Artificial Intelligence Strategy for Digital Government.

Proposal for public consultation.

AGESIC

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Content

Introduction

In the history of human evolution there are milestones that have transformed culture and generated changes in all disciplines, activities and ways of life of people.

Currently, Artificial Intelligence (AI), associated with large volumes of data, opens a new scenario that generates changes of great impact in all areas of human life.

As a leader in Digital Government, Uruguay has identified this trend early and is currently preparing to incorporate AI into Digital Government. In this context, Uruguay has defined the goals and objectives for its digital development in the Uruguay Digital Agenda 2020[1] and in the Digital Government Plan 2018-2020[2] Both documents, which are based on the principle of digital transformation with equity, provide a framework for incorporating AI at different levels of government. One of the dimensions established in the Digital Government Plan is Smart Government, which strengthens decision-making by basing it on evidence and improves the performance and monitoring of results of public policies. In addition, it proposes the development of predictive analytical platforms and models to design proactive services.

Today, AI has the potential to enable governments to incorporate new forms of analysis and use of existing information by adopting a proactive attitude, with the ability to anticipate people's needs or prevent problems. These skills strengthen the development of public policies and consolidate a closer relationship between people and the State. In the context of Smart Government, AI appears to be a technology that is conducive to implementing more efficient and innovative services.

However, AI also presents challenges and risks that need to be considered when developing a solution based on this type of technology. As part of Uruguay's Digital Policy, the implementation of AI in the Public Administration (PA) requires general principles that guide the digital transformation of the government and provide a framework for its use in the public sphere. In addition, a clear strategy is needed that incorporates different visions and considerations for the development and responsible use of this technology.

The purpose of this document is to outline this strategy so that the Public Administration can use Artificial Intelligence in the development of public services and in the improvement of its internal processes.

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[1] https://uruguaydigital.uy/

[2] https://www.agesic.gub.uy/innovaportal/file/6539/1/plan_de_gobierno_digital.pdf

The general objective of the strategy is to promote and strengthen the responsible use of AI in Public Administration,identifying objective pillars and specific lines of action.

This first version was generated by a multidisciplinary working group of Agesic professionals who come from different fields, such as technology, law, sociology and medicine, among others. This holistic approach provides different perspectives on how to address the challenge.

This working group began by investigating the state of the art, in particular by delving into the experience of countries such as Canada and Italy, pioneers in addressing Artificial Intelligence strategies focused on Digital Government. These activities involved a study of work processes and documents generated, as well as holding exchanges with the experts directly involved.

Following this initial survey, this document began to be built, the main objective of which is, as mentioned, to promote responsible use of AI throughout the AP, focused on generating better digital services and work processes.

This Artificial Intelligence Strategy for Digital Government presents the first actions to be carried out, through an open construction process, sharing what has been developed with different actors and interested parties to gather their vision and contributions both at national and international level. These actions will be the initial kick-off for a process that must continuously monitor and evolve the use of technology, as well as the results obtained to ensure the digital transformation with equity of the Public Administration in Uruguay.

Background

As a result of the evolution in the application of Artificial Intelligence in different areas and topics, in recent periods of government strategies and guidelines have been established for its development and promotion.

Countries such as the United States, Finland and France, among others, have developed national strategies for the development of Artificial Intelligence, while, for example, Canada and Italy focused these strategies on the use of technology to improve public services. A good report on these experiences can be found in the article "An Overview of National AI Strategies", by Tim Dutton.[3].

Considering this trend, in 2018 the member countries of the Digital 9 (D9), including Uruguay, developed and agreed on a series of general objectives regarding the application and use of AI by national governments (see box). In turn, starting in 2019, the D9 formed a working group to share and generate knowledge on the subject, such as reference frameworks for responsible use, impact analysis of the development of algorithms and models, among others.

At the national level, multiple initiatives and projects in various areas of the State come together with this strategy. As relevant examples we could cite the work of the Planning Directorate within the Planning and Budget Office (OPP), which generated a series of prospective works, such as: For example, the document "Automation and employment in Uruguay"[4], within the framework of "A national development strategy Uruguay 2050". In turn, Transforma Uruguay [5](The National System for Productive Transformation and Competitiveness is preparing to launch the Roadmap for Data Science and Machine Learning, with the aim of presenting a set of initiatives on this topic in strategic sectors. Also in the area of Departmental Governments, Montevideo del Mañana stands out.[6], a process that integrates prospective analysis with citizen participation towards the formulation of the Vision of the Future for Montevideo.

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[3] https://medium.com/politics-ai/an-overview-of-national-ai-strategies-2a70ec6edfd

[4] https://www.opp.gub.uy/sites/default/files/documentos/2018-06/2256_Publicacion_Automatizacion_y_empleo_en_Uruguay.pdf

[5] https://www.transformauruguay.gub.uy/es/

[6] http://www.montevideo.gub.uy/montevideo-del-manana

In the capacity building space, new training options in data science were launched, such as the Master's Degree in Data Science[7]at the Faculty of Engineering of the University of the Republic or the Data Science Program[8] from the Technological University of Uruguay (UTEC), as well as other courses and specializations taught at private institutes and universities in Uruguay.

Finally, in recent years the Public Administration has not been oblivious to this strategy by developing fields of work such as interoperability, open data and data management.

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[7]https://www.fing.edu.uy/cpap

[8]https://datascience.edu.uy/

AI Strategy for Digital Government

Artificial Intelligence (AI) is a term used to describe a field of study and a set of technologies that study and develop systems capable of performing tasks normally attributed to human intelligence. Examples of this might include translating a document or recognizing a person by their face. AI also includes systems that learn to behave autonomously, such as driverless cars and programs that play chess or perform other activities.

Although the beginnings of AI development can be traced back to the mid-20th century, the generation and availability of large amounts of data, the evolution of techniques and algorithms, as well as the decrease in costs of increasingly efficient infrastructure for processing this type of information, have meant that this technology has advanced rapidly in recent years.

We are increasingly dealing with AI applications: virtual assistants on our cell phones, algorithms on social networks that show us information in one way or another, driverless cars, programs that learn from our actions to recommend music, movies or consumer items in online stores, real-time translators, systems that detect diseases or health risks early, among others.

In turn, solutions based on Artificial Intelligence have become an indispensable tool for the development and provision of digital services for citizens. Through their implementation, the digital transformation of the Public Administration can be enhanced, which requires a strategy that guides the decisions to be made in this regard.

For the use of AI tools in Public Administration to be successful, the strategy must be designed and implemented in a legitimate manner, generate trust and understanding, and consider the short, medium and long-term implications. This work must be carried out in conjunction with citizens and different groups of stakeholders: final recipients of the tools and parties involved in the process of building, developing and using the emerging product of the AI   application.

Considering the above, the AI   Strategy as a tool for digital transformation is developed with the purpose of promoting and strengthening its responsible use in Public Administration.

The responsible use of AI involves four dimensions: "ethical", "normative", "technical" and "social", which must be present from the design to the implementation of its various applications.

The**ethical dimension**In Public Administration, this implies that the ethical framework must structure all public actions and, therefore, set the guidelines for developments in AI. For its application and implementation, transparency in the actions of Public Administration is essential. This transparency not only implies complete knowledge of the information managed, but also of the strategies applied, their purposes and content. At the same time, by introducing transparency rules, the possibilities of unwanted biases and discrimination will be mitigated.

The**legal dimension**In Public Administration, this involves developments within a pre-existing legal framework that establishes the rights and obligations of individuals, as well as the scope of action of public bodies. In this sense, adherence to the Human Rights standards enshrined in international instruments is essential, which ensures a balance between the rights of individuals and the limitation of the scope of State action.

The**technical dimension**In public administration, this involves compliance with the technical and regulatory frameworks that guarantee the solvency and robustness of AI systems. This also requires constant attention to good practices, ongoing review of the measures implemented and audits by impartial third parties.

The**social dimension**In Public Administration, it involves generating people-oriented solutions that seek the general interest and consider the agency capacity of human beings.

These four dimensions must be present during the execution of the lines of action of the AI   strategy, seeking to address them in such a way that they contribute to responsible use for digital transformation. In this framework, AI generates opportunities to create public services with better quality, it is a support for decision-making and for devising public policies that respond more adequately to people's needs.
At the same time, it involves risks and threats that we must take into account when developing AI applications in the public sphere.

To take advantage of these opportunities and reduce the risks and threats, an AI Strategy for Digital Government and a set of general principles were developed to provide a general framework for using AI in the public sphere.

The overall objective of the strategy is**promote and strengthen the responsible use of AI in Public Administration.**Within this framework, four pillars have been identified that make up this strategy, each with specific objectives and lines of action.

1. AI Governance in Public Administration.
2. Capacity building for AI.
3. Use and application of AI.
4. Digital Citizenship and AI.

General principles

Purpose: AI must enhance human capabilities, complementing them in every way possible, aiming to improve people's quality of life, facilitating processes and providing added value to human activity.

General interest: State-driven AI-based solutions must serve the general interest, guaranteeing inclusion and equity. To do this, specific work must be done to reduce the possibility of unwanted biases in data and models used that may negatively impact people or encourage discriminatory practices.

Respect for Human Rights: Any technological solution that uses AI must respect human rights, individual freedoms and diversity.

Transparency: AI solutions used in the public sphere must be transparent, complying with current regulations. This transparency must:
- Provide the algorithms and data used to train the solution and put it into practice, as well as the tests and validations carried out.

- Explicitly make visible, through active transparency mechanisms, all those processes that use AI, whether in the generation of public services or in supporting decision-making.

Responsibility: Technological solutions based on AI must have a clearly identifiable person responsible for the consequences arising from the operation of the solution.

Ethics: When the application and/or development of AI-based solutions presents ethical dilemmas, these must be addressed and resolved by humans.

Added value: AI-based solutions should only be used when they add value to a process. AI should not be an end in itself, but rather a tool that can enhance the development of Digital Government.

Privacy by design: AI solutions must take into account, from the outset, the privacy of individuals. The Personal Data Protection principles in force in Uruguay are considered components of this document.

Security: AI developments must comply, from their design, with the basic principles of information security. The guidelines and regulations related to cybersecurity in force in Uruguay that apply to AI development are considered components of this document.

Pillars, objectives and lines of action

AI Governance in Public Administration

The purpose of the AI Governance dimension for Digital Government is to ensure compliance with the principles and recommendations set out in this document.

Likewise, the reference framework must contemplate the generation of a model for selecting and prioritizing AI projects that contains acceptance criteria considering the principles generated, such as the purpose, the contribution of value to the processes, the general interest and the need that the project creates.

In turn, the reference framework must include an AI maturity model that contains all the technical, organizational and human aspects, among others. This model allows for a single indicator that contributes to the evolution of AI in Public Administration.

The governance framework must include a standard quality data model for open data, which will create the foundations necessary to implement AI.

The governance model must include monitoring procedures and structures, an AI observatory that allows obtaining information for decision-making. It will also be convenient to generate a monitor of the projects in progress in order to identify impacts and be able to take action accordingly.

Finally, Governance will include a knowledge management process in order to capitalize on and manage lessons learned and knowledge generated in the ecosystem.

To this end, the following objectives are defined:

OBJECTIVE I: Identify the AI ecosystem in Uruguay

- Develop a map with the different stakeholders (role, sector, experience, value contribution, areas of action, etc.) and identify the ecosystem that brings together the public and private sectors, academia and civil society, as well as international actors and organizations that will then allow them to develop and enhance their capacities.

- To create a forum for discussion on the use of AI in public administration, which will allow for the definition of guidelines, ensure the generation of capabilities and promote a research culture in AI.

OBJECTIVE II: Define an AI Governance model in Public Administration

- Define an AI Governance model for the AP, as well as a reference framework for its implementation that includes, among others: actors (such as public, private, academia, civil society), roles and responsibilities, standards, procedures and decision-making mechanisms, as well as performance indicators and guidelines for impact analysis.

- Promote active transparency and compliance with agreed ethical principles and values.

Capacity building

As a foundational point for the adoption of AI in the PA, it will be necessary to train its officials in different capacities. This will allow understanding the benefits and risks of this technology, fields of application where it adds value, as well as technical elements (not only technological) for its correct implementation, putting into practice and continuous monitoring. It will be increasingly necessary to generate the conditions for a good design and development of AI systems and applications, in close collaboration with academia, the private sector and civil society.

It is important to prioritize training in multidisciplinary contexts, generating skills that allow understanding all the difficulties, challenges and impacts that arise when using AI in the services and processes of the Public Administration. In addition to the technical and business profiles that are linked to Information Technologies in the public sphere, there is a need to incorporate new profiles, such as those related to humanistic training, whose contributions are essential to improve the interaction between AI systems and their users.

Training should extend to professional training methodologies in a context of permanent and accessible learning. This implies the development of transversal and specific training in topics related to AI, both for the development of talent in professionals in the area and for the necessary updating of knowledge of society in general.

The transfer of knowledge between universities, research centres, the public sector and the private sector is essential for the improvement of public services, through new opportunities for innovation and areas of development.

To this end, the following objectives are defined:

OBJECTIVE III: Generate capacities for the development and use of AI in AP

- Develop a training program that covers the different disciplines related to AI, as well as the different profiles involved, through actors from academia and local industry.

- Train 100% of the Central Administration agencies according to the defined program.

- Encourage an organizational culture that promotes the development of AI as a tool for the Digital Transformation of Public Administration, addressing aspects such as change management, among others.

OBJECTIVE IV: Generate knowledge spaces

- Promote the exchange of experiences in the use of AI in the public and private spheres, both nationally and internationally.
- Generate a Knowledge Space in AI for Public Administration, with the aim of sharing best practices and experiences among its participants.

Responsible use

AI is not an end in itself, but rather a strategic capability that organizations can develop and mature to achieve specific, measurable, and transformative outcomes. A capability where the journey from pilot projects or short-term plans to large-scale implementations is a task that requires solid planning.

This planning must consider various aspects that directly impact implementation, in particular, all those related to how data should be treated, manipulated and managed. Thus, the data management strategy of the Public Administration, its existing regulations on privacy and data protection, its policy of openness and available data, as well as the regulation related to information security, among others, will be strongly linked to the success of the use of AI in this area. Therefore, building a data-based Public Administration, where data is considered a critical asset, is key to the success of AI initiatives, a practice that combines business and technology understanding and skills.

Due to the complex nature of AI, solutions using this technology may generate unpredictable or unexpected results. These

Results may even appear opaque due to the difficulty in explaining the results obtained.

While transparency is a vital element for trust, there is a challenge that the Public Administration must consider: establishing what level of opacity it will be willing to address (and even in what contexts) in order to take advantage of the potential offered by AI, whether using open source or even proprietary solutions, always in accordance with current regulations.

Together with capacity building, all the aspects mentioned above make it relevant to implement lines of action that strengthen the proper use of AI, through the generation of technical guidelines, guides and good practices that can be shared in the Public Administration.

To this end, the following objectives are defined:

OBJECTIVE V: Generate technical guides for the proper use of AI in Public Administration

- Develop technical guidelines for problem selection, as well as the design and implementation of AI-based solutions. These guidelines should consider, among other aspects, the relevance of using AI services in the cloud, the identification of appropriate tools for different application cases, data protection and privacy, and the role of those involved in the results.
- Strengthen the integration, good management and availability of quality data in the AP, as well as private data of public interest, thus generating the necessary inputs for the generation of high-quality and value-added AI-based systems.

OBJECTIVE VI: Promote transparency of algorithms

- Define standards, guidelines and recommendations for the impact analysis, monitoring and auditing of decision-making algorithms used in the AP, as well as for their interpretation and explanation at all times.

- Establish standards and procedures for the dissemination of the processes used for the development, training and implementation of AI algorithms and systems, as well as the results obtained, promoting the use of open source code and data.

OBJECTIVE VII: Design specific action plans in strategic sectors.

- Design specific action plans to strengthen the responsible use of AI in defined strategic sectors
- Implement proof of concepts and pilots in the defined strategic sectors.

AI and Digital Citizenship

Science fiction has generated the first constructions on AI. Later, and associated with the cinematographic diffusion, it has become part of the social imagination, generally with apocalyptic perspectives and dystopian futures, which has fostered fear of the unknown. However, AI is already part of our lives. However, AI is already part of our lives.

The application of AI in Public Administration opens up a series of potentialities that can radically change the way we relate to the State, design and implement public policies, measure results and make decisions.

Today, several nations are already applying AI systems in highly sensitive areas, such as education, the justice system, or public health. For this reason, it is increasingly important to have citizens with sufficient knowledge and the availability of tools to be able to interact with AI, protect their rights, and understand the scope of the application of emerging technologies.

The application of AI can have an impact on the way we use and protect data, on equal access to public services and opportunities, and on how we exercise our rights and interact with each other. For this reason, this strategy includes a dimension that seeks to prepare citizens to take advantage of the opportunities and face the challenges that AI brings, as well as to generate the necessary trust in people to develop and use new technologies.

To this end, the following objectives are defined:

OBJECTIVE VIII: Develop citizen awareness and trust

- Implement awareness-raising campaigns to inform citizens about what AI is and how it is being used by the Public Administration.

- Strengthen mechanisms for citizens to know their rights in the digital sphere and how to exercise them.
- Promote the development of Digital Intelligence at its three levels (digital citizenship, creativity and digital initiative) to enhance involvement, participation and understanding in the development and application of AI solutions.