



Uruguay
Presidencia

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Artificial Intelligence Strategy for Digital Government.

Proposal for public consultation.

AGESIC

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Introduction

The history of human evolution includes milestones that have transformed culture and brought changes to every discipline, activity and way of life.

Today, Artificial Intelligence (AI), combined with large volumes of data, is opening up a new landscape that brings far-reaching changes to every area of human life.

As a leader in Digital Government, Uruguay identified this trend early and is now 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 the Digital Government Plan 2018-2020 ². Both documents, 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 public policy outcomes. It also proposes the development of platforms and predictive analytical models to design proactive services.

Today, AI has the potential to enable governments to introduce new ways of analyzing and using existing information by adopting a proactive approach, with the ability to anticipate people's needs or prevent problems. These capabilities strengthen the development of public policies and build a closer relationship between people and the State. In the context of Smart Government, AI emerges as a suitable technology for 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, implementing AI in Public Administration (PA) requires general principles to guide the government's digital transformation and provide a framework for its use in the public sphere. A clear strategy is also needed that incorporates different perspectives and considerations for the responsible development and use of this technology.

The purpose of this document is to set out that strategy so that Public Administration can use Artificial Intelligence to develop public services and improve its internal processes.

¹ <https://uruguaydigital.uy/>

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



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

This first version was produced by a multidisciplinary working group of Agesic professionals from various fields, including technology, law, sociology and medicine. This holistic approach provides different perspectives on how to address the challenge.

The working group began by researching the state of the art, in particular by exploring the experience of countries such as Canada and Italy, pioneers in addressing Artificial Intelligence strategies focused on Digital Government.

These activities involved studying working processes and the documents produced, as well as holding exchanges with the experts directly involved.

After this initial survey, work began on this document, whose main objective, as mentioned, is to promote the responsible use of AI throughout PA, with a focus on producing better digital services and working processes.

This Artificial Intelligence Strategy for Digital Government presents the initial actions to be undertaken through an open development process, sharing the work with different actors and stakeholders to gather their perspectives and contributions at both national and international levels. These actions will launch a process that must continuously monitor and evolve the use of technology and the results obtained, to ensure the equitable digital transformation of Public Administration in Uruguay.



Background

As the application of Artificial Intelligence in different fields and subject areas has evolved, strategies and guidelines for its development and promotion have been established over recent terms of government.

Countries such as the United States, Finland and France, among others, have developed national strategies for Artificial Intelligence development, while Canada and Italy, for example, have focused these strategies on using the technology to improve public services. A useful account of these experiences can be found in Tim Dutton's article "An Overview of National AI Strategies"³. In light of this trend, in 2018 the member countries of Digital 9 (D9), including Uruguay, developed and agreed on a series of general objectives for the application and use of AI by national governments (see box). In turn, from 2019 the D9 established a working group to share and generate knowledge on the subject, including reference frameworks for responsible use and impact assessments for the development of algorithms and models.

At the national level, multiple initiatives and projects in various areas of the State converge with this strategy. Relevant examples include the work of the Planning Directorate within the Office of Planning and Budget (OPP), which produced a series of foresight studies, such as the document "Automation and Employment in Uruguay"⁴, as part of "A National Development Strategy, Uruguay 2050." In turn, Transforma Uruguay 5 (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 subject in strategic sectors. At the departmental government level, Montevideo del Mañana⁶ also stands out: a process that integrates foresight analysis and citizen participation to formulate a Vision for Montevideo's Future.

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 area of capacity development, new data science training options have been introduced, such as the Master's in Data Science ⁷ at the School of Engineering of the Universidad de la República, or the Data Science Program ⁸ at the Universidad Tecnológica del Uruguay (UTEC), along with other courses and specializations offered by private institutes and universities in Uruguay. Finally, in recent years Public Administration has also contributed to this strategy by developing fields of work such as interoperability, open data and data management.

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 include translating a document or recognizing a person by their face. AI also includes systems that learn to behave autonomously, such as driverless vehicles and programs that play chess or perform other activities.

Although the beginnings of AI development can be traced back to the mid-twentieth century, the generation and availability of large quantities of data, the evolution of techniques and algorithms, and the falling costs of increasingly efficient infrastructure for processing this type of information have driven rapid advances in this technology in recent years.

AI applications are increasingly part of our lives: virtual assistants on our cell phones; social media algorithms that present information to us in different ways; driverless cars; programs that learn from our actions to recommend music, films or consumer goods in online stores; real-time translators; and systems that detect diseases or health risks early, among others.

In turn, solutions based on Artificial Intelligence have become an indispensable tool for developing and providing digital services to citizens. Their implementation can enhance the digital transformation of Public Administration, requiring a strategy to guide the decisions made in this regard.

For the use of AI tools in Public Administration to succeed, the strategy must be designed and implemented legitimately, build trust and understanding, and consider the short-, medium- and long-term implications. This work must be carried out jointly with citizens and different stakeholder groups: the ultimate recipients of the tools and those involved in building, developing and using the product resulting from the application of AI.

In view of the above, the AI Strategy as a tool for digital transformation is being developed to promote and strengthen its responsible use in Public Administration.



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

The ethical dimension in Public Administration means that an ethical framework must structure all public action and therefore establish the guidelines for AI developments. Transparency in the actions of Public Administration is essential to its application and implementation. This transparency involves comprehensive knowledge not only of the information managed but also of the strategies applied, their purposes and their content. At the same time, introducing transparency rules will mitigate the potential for unwanted bias and discrimination.

The legal dimension in Public Administration involves development within an existing legal framework that establishes people's rights and obligations and the scope of action of public bodies. In this respect, adherence to the Human Rights standards enshrined in international instruments is essential, ensuring a balance between people's rights and limits on the scope of State action.

The technical dimension in Public Administration involves compliance with technical and regulatory frameworks that ensure the reliability 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 involves generating solutions centered on people, seeking the general interest and taking human agency into account.

These four dimensions must be present throughout the implementation of the AI strategy's lines of action, with attention to them contributing to responsible use for digital transformation. Within this framework, AI creates opportunities to deliver higher-quality public services, support decision-making and devise public policies that respond more appropriately to people's needs.

At the same time, it entails risks and threats that we must consider when developing AI applications in the public sphere.

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

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



General principles

Purpose: AI must enhance human capabilities, complementing them wherever possible, aiming to improve people's quality of life, facilitate processes and add value to human activity.

General interest: AI-based solutions promoted by the State must serve the general interest, ensuring inclusion and equity. To this end, specific work is required to reduce the potential for unwanted biases in the data and models used that could negatively affect people or favor discriminatory practices.

Respect for Human Rights: Every technological solution using AI must respect Human Rights, individual freedoms and diversity.

Transparency: AI solutions used in the public sphere must be transparent and comply with current regulations. This transparency must:

- Make available the algorithms and data used to train and implement the solution, as well as the tests and validations performed.

- Explicitly make visible, through proactive transparency mechanisms, all processes that use AI, whether to generate public services or support decision-making.

Accountability: AI-based technological solutions must have a clearly identifiable person responsible and accountable for the consequences of the solution's actions.

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

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

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

Security: AI developments must comply with the basic principles of information security from the design stage. The cybersecurity guidelines and regulations 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 for Digital Government dimension is to uphold the principles and comply with the recommendations set out in this document.

The reference framework must also provide for the development of a model for selecting and prioritizing AI projects, with acceptance criteria that take into account the principles established, such as purpose, added value for processes, the general interest and the need giving rise to the project.

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

The Governance reference framework must provide for a quality data model based on open data standards, laying the foundations needed to implement AI.

The Governance model must include monitoring procedures and structures, and an AI observatory to obtain information for decision-making. It will also be advisable to establish a monitoring mechanism for projects under way in order to identify impacts and take action accordingly.

Finally, Governance will include a knowledge management process to make use of and manage the lessons learned and knowledge generated in the ecosystem.

To this end, the following objectives are defined:

OBJECTIVE I: Identify the AI ecosystem in Uruguay

- Draw up a map of the various stakeholders (role, sector, experience, contribution of value, areas of action, etc.) and identify the ecosystem bringing together the public and private sectors, academia and civil society, as well as international actors and organizations that will subsequently enable their capabilities to be developed and enhanced.
- Manage a forum for discussion on the use of AI in Public Administration to define guidelines, ensure capacity development and encourage a culture of AI research.



OBJECTIVE II: Define a model for AI Governance in Public Administration

- Define an AI Governance model for PA, as well as a reference framework for its implementation that includes, among other elements: actors (such as the public and private sectors, academia and civil society), roles and responsibilities, rules, procedures and decision-making mechanisms, as well as performance indicators and guidelines for impact assessment.
- Promote proactive transparency and compliance with the agreed ethical principles and values.

Capacity development

As a foundation for adopting AI in PA, it will be necessary to train its staff in different capabilities. This will enable them to understand the benefits and risks of this technology, fields of application where it adds value, and technical elements (not only technological ones) for its proper implementation, practical use and continuous monitoring. Creating the conditions for sound design and development of AI systems and applications, in close collaboration with academia, the private sector and civil society, will become increasingly necessary.

It is important to prioritize training in multidisciplinary settings, developing skills to understand all the difficulties, challenges and impacts that arise when using AI in Public Administration services and processes. In addition to the technical and business profiles associated with Information Technology in the public sphere, there is a need to incorporate new profiles, such as those with a background in the humanities, whose contributions are fundamental to improving interaction between AI systems and their users.

Training must extend to professional training methodologies within a context of continuous, accessible learning. This involves developing cross-cutting and specialized training on AI-related subjects, both to develop the talents of professionals in the field and to provide the necessary updating of knowledge for society in general.

Knowledge transfer among universities, research centers, the public sector and the private sector is essential to improving public services through new opportunities for innovation and areas of development. To this end, the following objectives are defined:



OBJECTIVE III: Develop capabilities for the development and use of AI in PA

- Develop a training program covering the various disciplines related to AI and the different profiles involved, through actors from academia and local industry.
- Train 100% of Central Administration bodies 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: Create spaces for knowledge

- Promote exchanges of experience in the use of AI in the public and private spheres, both nationally and internationally.
- Create an AI Knowledge Space 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 a strategic capability that organizations can develop and mature to achieve specific, measurable and transformative results. Moving this capability from pilot projects or short-term plans to large-scale implementation requires sound planning.

This planning must consider various aspects that directly affect implementation, particularly everything related to how data must be processed, handled and managed. Thus, Public Administration's data management strategy, its existing regulations on privacy and data protection, its openness policy and available data, and regulations on information security, among other factors, will be closely linked to the successful use of AI in this sphere. Building a data-driven Public Administration in which data is considered a critical asset is therefore key to the success of AI initiatives: a practice that combines business and technology understanding and skills.

Because of the complex nature of AI, solutions using this technology can generate unpredictable or unexpected results. These



results may even appear opaque because of the difficulty of explaining the outcomes obtained.

Although transparency is vital to trust, this presents a challenge that Public Administration must consider: determining what level of opacity it is willing to address (and even in which contexts) in order to make use of AI's potential, whether using open-source or even proprietary solutions, always in accordance with current regulations.

Together with capacity development, all the aspects mentioned make it relevant to implement lines of action that strengthen the sound use of AI by producing technical guidelines, guides and good practices that can be shared across Public Administration.

To this end, the following objectives are defined:

OBJECTIVE V: Produce technical guides for the sound use of AI in Public Administration

- Develop technical guides for selecting problems and for designing and implementing AI-based solutions. These guides must consider, among other aspects, the appropriateness of using cloud-based AI services, identifying suitable tools for different application cases, data protection and privacy, and the role of those involved in the outcomes.
- Strengthen the integration, sound management and availability of quality data in PA, as well as privately held data of public interest, thereby providing the inputs needed to generate AI-based systems of high quality and added value.

OBJECTIVE VI: Promote algorithmic transparency

- Define standards, guides and recommendations for impact assessment, monitoring and auditing of decision-making algorithms used in PA, as well as for ensuring that they can be interpreted and explained at all times. .
- Establish standards and procedures for disseminating the processes used to develop, train and put into operation AI algorithms and systems, as well as the results obtained, promoting the use of open-source code and open 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 proofs of concept and pilot projects in the defined strategic sectors.

AI and Digital Citizenship

Science fiction gave rise to the first conceptions of AI. Subsequently, and through its portrayal in film, it became established in the social imagination, generally with apocalyptic perspectives and dystopian futures, fostering 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 range of possibilities that can radically change how we relate to the State, design and implement public policies, measure results and make decisions.

Today, various nations are already applying AI systems in highly sensitive areas such as education, the justice system and public health. This makes it increasingly important for citizens to have sufficient knowledge and access to tools to interact with AI, protect their rights and understand the scope of the application of emerging technologies.

The application of AI can affect how we use and protect data, equal access to public services and opportunities, and how we exercise our rights and relate to one another. This strategy therefore includes a dimension that seeks to prepare citizens to take advantage of the opportunities and face the challenges posed by AI, and to build the confidence people need to develop and use new technologies.

To this end, the following objectives are defined:



OBJECTIVE VIII: Build citizen awareness and trust

- Implement outreach and awareness campaigns to inform citizens about what AI is and how Public Administration is using it.
- Strengthen mechanisms so that citizens know their rights in the digital sphere and how to exercise them.
- Promote the development of Digital Intelligence at its three levels (digital citizenship, digital creativity and digital initiative) to enhance involvement, participation and understanding in the development and application of AI solutions.

