WHITE BOOK ON

DATA GOVERNANCE AND ARTIFICIAL INTELLIGENCE



CONTENTS

LISTA OF ABBREVIATIONS

AI	Artificial Intelligence
CAI	Council of Europe Committee on Artificial Intelligence
CDEP	OECD Committee on Digital Economy and Policies
CoE	Council of Europe
DGA	Data Governance Act
DG EAC	Directorate General Education, Youth, Sport and Culture
DIB	Data Innovation Board
DigComp	Digital Competence Framework for Citizens
DMA	Digital Markets Act
DSA	Digital Services Act
DTSM	Digital Transformation Strategy of the Republic of Moldova for the years 2023-2030
EDIH	European Digital Innovation Hubs
EU	European Union
EU AI Act	Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts
GDPR	General Data Protection Regulation
ICT	Information and Communication Technologies
JRC	European Joint Research Centre
MoEDD	Ministry of Economic Development and Digitalization of the Republic of Moldova
NGO	Non-Governmental Organization
OECD	Organization for Economic Development and Cooperation
ODA	Organization for the Development of Entrepreurship
ODIMM	Organization for the Development of SMEs

SMEs	Small and Mediul Entreprises
STEM	Science, Technology, Engineering, Mathematics
TEFs	Testing and Experimenting Facilities
UGAI	Universal Guidelines for AI
UNESCO	United Nations Education, Science and Culture Organization
White Book	White Book on Data Governance and Artificial Intelligence

EXECUTIVE SUMMARY

The White Book on Data Governance and Artificial Intelligence (White Book) presents the vision of accelerating the creation of a data governance ecosystem and the adoption of artificial intelligence (AI) for the development of the Republic of Moldova, stated as follows: ***An ecosystem of data governance and artificial intelligence for sustainable and durable growth, centered on human needs.***

The fundamental features of the vision are the commitment to sustainability, durable development and economic and social prosperity. This implies trust in the security and reliability of AI, emphasizing the role of the state in overseeing the ethical and responsible use of this technology. The focus is on excellence in the adoption of innovative technologies and in communicating the transformative impact of AI on economic growth and social well-being in the context of the Republic of Moldova's alignment with technological progress and the transition to a data and knowledge-based economy.

The vision also focuses on shaping the evolution of AI at the national level, with the aim of promoting economic progress, social welfare and democratic values, as well as contributing to global norms and standards. The national component of the vision aims to support sustainable economic development while respecting the fundamental rights of citizens and ensuring compliance with ethical principles regarding the impact of technology on individual freedoms and the prevention of discrimination. In addition, the vision includes an international component, aiming to position the Republic of Moldova as a valuable participant in the European and global ecosystem of AI and data governance.

Of fundamental importance for the fulfillment of its vision, the White Book defines the following general objectives, aligned with the priority axes of action included in the EU strategic documents and the development needs and opportunities at the national level:

1. Consolidation of the system of education, research and development and training of skills specific to data governance and AI;
2. Development of a resilient infrastructure and usable and reusable datasets (integrated data ecosystem);
3. Supporting measures to encourage the adoption of AI in society;
4. Establishing an appropriate data governance and AI and regulatory environment.

The transversal nature and potentially massive impact of AI in society determines the need for entities from business, academia, public administration and AI-focused organizations to join forces to participate in a permanent and productive dialogue on the adoption of AI, in the spirit of open governance principles, embodied in a unique and jointly assumed vision, of general and specific objectives validated on a generalized scale and of a transparent approach in the implementation of measures through dedicated initiatives, throughout the process.

Another important landmark refers to the principles underlying the development of technologies that incorporate AI and their adoption in society, with the objective of inclusive, sustainable development and social well-being. They reflect the strategic vision and convey a clear message regarding the place and role assigned to AI as a tool for the development of society. These are:

- Respect for human rights and democratic values (freedom, dignity, confidentiality and data protection, non-discrimination, equality, social justice);
- Human-centered, inclusive, non-discriminatory and unbiased AI (keeping AI under the control of human agency and taking responsibility for AI);
- Diversity, equality of opportunity and gender in the use of AI-based products or services;
- Transparency and trust (knowledge of data processing processes, trust in systems and applications, in the reasoning that supports AI-based decisions);
- Robustness, security and safety (system resilience to risk situations, cyber attacks);
- Accountability (mechanisms that ensure accountability for the development, implementation and use of AI systems);
- Partnership (international trusted AI projects and partnerships).

Thus, the White Book is based on the concrete actions proposed at the level of the European Union, but it is also anchored in the current situation and the national context, both in terms of data governance and AI, and the main related areas: research-development-innovation, the competitiveness of the economy, education, the digitalization of public administration and society.

The White Book represents a first exercise coordinated by the Ministry of Economic Development and Digitalization to bring together actors from the field and from related fields, as well as sectorial initiatives or policies, to catalyze initiatives regarding the creation of a framework for the adoption and development of an ecosystem of data governance and AI in the Republic of Moldova.

The White Book represents the preliminary instrument through which the actions of government institutions will align, connect and intensify to produce results, later outlined in a national policy document, action plan and governance framework assumed at the political level.

The White Book encompasses the concrete development needs of the Republic of Moldova in the field of data governance and AI, respecting both national and European legislative requirements and alignment with the community's macro strategic directions regarding supporting excellence and ensuring trust in technology, as determining factors in its adoption.

The Republic of Moldova is currently at the first iteration for the development of the strategic framework in the field of data governance and AI, although this has been a topic on the public agenda for several years, which concerns all environments, from the governmental level to local public administrations, from the academic environment to business. There are all the necessary premises for the development of an ecosystem of data governance and AI in the Republic of Moldova that would align with the actions of the member states of the European Union and represent a vector of economic growth.

The development of the White Book aims to align the Republic of Moldova with the initiatives and desires promoted by the international community and, in particular, those within the EU, so that the Republic of Moldova can contribute to and benefit from the development of an ecosystem of data governance and AI, effectively using the human capital and financial and technical resources currently available, as well as those that may be attracted as a result of aligning with global developments and trends.

METHODOLOGY

The White Book was developed by the Ministry of Economic Development and Digitalization of the Republic of Moldova (MoEDD), in consultation with stakeholders from the data governance and AI sector (public sector, private sector, ICT industry, academia, associative sector).

The conclusions expressed in the White Book are based on a previous assessment of public policy documents, reports and analytical documents available to the general public, as well as the national and international policy and regulatory framework related to data governance and AI.

In the preparation of the White Book, concrete recommendations formulated by international organizations were taken into account, especially for cases where states start processes of developing policy documents in this field, some of the most important being:

1. Making investments in research and development in the field of data governance and AI;
2. Promoting a digital ecosystem for data governance and AI;
3. Providing an enabling a policy environment for data governance and AI;
4. Strengthening human capacity and preparing for the transition to the labor market;
5. International cooperation.

The recommendations included in the White Book are designed to be implemented in the short and medium term, without which other initiatives and improvements in the field would not be feasible.

RECCOMMENDATIONS

R1. Proactive strategic management of the impact of AI in today's economic, social and technological context. The proactive approach aims to carefully evaluate the benefits and risks associated with AI, with the aim of positively influencing the quality of life, as well as the conditions of security, safety, health and ethics. The development of a proactive and customized policy framework, in line with specific needs, is an essential foundation for a proper integration of technology at the national level. Thus, an adequate balance between social progress and the evolution of the domestic technological ecosystem will be ensured.

R2. In the context of the prospect of joining the European Union, it is recommended to quickly adapt our regulations and governance regimes to keep up with the rapid changes in the field of data governance and AI. This adaptation must aim at maximizing growth and competition, promoting excellence in innovation, while ensuring the protection of safety, security, choice and fundamental human rights.

R3. Government must take a central role in facilitating the development and implementation of AI technologies in society, assuming the following roles:

- Regulation and Oversight - it is recommended to establish rules and regulations to ensure the ethical and responsible development, design, use and deployment of AI. This should include protecting personal data, preventing abuse and ensuring transparency in AI-based decisions.
- Investments in Research and Development - it is recommended to allocate financial resources for research in the field of AI, thus supporting innovation and the development of new technologies.
- Education and Training - the development and delivery of specialized training and courses is recommended to ensure that the workforce is ready for the AI-based economy.
- Promoting Ethics in AI - it is recommended to establish committees or bodies to debate and establish ethical standards in the development, design, use and deployment of AI.
- Public-Private Partnerships - collaboration between the public and private sectors is suggested to promote the development, design, use and deployment of AI solutions, thus leveraging the expertise and resources of both parties.
- Infrastructure - the development of appropriate infrastructure, including fast data networks and data centers, to support AI-based operations is supported.
- Public Awareness - it is recommended to launch information campaigns to educate the general public about the benefits and risks associated with AI.
- Economic Policies - it is recommended to create policies that encourage investments in start-ups and companies that develop AI technologies, thus supporting economic growth.

R4. It is essential to recognize and promote the increasingly crucial role of data-driven AI technologies in maximizing the benefits of data use and reuse. In the context of the evolving digital economy, the importance of data in shaping AI-based products and services is constantly growing. Given the rapid development of AI, it is recommended to pay more attention to the integration of these technologies in various fields, from scientific research and innovative digital products with global impact, to the improvement of digital public services. The effective promotion of data-driven AI technologies can significantly contribute to the achievement of national priorities and the advancement of various sectors through the benefits of innovation and efficiency.

R5. Facilitating data access and sharing is recommended to be prioritized as key to accelerating AI adoption. In order to stimulate the adoption of AI, it is recommended to strengthen open data access policies and strategies, thereby strengthening efforts to facilitate data access and sharing for the benefit of AI technology development.

R6. It is recommended to improve the existing regulatory and policy framework to ensure greater clarity on the scope, governance and technical safeguards for data sharing between the public and private sectors. This initiative will help incentivize organizations to share and use data more broadly in legitimate use cases, thereby facilitating data collaboration and innovation between the public and private sectors.

R7. It is recommended to identify organizations that can act as trusted data intermediaries, thereby facilitating efficient data fusion and distribution. It is suggested to evaluate the possibility of placing these trusted entities in both the private and public sectors, depending on the specifics of the sector, the type of data and their predominant location. This approach allows adaptability in selecting the most suitable entities for managing and brokering data in various contexts.

R8. It is recommended to develop and promote common data standards to ensure effective data interoperability. In order to facilitate data fusion, the collaboration and active involvement of companies in key sectors to identify and promote a common set of sector-specific data standards is essential. This approach will help create a coherent and unified framework, facilitating the efficient and consistent exchange of data between various entities. Thus, it is suggested to extend the capabilities of MCloud to run AI models locally, and at the same time to adjust national legislation to international standards, to enable cross-border transmission of data for the use of AI services outside the country (such as access to API subscriptions of OpenAI).

R9. It is recommended to establish a system for monitoring and publishing a meta-data catalog that includes the public-private datasets essential for the implementation of national AI projects. In this sense, it is suggested to expand the existing semantic catalog in the Republic of Moldova to include AI-related indexes, at the same time facilitating the access of companies and researchers to these critical data sets for the progress of AI projects.

R10. Given its recent candidate country status, Moldova is recommended to step up efforts to mainstream its data-driven development, thereby supporting key economic sectors and strengthening sound governance of data and emerging technologies such as AI. It is increasingly evident that AI will be the engine that will drive significant change in the near future. In this context, the authorities have the main role in facilitating, guiding and managing the development of AI, ensuring that it brings the desired positive effects. In this framework, adaptation to global trends, investment in AI research and the integration of AI tools are becoming increasingly essential, being essential to achieve a digital and technological transformation of society through AI.

R11. The White Book encourages the alignment of future policy documents on data governance and AI with the EU, OECD and UNESCO guidelines, which should govern the development, design, use, deployment and adoption of AI in various business sectors and across society, to create a principles-level reference framework and fundamental requirements that are grounded solidly and comprehensively.

R12. The following principles are encouraged that underlie the design, development, use and deployment of AI-based technologies and the adoption of these solutions in society, *such as:*

- Respect for human rights and democratic values;
- Human-centered, inclusive, non-discriminatory and unbiased AI;
- Diversity, equal opportunities and gender;
- Partnership and international cooperation;
- Respecting the rights of the child.

CONTEXT AND PROBLEM

Artificial Intelligence (AI) refers to the ability of machines to simulate human cognitive functions, learning and adapting autonomously to data and stimuli, and to perform tasks that traditionally require human reasoning, perception and interaction in order to optimize decisions and actions.[1]

Building on this definition, it follows the idea that AI has the immediate ability to transform the environment and the way humans interact and collaborate with technology. This interaction must be seen in the context of a significant improvement in the way people live and work. AI and robotics currently represent the emerging landmark technologies towards which most nations focus large components of their human and financial resources, in order to maximize the exploitation of the context of opportunities offered by these technologies.

The rapid global development of the field in recent years is proof of its strong potential to generate a new technological revolution in the near future, with significant impact and results in all areas of life, from education, medicine, agriculture, culture, entrepreneurship, to the daily organization of social interactions. AI can increase business productivity, improve government/decision-making efficiency, and reduce monotonous tasks. It can also help address many pressing global challenges, such as climate change and lack of access to quality education and health care. Along with its benefits, AI raises socio-economic and ethical considerations - among the most important are respect for human rights and democratic values. These concerns raise a number of challenges and opportunities.

AI is largely a set of highly complex algorithms developed by humans that can be applied similarly in different domains as long as large datasets or work scenarios are available. Machine learning algorithms have the ability to abstract the information present in this input data, but at the same time they will also pick up any imperfections (biases) or errors present in the data. In this context, the need to ensure a digital environment that allows access to data increases, ensuring an increased quality of data and their confidentiality. At the same time, it is extremely important that the directions in which the new algorithms are developed include information on the transparency and impartiality of the decisions made, their explanation, as well as methods of direct human intervention in the process of running autonomous systems.

Both internationally and nationally, AI has the great potential to change the level of economic development and the quality of life in all social strata, to significantly change the way the research and business environment develops and technological solutions are aimed to make working time and the quality of the products made more efficient.

At the same time, through the interpenetration of these two areas, starting from the opportunities to automate repetitive processes, mechanical, error-prone and not directly adding value, human

[1] The European Parliament has agreed to clarify a critical point of the AI Act by adopting the definition used by the Organization for Economic Co-operation and Development (OECD) - *Artificial intelligence system (AI system) means a machine-based system that is designed to work with different levels of autonomy and which can, for explicit or implicit objectives, generate results such as predictions, recommendations or decisions that influence physical or virtual environments.*

creative potential will truly find its support pillar capable of allowing each of us to develop fast and effective solutions for the benefit of the whole community. The reduction of transit times and

the possibility of real-life communications regardless of location have led to the creation of a favorable context for the exchange of ideas and technologies, unprecedented in human history. The developed countries of the world are already massively investing human and financial resources in the field of AI, realizing the innovative capabilities of AI that will lead to the next global technological revolution.

The use of AI-based technologies is expected to bring economic, social, environmental and public health benefits to several segments of society, such as:

● ***Citizens*** will be able to benefit from many of the positive effects of the adoption of AI applications in society. Examples of population-based benefits include:
(i) better healthcare;
(ii) safer and more environmentally friendly transportation (mobility);
(iii) improved public services;
(iv) better working conditions.

● ***The public sector*** can benefit from multiple advantages, such as:
(i) improving the services offered and increasing the degree of satisfaction of citizens;
(ii) the development of employees' digital skills;
(iii) the implementation of solutions for the access of the interested public and companies to open databases in different fields;
(iv) increasing the Government's ability to analyze available data for informed decision-making and to provide proactive and personalized services;
(v) implementation of intelligent systems for tax collection, detection of tax fraud, optimization and transparency of financing and allocation of resources in public institutions;
(vi) monitoring and alert systems for air quality or water pollution;
(vii) medical data analysis systems;
(viii) resource management systems to reduce waste and improve energy efficiency;
(ix) smart urban planning.

● ***The academic environment*** benefits from advantages such as participation in educational or research projects in the field of AI that lead to:
(i) improving computing capacity and infrastructure in general;
(iii) the opening to new techniques for experimenting and testing the applications resulting from the research carried out;
(iv) the interconnection to the European R&D centers and implicitly to their logistics, as well as access to data sets and knowledge;
(v) online learning platforms that adapt to the individual needs of each user;
(vi) access to knowledge and information by connecting with various research centers and, implicitly, partnerships with a diversity of researchers. Access to databases for research and testing, as well as testing and experimentation spaces in digital innovation centers.

● ***Private companies*** can benefit from important advantages such as the following:
(i) participation in national and European funding or cooperation projects within the innovative HUBs;

(ii) improving logistics in general and computing infrastructure in particular;
(iii) AI as a powerful determinant in the growth of key sectors of the national economy.

As a result, the impact of AI is substantial in the new economic, social and technological context, bringing both benefits and risks likely to influence the quality of life or conditions of security, safety, health and ethics. Proactive strategic management of the specific needs related to the impact of AI creates the prerequisites for a proper adoption of the technology at the national level, ensuring a balance in the conditions of social evolution and in the domestic technological ecosystem.

With a view to joining the European Union, our regulations and governance regimes must keep pace with the fast and changing demands of AI and data governance, maximizing growth and competition, promoting excellence in innovation and protecting safety, security, choice and fundamental human rights. The rapid and far-reaching changes in AI offer dynamic opportunities for improving economic and social sectors. AI can increase business productivity, improve government efficiency, and prepare workers for the future of the labor market. It can also help address many pressing global challenges, such as climate change and lack of access to quality education and healthcare.

Government thus plays a critical role in the development and implementation of AI technologies in society. The key roles of government in AI are:

1. ***Regulation and Oversight:*** The government sets rules and regulations to ensure the ethical and responsible use of AI. This includes protecting personal data, preventing abuse and ensuring transparency in AI-based decisions.
2. ***Investments in Research and Development:*** The government can allocate financial resources for R&D in the field of AI, stimulating innovation and the development of new technologies.
3. ***Education and Training:*** It is the Government's responsibility to ensure that the workforce is ready for the AI-based economy by providing training programs and specialized courses.
4. ***Promoting Ethics in AI:*** The government can establish committees or bodies to discuss and set ethical standards in the design, development, deployment and use of AI.
5. ***Public-Private Partnerships:*** Government can work with the private sector to promote the design, development, deployment and use of AI solutions, combining expertise and resources.
6. ***Infrastructure:*** Ensuring adequate infrastructure, by extending MCloud capabilities to cover specific AI needs, to be able to run models locally.
7. ***Public Awareness:*** Government can launch information campaigns to educate the general public about the benefits and risks associated with AI.
8. ***Economic Policies:*** The government can create policies that encourage investment in start-ups and companies developing AI technologies, thereby stimulating economic growth.

By taking on these roles, the Government can ensure that AI technologies are used in a way that benefits society as a whole and encourages innovation, while protecting the rights and interests of citizens.

Data-driven AI technologies are becoming increasingly important to maximize the benefits of using and reusing data. The importance of data in shaping AI-based products and services in the digital economy is growing, and the accelerated development of AI is expected to support many national priorities, from scientific research and innovative digital products with global reach to

improved digital public services. For example, the European Union has emphasized the importance of data and AI in particular, as reflected in EU strategic documents such as the European Data Strategy and programs like Horizon Europe, the Digital Europe Programme and Copernicus. In AI strategies, a government's role as a data steward is often prominent, as it holds in its own name or on behalf of its citizens large data sets that can power AI-based technologies.

Data is at the heart of AI-driven transformation, and data-driven innovation will bring enormous benefits to both citizens and the economy. In the past decade, data consumption associated with creating, recording, copying, and viewing data has grown 5,000 percent according to Forbes, from 1.2 trillion gigabits to about 60 trillion gigabits. For the next decade, Statista estimates an annual increase in the volume of data by 19.2%, reaching 145 trillion gigabits by 2025. In this context, data governance becomes a key factor for the adoption of AI in the Republic of Moldova, the aim being to lay the foundations of a data savings that citizens and businesses can trust.

Data access and sharing are key to accelerating AI adoption. Many countries continue to focus on providing access to public sector data, including open government data, geo-data and transport data. Similarly, they also emphasize data sharing in the public sector. Countries rely on their open data access policies and strategies to promote data access and sharing for AI.

According to the Global Data Barometer, the Republic of Moldova ranks 47th in the data governance module, out of the 109 countries evaluated.

Pillar: Governance

Country	Module score	Data accessibility frameworks	Data management frameworks	Data sharing frameworks	Data protection law	Language and data governance	Open data policy
Republic of Moldova →	47	40	18	60	80	0	36

Fig.1 *Global Data Barometer - Moldova*

Effective data governance involves developing and implementing rules, processes and structures to ensure that data is reliable, trustworthy and comprehensive. It is also essential to ensure that sensitive data is protected, while non-personal and depersonalized data sets are shared or open for re-use.

The existing regulatory and policy framework is to be improved to provide greater clarity on the scope, governance and technical safeguards for data sharing between the public and private sectors. This will encourage organizations to share and use data more pervasively for legitimate use cases and help establish data collaboration and innovation between the public and private sectors.

The private sector data sharing framework will guide companies in establishing data sharing partnerships with each other. The framework will articulate the key legal and technical considerations and safeguards that every organization should consider and provides example legal clauses and templates for drafting data sharing agreements.

As the national custodian of personal and government data, the Government holds a data resource that many businesses find very valuable. Government can thus help drive cross-sector data sharing and innovation by policing, cleaning and providing the private sector with access to Government

datasets. The public-private data sharing framework will facilitate the sharing of government data with non-governmental entities and key private partners by defining the scope, type, granularity and safeguards (people, processes and technical) of government data that can be shared with the private sector. For this, the normative framework is to be developed in accordance with the European Data Strategy.

The government has the ability to identify organizations that will serve as trusted data brokers for data fusion and distribution. These trusted entities could be placed in either the private or public sector, depending on the sector, the type of data and where most of the data resides.

Similarly, the Government can define and promote common data standards to ensure data interoperability. In order to facilitate data fusion, it is indispensable to involve companies in key sectors to define and promote a set of common data standards for the sector (eg standards for health records from restructured hospitals, private general practitioners and research institutes). Also here, the Government will be able to monitor and publish an extension to the existing semantic catalog of public-private datasets needed to implement national AI projects. It will also work with trusted data intermediaries to define the common data standard and technical safeguards to anonymize, secure and provide companies and researchers with access to this data.

Thus, it is suggested to extend the capabilities of MCloud to run AI models locally, and at the same time to adjust national legislation to international standards, to enable cross-border transmission of data for the use of AI services outside the country (such as access to API subscriptions of OpenAI).

Global states are at different stages of developing and implementing national AI strategies and policies. Some countries, such as Canada and Finland, developed their national AI strategies as early as 2017, closely followed by Japan, France, Germany and the United Kingdom in 2018. Other countries, such as Brazil, Egypt, Hungary, Poland and Spain, launched more recent national AI strategies. Several countries are currently in processes of consultation and development of AI policies. National AI strategies and policies are often initiated with a call to action in the form of a report, roadmap or white paper that outlines the high-level goals for a strategy. It often follows the stages of policy making and development. According to the Government AI Readiness Index 2022, the Republic of Moldova ranks 83 out of the 181 countries evaluated, compared to the 86th place, occupied in 2021, with the score for the country vision for AI being set to zero in both 2021 and 2022.

Global Position	Country	Total Score	Government Pillar	Technology Sector Pillar	Data Infrastructure Pillar
83	Republic of Moldova	42.04	41.75	28.26	56.09
86	Republic of Moldova	41,71	40,03	29.80	55.29

Country	Total		Government	Technology Sector	Data and Infrastructure	
Republic of Moldova	42.04		41.75	28.26	56.09	

Vision	Governance and Ethics	Digital Capacity	Adaptability	Maturity	Innovation Capacity	Human Capital	Infrastructure	Data Availability	Data Representativeness
0.00	52.82	63.50	50.70	18.76	26.32	39.71	25.51	64.94	70.50

Fig.2 *Government AI Readiness Index - Moldova*

The OECD AI Policy Observatory does not identify any sectoral policy documents for the Republic of Moldova, compared to Romania, for which 3 are identified, and the horizontal nature of policies in the field of AI requires the involvement of a number of institutions, as well as the investment of public funds and mobilizing private investment for its development and widespread use.

Fig.3 *OCDE AI Policy Observatory - Moldova*

Fig.4 *OCDE AI Policy Observatory - România*

Given the recent candidate country status, Moldova should make further efforts to integrate its data-driven development, support key economic sectors and ensure robust governance of data and emerging technologies such as AI.

Therefore, it is increasingly evident that AI will be the engine behind many major changes in the near future. Thus, the main role of the authorities is to facilitate, direct and manage the development of AI, so that the intended positive effects are produced. In these conditions, connecting to world trends, research in the field of AI and integration of AI tools are becoming more and more important, leading to the need for the digital and technological transformation of society through AI.

VISION

The White Book presents the vision of accelerating the creation of an ecosystem of data governance and AI adoption for the development of the Republic of Moldova, stated as follows: ***An ecosystem of data governance and artificial intelligence for sustainable and durable growth, centered on human needs.***

The fundamental features of the vision are sustainability, durable development, economic growth and social well-being. They aim to ensure the safety and reliability of AI, as well as the role of the state in overseeing the responsible and ethical use of technology, excellence in the use of disruptive technologies, and relating the transformative capabilities of AI to the effects of economic growth and social well-being as a result of national adaptation to the technological advance, in the transition to a data and knowledge based economy.

Also, the vision statement aims to shape the national evolution of AI in order to promote economic advancement, social welfare and democratic values, stability and national security through responsible and ethical approaches, but also by contributing to global norms and standards. The vision projects a national component - that of supporting sustainable and durable economic development in which the fundamental rights of citizens are respected and compliance in the matter of ethical aspects regarding the impact of technology on the freedom of the person and non-discrimination is ensured - and an international component - that of placing the Republic Moldova as a valuable participant of the European and global AI ecosystem.

Of fundamental importance for the fulfillment of its vision, the White Book defines the following general objectives, aligned with the priority axes of action included in the EU strategic documents and the development needs and opportunities at the national level, along the lines of:

1. Consolidation of the system of education, research-development and training of skills specific to AI and data governance;
2. Developing a resilient infrastructure and usable and reusable data sets (integrated data ecosystem);
3. Supporting measures to encourage the adoption of AI in society;
4. Establishing a governance system and an adequate AI and data regulatory environment.

The transversal nature and potentially massive impact of AI in society determines the need for entities from business, academia, public administration and AI organizations to join forces to participate in a permanent and productive dialogue on the adoption of AI, in the spirit of open governance principles, embodied in a unique and jointly assumed vision, of general and specific objectives validated on a generalized scale and of a transparent approach in the implementation of measures through dedicated initiatives, throughout the process.

Another important landmark refers to the principles underlying the design, development, use and deployment of technologies that incorporate AI and their adoption in society, with the objective of inclusive, sustainable development and social well-being. They reflect the strategic vision and convey a clear message regarding the place and role assigned to AI as a tool for the development of society. These are:

- Respect for human rights and democratic values (freedom, dignity, confidentiality and data protection, non-discrimination, equality, social justice);
- Human-centered, inclusive, non-discriminatory and unbiased AI (keeping AI under the control of human agency and taking responsibility for AI);
- Diversity, equality of opportunity and gender in the use of AI-based products or services;
- Transparency and trust (knowledge of data processing processes, trust in systems and applications, in the reasoning that supports AI-based decisions);
- Robustness, security and safety (system resilience to risk situations, cyber-attacks);
- Accountability (mechanisms that ensure accountability for the design, development, use, and deployment of AI systems);
- Partnership (international trusted AI projects and partnerships).

SCOPE OF THE DOCUMENT

The White Paper aims to establish a strategic vision of data governance and AI for the Republic of Moldova, aligned with strategic directions at the European level regarding the common rules applied to digital services.

The White Book constitutes a necessary and timely landmark for the preparation of the future national policy framework on data governance and AI, as well as for the preparation of society in understanding, accepting and capitalizing on the transformative processes generated by AI.

The White Book will support the central public administration of the Republic of Moldova to sustain the efforts to standardize, operationalize and regulate the governance of data and the design, development, use and deployment of AI and to enhance its positive effects, it will contribute decisively to highlighting and capitalizing on the national innovative potential in the field of AI, as well as managing the risks posed by the evolution of AI.

In terms of global projections that estimate that by 2030 approx. 70% of companies will use at least one AI technology (computer vision, natural language processing, virtual assistants, automation/robotization, machine learning) and the technology will generate additional economic results of approx. 1.2% annual growth of global GDP, with disruptive effects on countries, companies, the labor market, this strategic framework will represent an important precedent for the authorities of the Republic of Moldova in the proactive approach of adapting measures in accordance with the realities of the accelerated evolution of digital infrastructures at scale global.

The implementation of AI technologies can have a profound impact on the economy of the Republic of Moldova. The exact measure of GDP growth due to AI technologies depends on several factors, including the level of AI adoption, investment in research and development, existing infrastructure, and the ability of the workforce to adapt to new technologies. Potential national economic effects include:

1. ***Increased productivity:*** AI can automate repetitive tasks, reducing time and associated costs, which can lead to a significant increase in productivity in various sectors, from industry to services.
2. ***Innovation:*** The implementation of AI can drive innovation, leading to the development of new products, services and business models, which can open up new markets and opportunities for economic growth.
3. ***Attracting investment:*** Countries that adopt AI technologies can attract more foreign direct investment, especially in the technology and research sectors.
4. ***Transforming the labor market:*** While AI may replace some jobs, it may also create new job opportunities and require a more skilled workforce, thereby boosting education and training.
5. ***Increasing the efficiency of the public sector:*** Public authorities can use AI to improve the efficiency of public services, from health to transport and administration.
6. ***Global Competitiveness:*** Countries that quickly and effectively adopt AI can become global leaders in technological fields, having a competitive advantage on the international stage.
7. ***Economic growth:*** The export of AI-based technologies and services can boost the economy of the Republic of Moldova.

8. ***Service Personalization:*** Companies can use AI to provide personalized services, which can increase customer satisfaction and customer loyalty.

To respond to the ongoing concern about the use of AI to achieve inclusive, sustainable development and the creation of social well-being, the White Book encourages the alignment of future policy documents on data governance and AI with the EU and OECD guidelines, which should govern the development and the adoption of AI in various sectors of activity and throughout society, to create a solid and comprehensive reference framework at the level of fundamental principles and requirements.

So, in the approach promoted by the White Book, AI must meet seven key requirements, summarized as follows:

1. ***Human agency:*** There must be mechanisms to allow human intervention in case the AI system generates unwanted or erroneous decisions.
2. ***Transparency and explainability:*** AI systems must be able to explain their decisions and actions in terms that humans can understand.
3. ***Safety and Security:*** AI systems must operate in a secure manner and be protected against cyber threats.
4. ***Adaptability:*** AI systems should be able to learn and adapt to changes in the environment and feedback received.
5. ***Accountability:*** AI developers and operators should be responsible for the correct and ethical operation of their systems.
6. ***Accessibility:*** AI should be accessible and useful to all users, regardless of their technical skills or knowledge.
7. ***Sustainability:*** AI systems should be developed and operated in a way that respects the principles of sustainable development and has a minimal impact on the environment.
8. ***Data privacy:*** AI systems should protect the data they work with, ensuring that personal information is kept safe and used ethically.
9. ***Interoperability:*** AI systems should be able to interact and collaborate effectively with other systems and technologies, ensuring seamless integration into various applications and environments.

Complementary to these general guidelines, a series of principles that underlie the design, development, use and deployment of AI-based technologies and the adoption of these solutions in society were also taken into account, such as:

1. ***Respect for human rights and democratic values.*** AI stakeholders must respect the rule of law, human rights and democratic values throughout the life cycle of the AI system. These include: freedom, dignity and autonomy, privacy and data protection, non-discrimination and equality, diversity, fairness, social justice and internationally recognized labor rights.
2. ***Human-centered, inclusive, non-discriminatory and unbiased AI.*** The principle conveys the idea of applying AI under the control of human intelligence and agency as the final actor in decision making. Accountability over AI must also be ensured, so that fundamental and social rights, civil and political rights, economic and cultural rights are respected, including the right not to be discriminated against through the algorithms applied.
3. ***Diversity, equal opportunities and gender.*** AI systems must be user-centric and designed in a way that allows anyone to use AI products or services, regardless of age, gender, abilities or characteristics.

4. ***Partnership.*** The Republic of Moldova aligns itself as a partner and active contributor at the European and global level, through the development of original projects and international partnerships for regional, European and global benefit.
5. ***Respecting the rights of the child.***

COMPLIANCE WITH NATIONAL AND INTERNATIONAL STRATEGIC FRAMEWORKS

The Republic of Moldova is currently at the first iteration for the development of the strategic framework in the field of data governance and AI, although this has been a topic on the public agenda for several years, which concerns all environments, from the governmental level to local public administrations, from the academic environment to business. There are all the necessary premises for the development of an ecosystem of data governance and AI in the Republic of Moldova that would align with the actions of the member states of the European Union and represent a vector of economic growth.

The drafting of the White Book aims to align the Republic of Moldova with the initiatives and desires promoted by the international community and, in particular, those within the EU, so that the Republic of Moldova can contribute and benefit from the development of an ecosystem of data governance and AI, effectively using the capital human and financial and technical resources currently available, as well as those that may be attracted as a result of alignment with global developments and trends.

In the preparation of the White Book, concrete recommendations formulated by international organizations were taken into account, especially for cases where states start processes of developing policy documents in this field, some of the most important being:

1. Making investments in research and development in the field of data governance and AI;
2. Promoting a digital ecosystem for data governance and AI;
3. Providing an enabling a policy environment for data governance and AI;
4. Strengthening human capacity and preparing for the transition to the labor market;
5. International cooperation.

Existing priorities, policies and regulatory framework

AI has become an area of strategic importance, with the potential to be a key driver of economic development. AI also has a wide range of potential social implications. Starting from 2016, but especially after 2017, an intensification of actions, measures, concrete steps can be observed at the global level, both on the strategic and on the application level: the elaboration of national strategies, investment plans, the development of public policies, the increasingly systematic approach to the aspects of trust, ethics, regulation, understanding the importance of collaboration and partnership systems, as well as developments in the matter.

Priorities on data governance

1. The European Data Strategy

The European Data Strategy addresses the European vision for a society empowered by data, proposing measures and means of financing to achieve the vision of a *single data market*.

The EU can become a model society where data empowers better decisions in businesses and the public sector. To achieve this ambitious goal, the EU can rely on the legal framework for data protection, fundamental rights, safety and cyber security, as well as the internal market which includes competitive businesses of all sizes and a diversified industrial base.

If the EU is to become a leader in the data-driven economy, it needs to address issues ranging from connectivity to data processing and storage, processing power and cyber security in a concerted manner. In addition, they will need to improve their governance structures for data management and increase their common pools of quality data that are available for use and reuse. The EU aims to harness the benefits of better use of data, including increased productivity and more competitive markets, but also improvements in health and well-being, environmental protection, transparent governance and the effectiveness of public services. The measures set out in this document contribute to a comprehensive approach to the data economy, which aims to increase the use and demand for data and data-based products and services across the single market.

The data strategy builds on the results of measures that have already been taken since 2014. Through the General Data Protection Regulation (GDPR), the EU has created a solid framework for digital trust. The upcoming revision of the GDPR may provide additional useful elements in this regard.

Other initiatives that have favored the development of the data-based economy are:

1. Regulation on the free-flow of non-personal data;
2. Regulation on cyber security;
3. Open Data Directive.

The Commission also engaged in *digital diplomacy*, certifying that 13 countries provide an adequate level of personal data protection.

The actions of the strategy are organized in 4 pillars:

1. *a cross-sector governance framework* for data access and use;
2. *catalysts:* investment in data and strengthening Europe's capacities and infrastructures for data hosting, processing and use, interoperability;
3. *skills:* empowering people, investing in skills and in SMEs;
4. *common European data spaces* in strategic sectors and areas of public interest.

The European Data Strategy will also enable the EU to become the most attractive, secure and dynamic data-driven economy in the world, helping Europe to improve its decisions and provide a better life for all through data its citizens. The Communication sets out a number of policy and investment measures needed to achieve this objective. The stakes are very high, as the EU's technological future depends on its ability to capitalize on its strengths and the opportunities offered by continued growth in data production and use. A European way of processing data will ensure that more data will be available to respond to societal challenges and be used in the economy, while respecting and promoting our European values.

2. Directive on open data and reuse of public-sector information

Directive on open data and reuse of public-sector information provides a common legal framework for a European market for government-owned data (public sector information). It revolves around two main pillars of the internal market: transparency and fair competition.

3. The European Data Governance Act

The European Data Governance Act (DG Act) proposed in November 2020 within the framework of the European data strategy, later amended and informally accepted by the European Parliament and Council on 30.11.2021, has as its main objective the establishment of rules for sharing and use of data in the EU. The DG Act is the first legislative initiative under the European data strategy and sets out the governance structure for common data spaces to be introduced by the EU in different sectors (eg health, energy, agriculture). In order to avoid monopolization tendencies, the DG Act prohibits the combination of intermediation services with storage or analysis services. Thus, cloud service providers who also offer data acquisition services will not be able to launch commercial offers to customers who use both services. Member States are responsible for designating one or more public bodies to provide anonymization support, with respect to ensuring the right to privacy and respecting intellectual property rights. Also through the DG Act, the Data Innovation Board (DIB) is established, an advisory body, composed of members from academia, industry and civil society for the development of interoperability and portability standards, both at EU and international level.

Priorities on Artificial Intelligence

1. EU AI Strategy

As part of its concerns regarding the Digital Single Market and the development of AI, the European Commission presented the EU AI Strategy in June 2018.

The strategy claims that "beyond making our lives easier, artificial intelligence helps us solve some of the world's biggest challenges: from treating chronic diseases or reducing the death rate in traffic accidents to combating climate change or anticipating security threats cybernetics". Under these conditions, the major directions of action in the field of AI that he proposes are:

- Increasing the EU's technological and industrial capacity and the use of AI across the economy, both in the private and public sectors. This includes investment in research and innovation and better access to data.
- Preparing for the socioeconomic changes that AI brings, by encouraging the modernization of education and training systems, supporting talent, anticipating labor market changes, supporting labor market transitions and adapting social protection systems.
- Ensuring an appropriate ethical and legal framework, based on Union values and in accordance with the EU Charter of Fundamental Rights. This includes future guidance on existing product liability rules, a detailed analysis of new challenges and cooperation with stakeholders, through a European AI Alliance, to develop AI ethical guidelines.

The regulation of AI therefore represents one of the four dimensions in the EU strategy for the development of AI.

The objectives targeted by the EU through the regulatory framework for AI are:

1. Ensuring that AI systems introduced on the Union market and used are secure and comply with existing legislation on fundamental rights and Union values;
2. Ensuring legal security to facilitate investment and innovation in the field of AI;
3. Strengthen governance and effectively ensure compliance with existing legislation on fundamental rights and safety requirements applicable to AI systems;
4. Facilitate the development of a single market for legal, safe and trusted AI systems and prevent market fragmentation.

The proposed regulation aims at several dimensions, including ensuring a high level of protection of health, safety and fundamental rights, as well as ensuring the free cross-border movement of AI-based goods and services. The proposed regulatory framework aims for AI systems used in the EU to be secure, transparent, ethical, impartial and under human control. Humans are placed at the center, with AI systems being tools/instruments that support the activity of human agents.

The strong focus on ethics in the EU AI Strategy should be seen in the context of a global strategy aimed at protecting citizens and society against abuses of digital technology, but also as part of a competitiveness-oriented strategy aimed at raising access standards to the single market.

2. The Coordinated Plan on Artificial Intelligence

Following the publication of the EU AI Strategy, in December 2018, the European Commission published the Coordinated Plan on AI. This coordinated plan was revised in April 2021 and presents a concrete set of joint actions for the European Commission and Member States on how to build the EU's world leadership in AI. The proposed key actions reflect the vision that in order to succeed in achieving this objective, the European Commission together with Member States and private actors must:

- accelerate investments in AI technologies to stimulate economic and social recovery, a possibility offered by the adoption of "new" digital solutions;
- act firmly for the full and timely implementation of AI strategies and programmes, to ensure that the EU fully benefits from early adoption of AI;
- align AI policy to remove fragmentation and address global challenges.

The revised coordinated plan of April 2021 sets out a series of policy proposals and the necessary investments at Member State level to strengthen the European Union's leadership in the development of human-centric, sustainable, safe, inclusive and trustworthy AI.

Through this effort to revise the Plan, the European Commission has proposed new rules and actions aimed at transforming Europe into a global AI center of excellence and trust and leading global efforts to set standards in this field. The revised coordinated plan appeared as a result of the major changes that have occurred since the first publication in 2018, among which we can mention: (i) the Covid-19 pandemic, (ii) the Green Deal, (iii) the Recovery and Resilience Facility (together with Digital Europe Programme and Horizon Europe), technological developments (new computational components and concepts, data infrastructures and applications), (iv) lessons learned during the two years of implementation of the initial plan. The plan, coordinated with

Member States, together with the AI Act will guarantee the safety and fundamental rights of individuals and organisations, while strengthening AI adoption, investment and innovation across the EU.

The European AI Strategy and the Coordinated Plan make it clear that trust is a prerequisite to ensure a human-centric approach to AI: *AI is not an end in itself, but a tool that must serve people in order to increase their well-being*. The values our societies are based on must be fully integrated into how AI is developed and used.

Thus, the core of this White Book illustrates the spirit and the letter of the EU programmatic documents, the actions proposed by the EU and how the member states should relate to this technological evolution and act: "*A common European approach to the field of AI is needed to reach a sufficient critical mass and to avoid fragmentation of the single market. The introduction of national initiatives risks jeopardizing legal certainty (security), weakening citizens' trust and making it difficult for a dynamic European industry to emerge*".

3. White Paper on AI

On 19 February 2020, the Commission published the White Paper on Artificial Intelligence - A European Approach to Excellence and Trust, which includes:

- measures that will streamline research, encourage collaboration between member states and increase investment in the development and implementation of AI;
- policy options for a future EU regulatory framework to determine the types of legal requirements that will apply to relevant actors, with a particular focus on applications considered high risk.

The White Paper also sets out policy options on how to achieve the dual objective of promoting the adoption of AI and addressing the risks associated with certain uses of this technology. Through this document, the Commission is committed to enabling scientific progress, maintaining the EU's technological leadership and ensuring that new technologies serve all Europeans to improve their lives, while respecting their fundamental rights.

Starting from the premise that Europe's sustainable economic growth and societal well-being is increasingly based on the value created by data, the European Data Strategy, which accompanies this White Paper, aims to enable Europe to become the most attractive, secure and dynamic agile economy in the world in terms of data.

4. Proposal for a Regulation laying down harmonized rules for artificial intelligence

The European Commission proposed the first legal framework on AI, which addresses the risks of AI and positions Europe as a global leader, by publishing, in April 2021, the Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (EU AI Act) and amending certain legislative acts of the Union.

First proposed by the European Commission in April 2021, the EU AI Act proposes to regulate the development and use of AI systems, with strict requirements for "high-risk" AI systems, including those used in human resources, banking and education. Once passed, it will be the first law worldwide to comprehensively regulate the development and use of AI. The AI Act is set to

be a 'GDPR for AI', with heavy penalties for non-compliance, extraterritorial scope and a broad set of mandatory requirements for organizations developing and deploying AI.

The legislative process faced a notable disruption in December 2022 with the arrival of ChatGPT which necessitated a change to the draft text, creating specific regulations for generative AI. The European Parliament's Committee on the Internal Market and Consumer Protection adopted the AI Act in February 2024, after which it will be submitted for a plenary vote provisionally scheduled for 10-11 April 2024.

Some of the key takeaways of the EU AI Act are:

1. ***AI systems are broadly defined, with a focus on autonomy*** - The AI Act defines an AI system as "*a machine-based system designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments",* which follows the OECD's latest definition. The key elements in this definition are '*infers*' and '*autonomy*', which clearly differentiate an AI system from any other software where the output is pre-determined (*if x then y*) by a strict algorithm. This definition is intentionally broad to ensure that the AI Act does not become outdated in the near future. It clearly moves away from the original definition of AI systems, which linked the concept to a pre-defined list of technologies and methods, adopting a technology-neutral and uniformed approach.

2. ***A closed list of prohibited AI systems*** - The AI Act contains a closed list of prohibited AI practices:
   - using subliminal techniques or purposefully manipulative or deceptive techniques to materially distort behaviour, leading to significant harm;
   - exploiting vulnerabilities of a person or group due to specific characteristics, leading to significant harm;
   - biometric categorisation systems that individually categorise a person based on sensitive information, except for labelling or filtering lawfully acquired biometric datasets in the area of law enforcement;
   - social scoring systems;
   - real-time remote biometric identification systems in the public for law enforcement purposes;
   - predictive policing based solely on profiling or personality traits, except when supporting human assessments based on objective, verifiable facts linked to criminality;
   - facial recognition databases based on untargeted scraping; and
   - inferring emotions in workplaces or educational institutions, except for medical or safety reasons.

   The ban on real-time biometric identification for law enforcement purposes was the topic of much debate in the European institutions. The prohibition does not apply where these systems are used for any of the listed specific purposes, such as searching for victims of human trafficking or sexual exploitation, or for the prevention of terrorist attacks. In principle, relying on such an exception will require thorough assessments, technical and organisational measures, notifications and a warrant.

3. ***Dual definition of high-risk AI systems*** - A major part of the AI Act entails the strict and extensive regulation of high-risk AI systems. It will therefore be of the utmost importance in practice for a company engaged in AI to determine whether the AI system it develops, imports, distributes or deploys constitutes a high-risk AI system.
   The AI Act considers two types of AI systems that are regarded as high-risk:
   - AI intended to be used as a product (or the security component of a product) covered by specific EU legislation, such as civil aviation, vehicle security, marine equipment, toys, lifts, pressure equipment and personal protective equipment.
   - AI systems listed in Annex III, such as remote biometric identification systems, AI used as a safety component in critical infrastructure, and AI used in education, employment, credit scoring, law enforcement, migration and the democratic process.

   We can expect guidelines specifying the practical implementation of classification of AI systems, completed by a comprehensive list of practical examples of high-risk and non-high-risk use cases on AI systems no later than 18 months after entry into force of the AI Act.

4. ***Important exception to the qualification of high-risk AI system*** - The AI Act has added an exception to this qualification: if the AI system from the second category of high-risk AI systems (Annex III) does not pose a significant risk of harm to the health, safety or fundamental rights of natural persons, it will not constitute a high-risk AI system. This is the case if the system is intended to perform a narrow procedural task; improve the result of a previously completed human activity; detect decision-making patterns or deviations from prior decision-making patterns and is not meant to replace or influence the previously completed human assessment, without proper human review; or perform a preparatory task to an assessment. If, however, the AI system performs profiling of natural persons, it is always considered a high-risk AI system.
   This exception will become very important in practice, as a lot of AI system providers will try to argue that their system does not pose such risks, in order to avoid the high regulatory burden and cost that come with the qualification of high-risk AI. Nevertheless, if a provider wishes to rely on this exception, it will have to document its assessment under this exception. Even if it could successfully rely on the exception, the AI system will still need to be registered in the EU database for high-risk AI systems before it is placed on the market or put it into service.

5. ***Broad and extensive obligations for high-risk AI systems*** - Providers of high-risk AI systems must meet strict requirements to ensure that their AI systems are trustworthy, transparent and accountable. Among other obligations, they must conduct risk assessments, use high-quality data, document their technical and ethical choices, keep records of their system's performance, inform users about the nature and purpose of their systems, enable human oversight and intervention, and ensure accuracy, robustness, and cybersecurity. They must also test their systems for conformity with the rules before placing them on the market or putting them into service, and register their systems in an EU database that will be accessible to the public.

6. ***Obligations across the value chain*** - The AI Act imposes strict obligations not only on the '*provider'* of a high-risk AI system, but also on the '*importer'*, '*distributor'* and '*deployer'* of such systems. The importer's and distributor's obligations mainly concern the verification of whether the high-risk AI system they import or distribute is compliant.

Broadly speaking, the importer needs to verify the system's conformity through the verification of various documentation, whereas the distributor is required to verify the CE (*conformité européenne*) conformity.

7. ***Obligations for deployers (users) of high-risk AI systems*** - The deployer, formerly known as the user of the AI system, is also subject to a set of obligations when it deploys a high-risk AI system. One key obligation with important consequences for any potential liability discussion with the provider is that the deployer must use the high-risk AI system in accordance with the provider's instructions of use. When a company or its customers suffers damage following the use of a high-risk AI system, the AI system's provider's main argument will most likely be that the deployer did not use the AI system in accordance with the instructions of use. The deployer also has the obligation to install human oversight to the extent possible, and to monitor the input data and operation of the system. It must keep the automated logs for at least six months.

8. ***Fundamental rights impact assessment for banks, insurers and governments*** - Public sector bodies, private entities providing public services (i.e. education, healthcare, housing, social services, and entities engaged in credit scoring or life and health insurance are required to make a fundamental rights impact assessment (FRIA) prior to deploying the high-risk AI system. This assessment requires these entities to list the risks, oversight measures, risk mitigation measures, affected categories of natural persons, intended frequency of use, and the deployer's processes for which the system will be used.

9. ***Shifting the responsibilities along the value chain for high-risk AI systems*** - There is a mechanism similar to the rules on product liability whereby an entity other than the provider may be considered the provider. An importer, distributor, deployer or any third party will be considered a provider of the high-risk AI system, and will therefore be subject to the large list of obligations under the AI Act, if one of three conditions are met:
   - they have put their name or trademark on the system after it has already been placed on the market or put into service;
   - they have made substantial modifications after that placing on market/putting into service, provided that the system remains high-risk; or
   - they have modified the intended purpose of the AI system, which renders the system high-risk.

10. ***Rights to an explanation and battle for trade secrets*** - For a number of years, there has been a lot of speculation about whether the GDPR entitles the data subject to an explanation when a controller engages in automated individual decision-making, including profiling, which has legal or similar effects for that data subject. The AI Act now explicitly confirms this right, but only for the high-risk AI systems listed in Annex III: an affected person now has a right to meaningful explanations on the role of the AI system in the decision-making and the main elements of the decision made. In practice, there will be a battle between persons requesting explanations, and providers blocking or limiting such requests based on a trade secret. A good example are credit-scoring algorithms, which constitute a high-risk AI system. The business model and unique selling point for a credit scoring agency will lie in the exact weights and parameters used in the model, which can for a large part be protected by trade secrets. It is likely that, in practice, a balancing exercise will have to be made, following the opinion of advocate general Pikamäe in a recent case (case C-634/21) before the Court of Justice of the European Union: while, in principle, protection of trade

secrets or intellectual property constitutes a legitimate reason for a credit information agency to refuse to disclose the algorithm used to calculate the score for the data subject, it cannot under any circumstances justify an absolute refusal to provide information, all the more so where there are appropriate means of communication that aid understanding while guaranteeing a degree of confidentiality.

11. ***Right to complain*** - The AI Act grants a right to lodge a complaint with a market surveillance authority to any natural or legal person having grounds to consider that the AI Act has been infringed. This is an unusually large personal scope to exercise this right, as there is practically no requirement of standing. This is clearly different from other instruments, such as the GDPR, where data subjects may submit a complaint only if the processing of personal data relates to them.

12. ***General purpose AI models are not systems*** - General purpose AI (**GPAI**) models are specifically regulated and classified under the AI Act. The AI Act distinguishes between obligations that apply to all GPAI, and additional obligations for GPAI models with systemic risks. As models are regulated separately from AI systems, a model will never constitute a high-risk AI system, as it is not an AI system. A GPAI system built on top of a GPAI model, on the other hand, may constitute a high-risk AI system. Providers of GPAI models are subject to separate obligations that can be considered a *light* version of the obligations for AI systems. Among other things, they must create and maintain technical documentation, draw up a policy on how to respect copyright law, and create a detailed summary of the content used for training the GPAI model. Providers of GPAI models with systemic risks have additional obligations, including performing model evaluations, assessing and mitigating systemic risks, documenting and reporting serious incidents to the AI Office and national competent authorities, and ensuring adequate cybersecurity protection.

13. ***Transparency obligations for AI systems and GPAI models*** - As a third category of regulated AI systems (besides prohibited AI practices and high-risk AI), the AI Act imposes transparency obligations for four categories of AI systems and GPAI models:
    - AI systems intended to directly interact with natural persons (e.g. AI companions);
    - AI systems, including GPAI systems, generating synthetic audio, image, video or text content (e.g. Midjourney, DALL-E);
    - emotion recognition systems or biometric categorisation system (e.g. ShareArt); and
    - deep fakes.

    In these cases, the user will have to be informed about the AI system. In some cases, the content will have to be labelled in a machine-readable way so that it can be identified as artificially generated or manipulated content. The AI Act provides for exceptions to this obligation in some circumstances for law enforcement, or when the AI system is used for artistic, satirical, creative or similar purposes.

14. ***Compliance and enforcement structure*** - The AI Act will go hand in hand with a complex and layered governance structure involving multiple entities, such as notifying and notified bodies, conformity assessment bodies, an AI Board, an AI Office, national competent authorities, and market surveillance authorities. Bodies such as the AI Office will also support entities in scope through the development of codes of practice based on stakeholder dialogue. Moreover, these entities will also play a role in the various measures in support of innovation such as AI regulatory sandboxes and measures for SMEs and start-ups.

15. ***Enforcement and next steps*** - The Act gives market surveillance authorities the power to enforce the rules, investigate complaints, and impose sanctions for non-compliance. The penalties can be very high. Engaging in a prohibited AI practice can lead to a penalty of up to EUR 35 million or 7% of the total worldwide annual turnover for companies, depending on the severity of the infringement. For high-risk AI systems, the penalty may be as high as EUR 15 million or 3%. We expect the AI Act to be published mid-2024. The AI Act will enter into force 20 days after publication in the Official Journal of the EU. Most of its provisions will apply after 24 months. The rules on prohibited AI systems will apply after 6 months, the rules on GPAI after 12 months, and the rules on high-risk AI systems after 36 months.

16. ***Beyond the AI Act*** - One would almost forget that the AI Act is only one piece in the puzzle of laws and regulations that apply to AI systems. There are multiple other components of the law that will play a major role in how an organisation designs, tests, trains and provides its AI system. Notable examples include:
    - intellectual property law: patentability of AI, copyright protection of software and licences to use content for training purposes;
    - data protection law: transparency, the principal prohibition of profiling and the requirement of a lawful basis;
    - contracts and liability: building sufficient control and oversight as a user of an AI system through contractual clauses, the AI Liability Directive; and
    - cybersecurity: both general cybersecurity (NIS II) and sector-specific (DORA) requirements.

The AI Act is at the intersection between, on the one hand, human rights, ethical principles, national and international frameworks, and on the other, freedom of innovation. One of the objectives is to facilitate the development of a single market for AI at the EU level by preventing the fragmentation resulting from the existence of different AI legislative frameworks at the level of each member state. The Law on Artificial Intelligence is part of an ecosystem for AI in the EU where support for innovation is provided through tools such as:

1. common European data spaces;
2. testing and experimentation facilities (TEFs);
3. the European Digital Innovation Hubs (EDIH);
4. facilitating compliance assessments of high-risk AI systems;
5. use of regulatory sandboxes

5. Council of Europe Framework Convention on Artificial Intelligence, Human Rights, Democracy and the Rule of Law

In 2021, the Council of Europe (CoE)Committee of Ministers approved the creation of a Committee on Artificial Intelligence (CAI) charged with the development of a legal instrument for the development, design and application of artificial intelligence (AI) systems based on the CoE standards on human rights, democracy and the rule of law with a view for innovation.

The committee started its work in 2022 and is tasked with drafting the legal instrument in the form of a [framework] Convention on AI, human rights, democracy and the rule of law. The framework convention will also be open to the accession of other non-European states, turning it into a global tool for setting AI standards.

The Republic of Moldova is represented in this committee and participates directly in the negotiations and the drafting of the text of the Framework Convention.

6. OECD AI Principles

The OECD Principles on Artificial Intelligence (OECD AI Principles) promote AI that is innovative and trustworthy and respects human rights and democratic values. These were adopted in May 2019 by OECD member countries when they endorsed the OECD Council Recommendation on Artificial Intelligence (the Recommendation).

The recommendation represents the first intergovernmental standard on artificial intelligence – it was adopted by the OECD Council at ministerial level on 22 May 2019 at the proposal of the Committee for Digital Economy Policy (CDEP). The Recommendation aims to boost innovation and trust in AI by promoting the responsible management of trusted AI while ensuring respect for human rights and democratic values. Complementing existing OECD standards in areas such as privacy, digital security risk management and responsible business conduct, the Recommendation focuses on AI-specific issues and sets a standard that is implementable and flexible enough to stand the test of time in this rapidly evolving field. In June 2019, at the Osaka Summit, G20 leaders welcomed the G20 AI Principles, drawn from the OECD Recommendation.

The Recommendation identifies five complementary values-based principles for the responsible stewardship of trusted AI and calls on AI actors to promote and implement them:

1. inclusive growth, sustainable development and well-being;
2. human-centered values and fairness;
3. transparency and explainability;
4. robustness, security and safety;
5. and responsibility.

Consistent with these values-based principles, the Recommendation also provides five recommendations for policymakers (Members and non-Members who have adhered to the draft Recommendation ("Adherents")) on national policies and international cooperation for a Trusted AI, namely:

1. investment in AI research and development;
2. promoting a digital ecosystem for AI;
3. the formation of a favorable political environment for AI;
4. strengthening human capacity and preparing for the transformation of the labor market;
5. and international cooperation for reliable AI.

The recommendation also includes a provision for developing metrics to measure AI research, development and implementation and for building an evidence base to assess progress in its implementation.

7. UNESCO Reccommendation on the ethics of artificial intelligence

UNESCO produced the first global standard on AI ethics – "Recommendation on the Ethics of Artificial Intelligence" in November 2021. This framework has been adopted and supported by all 193 member states, including the Republic of Moldova.

The protection of human rights and dignity is the cornerstone of the Recommendation, based on the advancement of fundamental principles such as transparency and fairness, always remembering the importance of human oversight of AI systems. However, what makes the Recommendation exceptionally applicable are its broad areas of policy action, which enable policy-makers to translate core values and principles into action on data governance, environment and ecosystems, gender , education and research, health and social welfare, among many other areas.

This recommendation addresses ethical issues related to the field of AI as they fall within UNESCO's mandate. It approaches AI ethics as a systematic normative reflection based on a holistic, comprehensive, multicultural and evolving framework of interdependent values, principles and actions that can guide societies in dealing responsibly with the known and unknown impacts of AI technologies on human beings, societies and environment and ecosystems and provides them with a basis for accepting or rejecting AI technologies. The Recommendation considers ethics as a dynamic basis for the normative assessment and guidance of AI technologies, referring to human dignity, well-being and the prevention of harm as a compass and rooted in the ethics of science and technology.

The recommendation is addressed to Member States, both as actors in the field of AI and as authorities responsible for developing normative and regulatory frameworks throughout the life cycle of the AI system and for promoting business responsibility. It also provides ethical guidance to all AI actors, including the public and private sectors, providing a basis for an assessment of the ethical impact of AI systems throughout their life cycle.

8. Universal Guidelines for Artificial Intelligence (UGAI)

The Universal Guidelines for Artificial Intelligence (UGAI) draw attention to the growing challenges of intelligent computing systems and propose concrete recommendations that can improve and inform their design. At its heart, UGAI's purpose is to promote transparency and accountability for these systems and to ensure that people retain control over the systems they create. Not all systems fall within the scope of these guidelines. UGAI's concern is with those systems that impact on human rights.

The UGAIs were announced at the 2018 International Conference of Data Protection and Privacy Commissioners, and build on previous work by scientific societies, think tanks, NGOs and international organisations. The UGAI incorporates elements of human rights doctrine, data protection legislation and ethical guidelines. The guidelines include some well-established principles for AI governance and propose new principles not previously found in similar policy frameworks.

These guidelines should be incorporated into ethical standards, adopted into national legislation and international agreements, and incorporated into the design of AI systems.

The principles prescribed by UGAI:

- the principle of transparency
- the right to human determination (reaffirms that people, not machines, are responsible for automated decision-making)
- the obligation to identify
- the duty of fairness
- the obligation of evaluation and responsibility
- the obligation of accuracy, reliability and validity
- the principle of data quality
- public safety obligation
- the cyber security obligation
- the ban on secret profiling
- the ban on unit scores
- the obligation to terminate

Complementary priorities

1. European Digital Identity Framework

The European digital identity framework (e-identity bill) aims to provide digital wallets to individuals and businesses that will be able to link their national digital identities with proof of other personal attributes (eg driving licence, diplomas, bank account). These wallets can be provided by public authorities or private entities, provided they are recognized by a member state. New European digital identity wallets will allow EU citizens to access online services without having to use private identification methods or share personal data unnecessarily. With this solution, they will have full control over the shared data. The European digital identity will be:

- available to any EU citizen who wants to use it;
- widely usable: to identify or prove certain personal attributes, in order to access public and private digital services in the EU;
- controlled by users, who will be able to choose which aspects of their identity, data and credentials they share with third parties and keep track of such sharing.

The Commission invites Member States to establish by September 2022 a set of common tools including technical architecture, standards and best practice guidelines.

2. Europe's Digital Decade

Europe's Digital Decade: digital targets for 2030. On 15 September 2021, during the State of the Union address, the President of the Commission announced a governance framework in the form of a path towards the digital decade in order to achieve the digital transformation objectives (digital compass) until 2030. The draft decision proposed by the Commission establishes the Policy Program "The Path to the Digital Decade" and establishes a monitoring and cooperation mechanism consisting of measures for:

1. establishing the direction for the digital transformation of the Union and for the achievement of digital objectives;

2. structuring and stimulating cooperation between the institutions of the Union and the member states;
3. ensuring the coherence, comparability and exhaustiveness of monitoring and reporting by the Union.

The proposed decision also establishes a framework for multinational projects. The Commission has identified four main areas of action together with specific targets for each area:

1. achieving digital skills: 20 million ICT specialists, gender equality, 80% of the EU population to have basic digital skills;
2. the implementation of sustainable, secure and high-performance digital infrastructures: Gigabit and 5G connectivity, doubling the EU's share of semiconductor production on a global scale, data processing in 10,000 secure and climate-neutral cloud nodes, development of quantum accelerator computing systems;
3. achieving the digital transformation of enterprises: 75% of EU companies to use AI, doubling the number of unicorn companies in the EU; and
4. achieving the digitization of public services: 100% access to key public services, 100% citizens' access to their medical data, the use by 80% of the EU population of the digital identity document.

3. The European Commission's Digital Services Package

The European Commission's digital services package proposes two legislative initiatives, forming a single set of new rules applicable in the EU, to update the rules governing digital services: the Digital Services Act (DSA) and the Digital Markets Act (DMA). Targeted digital services include a wide range of online services, from simple websites to internet infrastructure services and online platforms.

The Digital Services Regulation aims to:

1. creating a safer digital space, where the fundamental rights of users are protected and
2. establishing fair conditions of competition to stimulate innovation, growth and competitiveness, both on the single European market and globally.

The DSA contains rules that mainly relate to online and intermediary platforms (for example: online marketplaces, social networks, content sharing platforms, app stores, online travel and accommodation platforms). While all online intermediaries offering their services in the single market will have to comply with the new rules, SMEs will have obligations commensurate with their capacity and size, while ensuring they remain accountable. In particular, the new rules are proportionate, encourage innovation, growth and competitiveness and facilitate the expansion of smaller platforms, SMEs and start-ups.

The Digital Markets Act (DMA) sets out a set of narrowly defined objective criteria to qualify a large online platform as a gatekeeper (access control). Some of the services covered by the regulation are also covered by the DSA, but for different reasons and with different types of provisions. The problem that DMA aims to address is aimed at large, systemic online platforms. The benefits that DMA regulations bring include:

1. business users, dependent on these platforms to provide their services in the single market, will have a fairer business environment;
2. innovators and technology start-ups will have new opportunities to compete and innovate in the online platform environment, without having to comply with unfair terms and conditions that limit their development;
3. consumers will have more and better services to choose from, more opportunities to switch providers if they wish, direct access to services and fairer prices;
4. from the perspective of these platforms, all opportunities to innovate and offer new services will be preserved, but at the same time they will not be allowed to use unfair practices towards business users and customers who depend on them.

4. European Skills Agenda

The European Skills Agenda is a plan that sets out the EU's 2021-2025 objectives for improving and acquiring new skills. The agenda prescribes 12 actions:

1. ***Pact for skills:*** engaging relevant actors to provide more and better training opportunities, stimulating synergies between industrial ecosystems and skills;
2. ***Strengthening skills intelligence:*** real-time online updating of skills demand and job vacancies, including at regional and sectoral level;
3. ***EU support for strategic national upskilling action:*** for the development of national skills strategies, supporting public employment agencies to implement these strategies, respectively through a strategic approach to legal migration, oriented towards a better attraction and retention of specialists;
4. ***Education and vocational training*** adapted to the demands of the future: for education and vocational training to be attractive for all learners, flexible and suitable for the digital transition and the green transition;
5. ***Rolling out the European Universities Initiative and upskilling scientists***: by creating long-term transnational alliances between EU higher education institutions and defining a set of basic skills for researchers;
6. ***Skills to support the twin transitions***: by developing basic green skills, statistical monitoring of the greening of jobs, stimulating the acquisition of digital skills through a digital education action plan and ICT fast-start courses;
7. ***Increasing STEM graduates and fostering entrepreneurial and transversal***: by encouraging young people and women to pursue studies in the field of science, technology, engineering and mathematics, respectively by strengthening the support given to entrepreneurs and the acquisition of transversal skills, such as cooperation and critical thinking;
8. ***Skills for life***: by supporting continuous learning in areas such as media literacy, civic skills, financial education, environmental protection or health;
9. ***Initiative on individual learning accounts***: to stimulate lifelong learning by introducing portable and quality-guaranteed training rights;
10. ***A European approach to micro-credentials***: by creating European standards for the recognition of training courses, including those of short duration, targeted or conducted online;
11. ***The new Europass platform***: which offers online tools for CV development, suggests jobs and learning opportunities;

12. ***Improving the enabling framework to unlock Member States' and private investments in skills***: increasing the EU budget to push Member States and private actors to invest in skills.

5. The Digital Competence Framework for Citizens

The Digital Competence Framework (DigComp) provides tools - both for citizens and policy makers - for assessment, setting learning objectives, identifying opportunities for education, training and jobs in the digital sphere. Developed by the Joint Research Center (JRC) and the European Commission's Directorate-General for Education and Culture (DG EAC), the framework has given rise to a platform on the Europass website. The framework includes 21 such competencies, distributed in five areas of competence:

1. information and data literacy;
2. communication and collaboration;
3. content creation;
4. safety;
5. problem solving.

Digital competences include, in addition to the set of skills, knowledge and skills regarding the nature and role of information technologies, and the opportunities they offer in everyday contexts, as well as related legal and ethical principles or critical and analytical attitudes towards available information and against their responsible use.

6. The Digital Education Plan 2021-2027

The Digital Education Action Plan 2021-2027 looks at the reform of education and training systems in the digital age.

As education is a fundamental right, it is recommended that AI technologies in the education sector be classified as high risk. The potential of AI in the education sector includes: personalizing learning or monitoring learning difficulties, automating administrative tasks, facilitating progress in subjects (e.g. foreign languages, mathematics), special needs education (e.g. speech recognition, virtual assistance).

Content recommendations by AI technologies raise risks related to: data protection, cultural diversity, discriminatory results based on biased data, reduction of opinion diversity. AI technologies are becoming a driver of innovation in newsrooms by interpreting and filtering data or even generating news (e.g. weather forecasts, sports results) and are ubiquitous in audiovisual content platforms (contributing to the production, distribution, localization and filtering of mass - audiovisual media). The lack of a legal framework for the generation of fabricated content (eg deepfakes) is mentioned. The communication points out that education, culture and audiovisual are sensitive areas in the context of the use of AI, as they can affect fundamental rights. The Commission's recommendations cover: including AI in school curricula, training educators using AI to identify discrimination, using gender-neutral imagery for AI used in education and culture, using machine learning to correct gender stereotypes, framing AI used in education in the high-risk group, sanctions applied to public authorities that do not comply with the obligations of

transparency of AI-based automated individual decisions, strict limitations for personalized advertising (e.g. AI offers services, products, sets prices), prohibition of inter behavioral advertising -platforms (specific advertising without prior consent is now illegal), prohibition of discriminatory practices for the provision of products or services.

7. Communication of the Commission on the Sustainable Growth Strategy 2021

The Commission's Communication on the Sustainable Growth Strategy 2021 introduces the principles and reforms supported by the Recovery and Resilience Facility at European level, to support Member States in expediting the development of national plans. The communication emphasizes the principles to be followed at the national level, in order to achieve the objectives of competitive sustainability at the European level, also considering the context given by the recent pandemic:

1. ***green transition:*** the development of reforms to reduce the impact on the environment of activities in areas such as: energy, transport, industry, water management and biodiversity, the implementation of the circular economy;
2. ***digital transformation and productivity:*** it is proposed that at least 20% of national plans be allocated to digital transition reforms, to improve connectivity, develop digital skills, but also develop research and innovation capacities in key areas, such as AI, High- Performance Computing, security, quantum computing or blockchain;
3. ***fairness:*** measures to reduce the unemployment rate, ensure the social acceptance of young people, access to education, health; at the same time, the need to ensure equal opportunity, inclusive education, fair working conditions and social protection is emphasized;
4. ***macroeconomic stability:*** the transition from "protective" fiscal measures - necessary in the short term in response to the effects of the pandemic - to measures that facilitate the reallocation of resources and support the recovery; the need to increase the efficiency of public administration and decrease private debt is emphasized, as well as the introduction of fiscal instruments to support the green transition.

8. EU Cybersecurity Strategy

The EU Cybersecurity Strategy for the Digital Decade explicitly mentions the need to correlate the field of cyber security with other technological areas of vital importance to society (such as Artificial Intelligence, encryption, quantum computing technology), both from the perspective of correlating investment efforts and countering risks common security.

9. EU Security Union Strategy

The EU Security Union Strategy for the period 2020-2025 places AI in the category of technologies that ensure an increase in the quality of life, but which also introduce considerable security risks both of a technical nature (e.g. in correlation with cyber risks) and human nature (e.g. regarding human rights, freedom of expression and manifestation, democracy and social organization, violations of ethical norms). The Commission Communication recommends the integration of AI in legal fields and practices, the updating of legislation in the sense of the most applied representation of AI in relation to technological development and ensuring community security, the creation of a governance system (at the level of governmental, academic and private environments) dedicated to the adoption of AI, as well as facilitating and supporting technological research-development processes.

Identifying national priorities, policies and strategies

In the context of the EU's ambitions to become a world leader in the field, it is desirable for the Republic of Moldova to align itself with the trends, to create a regulatory framework, to draw a path for the adoption of technologies that are in agreement with the national context and to capitalize on the resources of expertise in sciences, technological innovation, investments, by involving the academic environment, business, research-innovation, public administration and expertise from the diaspora.

The effort to develop the White Book is limited to actions at the European level, but it also responds, to the same extent, to the needs identified at the national level, in the context of a rapid evolution of advanced technologies and the use of AI solutions in various fields of activity, with impact at the level the whole society.

Thus the White Book is also anchored in the national framework given by the national legislation, policies and strategies that govern its related fields or those with which AI intersects. The present section includes references and extracts from the most relevant horizontal or sectoral strategies, with which a coordination and complementarity of the objectives and measures proposed by this strategic framework was sought, as well as a selection of normative acts with a major impact on the AI field.

1. The Digital Transformation Strategy of the Republic of Moldova for the years 2023-2030

Adopted by the Government of the Republic of Moldova on September 6, 2023, the Digital Transformation Strategy of the Republic of Moldova for the years 2023-2030 (DTSM) will focus on six general objectives that will guide the activities within the strategy:

1. Development of a digital society
2. Development of a robust and competitive ICT sector
3. Creating an innovative and resilient digital economy
4. Establishing an efficient, intelligent and transparent digital state
5. Creating an accessible, safe and inclusive digital environment
6. Consolidation of the image of the Republic of Moldova as a digital nation

Achieving the above objectives will ensure a functional and safe environment for the development and widespread use of digital solutions in all spheres of life, including the elimination of inequities and disparities associated with the dimensions of gender, livelihood, disability and income, facilitating the process of integration in the European Union.

The mission of the strategy is to contribute to the achievement of efficient public governance, to increase the well-being of citizens and the competitiveness of the country, thus allowing the Republic of Moldova to become a full member of the European Union.

As a result of the implementation of the strategy, the Republic of Moldova will become an innovative and inclusive digital society with digital skills, with an advanced digital infrastructure, a pro-digital governance and a business community that fully exploits digital opportunities.

Many of the principles that formed the basis of the strategic documents in the field of digital transformation are also valid for the implementation of the current strategy. The nine principles for digital development, for example, have been endorsed by a wide range of stakeholders internationally and provide practical guidelines for digital transformation.

However, DTSM brings to the fore three overarching defining principles for the mission, vision and goals set out above.

1. *Developing people over technology:* Digital transformation is primarily about focusing on people rather than the technology aspects of implementation. Technology is only a tool to achieve the vision and strategy objectives, while motivated and properly trained personnel are its core.
2. *Shared responsibility in implementing the strategy between central public administration authorities, local public administration authorities, the private sector, development partners and the whole society.* The experience of previous strategies has shown that the involvement of only a few interested parties in the implementation and the exclusion of the others inevitably leads to the development of solutions that operate in isolation, trying to solve complex problems from the perspective of narrow institutional interests.
3. *Compliance with European Union standards and regulations and application of international best practices.* The new country strategy regarding integration into the European Union dictates the need to harmonize the existing and future institutional, normative and technological framework with that of the EU by adopting common standards and best practices, including those recognized at the international level. The creation of the common digital space between the Republic of Moldova and Romania is an excellent test in this sense, to ensure compliance with the standards and regulations of the European Union, considering the strong cultural and social affinities between the two countries.

2. Activity program of the Government of the Republic of Moldova

With the completion of the implementation period of the National Information Society Development Strategy "Digital Moldova 2020" approved by Government Decision no. 857/2013, the Republic of Moldova has reached the moment when it must rethink its digital transformation possibilities, from a holistic perspective, at the level of the entire society, by identifying new opportunities through which people, businesses, local public administration will interact, and through stimulating the demand for skills and digital solutions.

The activity program of the Government of the Republic of Moldova, which identifies digital transformation as one of the most important policy objectives for the next four years, is in line with

the Association Agreement with the European Union and the UN 2030 Agenda for Sustainable Development. The recent grant to the Republic of Moldova of the status of a candidate country for accession to the European Union (on June 23, 2022) is another mobilizing factor for the country's integration into the legal framework of the European Union and the single digital market. In this context, it is necessary to accelerate the already initiated transformational processes, to align national strategic measures with European and global trends and to implement new policies, based on the latest transversal priorities of the European Union, as well as on the specific needs of the Republic of Moldova.

3. Promoting digital business skills in the Republic of Moldova

SMEs represent 99% of all businesses in Moldova, generating 60% of total employment, but only 39% of turnover.

Digital transformation offers numerous opportunities and benefits that could help businesses address some of the challenges they face. Digital tools can help firms improve processes and reduce costs by adopting enterprise resource planning (ERP) and/or customer relationship management (CRM) systems, for example, while using social media or websites web, combined with big data analysis, allows companies to reach new markets and gain a better understanding of customer needs. These technology-induced improvements result in higher productivity, increased export and investment potential, and higher wages for employees. Digitization can also help businesses weather economic crises better, as digitized firms have proven more resilient to disruptions.

Building on Moldova's existing policy efforts, the OECD supported the country in designing policies to equip individuals and legal entities with the digital skills they need, assessing progress made and identifying key challenges. Analyzing the four main categories of digital skills, the OECD provided policy analysis and recommendations to feed into the Digital Transformation Strategy of the Republic of Moldova 2023-2030 and future policy initiatives. The resulting report is built around three main components:

1. ***The institutional and policy framework for digital skills****:* Moldova has been making significant efforts to develop digital skills. The topic has been included in several policy documents, such as the previous National Digital Strategy (NDS) *Digital Moldova 2020*, which set digital literacy as a key objective and resulted in improvements in the education system. Nevertheless, previous policy documents left some aspects of digital skills policies unaddressed, such as lifelong learning and digital business skills. The previous NDS reportedly suffered from implementation gaps due to a lack of project implementation capacity, economic and political instability, and insufficient budget allocations. The new *Digital Transformation Strategy 2023-2030* should therefore be more comprehensive and set clear policy objectives, associated with measurable targets and budgets, to improve both implementation and monitoring. As for the digital skills ecosystem, Moldova has drawn on a strong and institutionalised public-private co-operation, with private sector initiatives complementing the policy approach and offering a wide range of additional services. Future policy initiatives would benefit from a whole-of-government approach by involving all relevant governmental actors, including the Ministry of Labour and the National Employment Agency who have been less involved so far, and other stakeholders outside the government (e.g., employers and teachers). The collaboration among relevant stakeholders could be facilitated by the creation of a National Digital Skills and Jobs Coalitions, also with a view to bringing Moldova closer to EU standards and practices.

2. ***Measuring digital skills and anticipating future needs**:* this report provides, *inter alia*, a gap analysis of Moldova against the indicators included in the OECD's Going Digital Framework, showing that Moldova has been collecting data on digitalisation, but that intelligence on digital skills remains limited. Skills anticipation tools also remain at a nascent stage, and firms still lack awareness of their skills levels and needs. Moving forward, Moldova could complement existing assessments with dimensions on digital skills (data collection, digital skills framework, self-assessment tool for digital skills), and strengthen skills needs anticipation practices, including at company-level.
3. ***Providing targeted support for SMEs to develop digital skills***: Moldova's SME agency ODA (formerly ODIMM) has been developing programmes to support SME digitalisation, which included training and mentoring components, and plans to incorporate digitalisation as a crosscutting component in existing trainings. Digital skills training opportunities were further enhanced by public-private sector co-operation. However, the range of support to improve SMEs' digital skills specifically remains limited. Moving forward, Moldova should assess the quality of trainings offered so far and step up these initiatives, while helping SMEs overcome barriers to digital skills development by raising awareness of the support available, strengthening incentives for on-the-job training, and building SMEs' capacity and learning culture through peer-learning between SME managers and entrepreneurs, including with the Moldovan diaspora.

4. The national program in the fields of research and innovation for the years 2024–2027

The national program in the fields of research and innovation for the years 2024–2027 is the main policy document that establishes the strategic priorities and development objectives in the fields of research and innovation, which, being considered as a matter of priority in the European integration process, will contribute to the preparation of other areas and sectors towards the process of our country's accession to the EU. A special emphasis is placed on integration into the European Research Area (ERA) through the progressive transformation of the internal functioning of research and development organizations and through the development of links with similar organizations in the EU, including through the full exploitation of the opportunities arising from the status of an associated country to the European Framework Program in the fields of research and innovation "Horizon Europe" (Agreement between the Republic of Moldova, on the one hand, and the European Union, on the other hand, regarding the participation of the Republic of Moldova in the European Union Program "Horizon Europe" - Framework Program for research and innovation, approved by law 193/2021).

According to the Program, the Republic of Moldova formulated as a strategic priority the achievement of economic competitiveness and innovative technologies (Strategic Priority V - Innovative technologies, sustainable energy, digitalization. The national vision of forming an advanced information society, in which the use of ICT facilities, extended access to ICT infrastructure modern, rich digital content and high-performance information services will lead to economic competitiveness, good governance and, implicitly, to an increase in the well-being of the population.

5. Law no. 48 of 16.03.2023 on cybersecurity

The Law no. 48/2023 regulates the normative, organizational and cooperation framework in the field of cybersecurity, establishes the competence of public authorities and institutions in the field of cybersecurity, determines the general national crisis management framework in the field of cybersecurity, establishes requirements, measures and mechanisms to ensure network security and

IT systems, which are essential for the functioning of society, and the management of cyber incidents.

The main objective of this normative act is the primary and partial transposition into national legislation of Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity in the Union, amending the Regulation (EU) no. 910/2014 and Directive (EU) 2028/1972 and repealing Directive (EU) 2026/1148 (NIS Directive 2).

6. Law no. 142/2018 on data exchange and the Government Decision no. 211/2019 on the interoperability platform (MConnect)

The purpose of this law is to facilitate and streamline data exchange and interoperability within the public sector, as well as between the public and private sectors, in order to increase the quality of public services provided, to create new electronic public services and to ensure information security.

The Government of the Republic of Moldova has developed the interoperability platform (MConnect), which according to art. 3 of Law no. 142/2018, constitutes an information system, owned by the state, intended to ensure the exchange of data between the information systems owned by the participants in the data exchange. Owner and holder of the interoperability platform (MConnect), is designated Electronic Governance Agency (EGA).

In the context of the aforementioned, public institutions, as well as private institutions, can use the interoperability platform to consume data, in an automated way, guided by the principle of legality of data exchange, i.e. starting from the underlying legal basis and legal purpose followed.

At the same time, potential data consumers, who do not have information systems capable of consuming data in an automated mode, can access the respective data using the "Data with Authorized Access" Module on the Governmental Data Portal (https://date.gov.md/).

7. Semantic Catalogue

The semantic catalogue is a digital working tool that ensures unification and standardization of definitions and classifiers, univocal description of data structures, reuse of these data and facilitation of interaction on the interoperability platform (MConnect).

The concept of the "Semantic Catalogue" information system and the Regulation on how to keep the Register formed by the "Semantic Catalogue" information system were approved by HG323/2021.

In a practical way, to use the Semantic Catalogue and to understand what data exists in the State Information Registers, the institutions have available an intuitive interface that allows, as potential participants in the data exchange, to explore and access information on the published data , directly from the main page of the Semantic Catalogue. Thus, public or private institutions can navigate through the Semantic Catalogue and consult its content to understand what data can be consumed by them in the process of providing services. The information in the Semantic Catalogue is published by the state institutions that hold data in the State Information Registers and are approved by the administrator of the Semantic Catalogue within EGA.

CONCLUSIONS

In conclusion, data is central to AI-powered transformation, and data-driven innovation promises significant benefits for both citizens and the economy. With an exponential growth in data consumption over the last decade and impressive projections for the future, data governance is becoming essential in efforts to adopt artificial intelligence in the Republic of Moldova. The goal is to build the foundation of a data economy that both citizens and businesses can trust.

The government, as the national custodian of personal and administrative data, holds a valuable data resource considered important by many companies. By policing, cleaning and facilitating private sector access to these datasets, Government can play a crucial role in driving cross-sector data sharing and innovation. A public-private sharing framework, precisely defined and in line with the European Data Strategy, will provide an essential structure for effective collaboration between the government and private sectors, clarifying issues such as the scope, type, granularity and safeguards of government data which can be shared. The development of an appropriate regulatory framework is a crucial step for the consolidation of this approach and the integration of the Republic of Moldova in the European strategic directions regarding data management.

The Republic of Moldova ranks modestly in terms of AI readiness, ranking 83rd in the AI Readiness Index 2022. Compared to the previous year, there is a marginal improvement, from 86th to 83rd. However, observations from the AI Policy Observatory of the OECD shows that the Republic of Moldova needs a more substantial development of sectoral policies in the field of AI, while Romania has already adopted three such documents. In this context, it is clear that there is an opportunity to strengthen efforts to strengthen the infrastructure and policies related to data governance and AI in the Republic of Moldova.

The implementation of AI technologies has the potential to influence the economy of the Republic of Moldova in various ways, including increasing productivity in various sectors, stimulating innovation and developing new products and business models, attracting foreign direct investments, transforming the labor market by creating new opportunities for employment and the need for a more skilled workforce, improving public sector efficiency, enhancing global competitiveness and economic growth through the export of AI-based technologies and services, as well as personalizing services for customer satisfaction and loyalty. All these aspects underline the essential role of the implementation of AI technologies in the context of sustainable economic and social development of the Republic of Moldova.

In this context, the White Book represents a vital strategic tool for the Republic of Moldova, aiming to establish a coherent vision for data governance and AI. This constitutes a necessary and timely frame of reference for the preparation of the future national policy framework related to data governance and AI, contributing to the understanding, acceptance and capitalization of the transformative processes generated by AI in society. The White Book will support the central public administration in the substantiated efforts to standardize, operationalize and regulate data governance and AI development, thus facilitating the highlighting and exploitation of the national innovative potential in the field of AI and the effective management of the risks associated with the evolution of AI.