impulse.
Digital Government Institute

The Future of Data-Driven Government

Índice

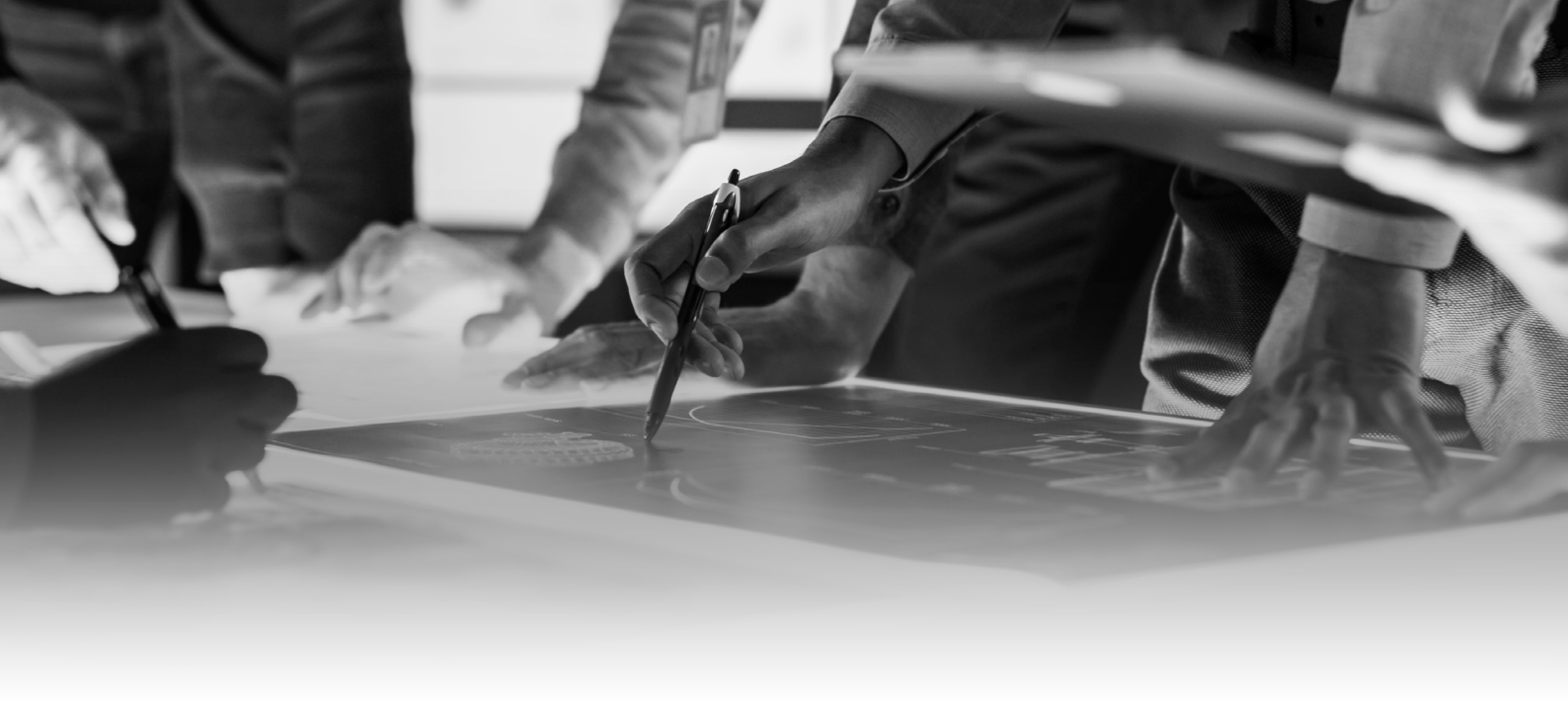
Introduction

Data is the key disruptive element necessary to transform Public Administrations and, nowadays, it has become an inescapable reality. Its value lies in the multiple capabilities it brings to every conceivable process of citizen service provision.

Supported by technologies such as artificial intelligence, data has become the key to develop evidence-based public policies, since it is possible to adapt it to the social reality and maximize the efficiency of resources in order to create better proactive, customizable and digital public services. These are the services that citizens expect and that were previously unthinkable.

Today, knowledge is the greatest asset we can give to the Administration to improve citizens' lives. Data has always been there, but now it can be understood and managed better than ever. The tools to do so, including technological tools, are already available.

Impulse is part of this transformation and we want to drive the Administration's efforts to achieve the new data paradigm. Data-driven decision making will take the civil service to the next level. With the right data, developing policies in line with citizens' needs will become a much faster, easier and more intuitive process.



2. Where is data-driven government heading?

Public systems are currently under the effect of what is called a data tsunami or data explosion, i.e., they are immersed in a huge 'wave' of information that they must surf and, if they fail to do so, they may fall behind on their way to digital transformation.

In addition to this phenomenon, others arise such as uncertainty, acceleration, the extraordinary complexity of the public agenda, as well as growing inequality, school failure, climate change, migration and massive urbanization processes. That is why it is more important than ever to have good public systems in an environment characterized by these factors. There is no longer doubt that the role of governments today is greater and more important than it has ever been before.

The digital transformation that all public systems are undertaking poses two major challenges: progress and protection. In terms of progress, scientific and technical development is so powerful that it challenges the capacity of administrations to create regulatory environments and scientific-technological ecosystems that keep up with current advances. But at the same time, there is the challenge of protection.

The Administration must protect citizens from the effects of technological change. To give two examples, in 2019 unregulated, i.e. uncontrolled, financial transactions exceeded 40% in Europe; and it is still unknown today what the impact of AI will be on the current work model and how the needs and capabilities of different jobs will change.

In order to address these challenges, governments and Public Administration, in general, need to innovate. We currently have the certainty that if the Administration does not innovate, societies do not progress, but neither can it carry out its regulatory mission.

In this vein, the only way to regulate properly is to experiment, to explore and to innovate. Hence the emergence of regulatory sandboxes for the creation of secure environments where experimentation is possible.

All these changes also affect massive data and its irruption in the Administration.

It is necessary to know how to use the data in order to:

- **Improve the quality and efficiency of public policies by better identifying target audiences.**
- **Base policies on evidence.**
- **Leverage more reliable environments to correct and improve performance.**
- **Be able to influence citizens' behavior in a more intelligent way that respects individual rights.**

The challenges of data in the public sector

Ethical issues and data management in the public sector must be addressed from a balanced approach that respects individual rights and, at the same time, promotes the scientific and technological development of countries. We must emphasize the importance of protecting security, privacy, transparency and ethics in the use of data, and preventing algorithms from becoming 'weapons' and not solutions.

To meet these challenges, we propose five major changes in the public system:

- **Creation of a robust data management system that involves inter-administrative coordination, anonymization and confidentiality agreements, as well as protocols that give access to the scientific community. To this end, it is suggested the creation of a central data authority to ensure effective governance.**
- **Public-private collaboration to expand the knowledge base and resources available to the public sector.**
- **Creation of a data culture and promotion of citizen participation to achieve greater transparency in decision-making and data management.**
- **Increased education and training in data management by public sector workers to ensure effective and ethical data management.**
- **Innovation and experimentation in data management will enable the creation of favorable environments that promote creativity and collaboration.**

Some barriers to this transformation

We are facing a key scenario that, undoubtedly, poses great opportunities, but at the same time, it imposes barriers that hinder the digital transformation of the Digital Administration:

1. Specialized talent.

On the one hand, technology will reorganize certain tasks within the Administration, allowing civil servants to evolve towards higher-value positions, and on the other hand, it will demand the recruitment of specialized young talent such as data scientists, robotization and cybersecurity experts, or cloud specialists, to name a few profiles.

The European Commission has estimated that 10.9 million data professionals will be needed in Europe by 2025, twice the amount needed in 2018.

2. Reluctance to share data.

It will be necessary to generate trust networks for sharing quality data. This requires the support of a legal framework that lays the foundations, organizations that identify the processes necessary to carry out data sharing and, finally, the semantic and technical aspects, i.e., how this sharing is to be carried out (data spaces, common vocabularies, ontologies, middleware, etc.).

3. Privacy and security.

The data of citizens and companies must be treated in a way that ensures their privacy in a rigorous and responsible manner, complying with the existing data protection regulations:

- **The migration to cloud infrastructures is an opportunity to work with companies and methodologies that offer the necessary guarantees and the required reliability, complying with the standards in force.**

- **It is necessary to obtain citizen consent in the use of their data by explaining the benefits of such practice but also clarifying that the risks have been minimized.**

- **AI ethics and transparency. It is essential for the Administration to control the development of algorithms that do not generate biases or discriminatory focuses based on age, gender or race. At the same time, they must be ethical algorithms, meaning that they have to be transparent and be able to explain decisions to citizens.**

3. Key challenges and opportunities to drive data-driven management in public services

On the path to the data culture, the Public Administration will have to face the following challenges:

Challenge 1:

Use of data to transform services.

Data is the new asset in the public sphere and will enable the Administration to transform itself and build the capabilities and tools necessary to respond to major challenges. The power of data now, and also in the future, will make it possible, for example, to reduce the digital gap in some groups of citizens, or to customize communication so that a public policy that translates into social aid reaches those who need it most.

Challenge 2:

Correct use of technology.

If we manage to use all the technologies already available (natural language processing techniques, conversational assistants, computer vision, predictive algorithms, etc.) in the right way, we will be able to have real-time information from citizens and companies and make better decisions at the right time.

For example:

- **A physician can early detect a cancer and define a much more personalized and effective treatment for his/her patient.**
- **An employment counselor will know which training pathway can help unemployed people find a job.**
- **A high school teacher will have better tools to guide his or her students to continue their education and reduce school failure.**
- **A tax inspector will have more tools to prevent tax fraud.**

We are in the so-called 'digital decade' and massive data, algorithms and technological infrastructures are the pillars to solve real problems. As John Thornhill, the Innovation Editor at the Financial Times, points out, in this century we seem to be entering a phase of increased focus on technology as a way to solve these problems.

Challenge 3:

Data privacy and security

When dealing with sensitive data of citizens and companies, data protection regulations must be complied with in order to ensure privacy and rigorous and responsible treatment. This can be done, for example, by using data anonymization tools and secure usage protocols. This is the only way to make citizens trust in the Administration and to explore the full potential of adopting data-driven management.

Challenge 4:

Interoperability of systems and data

Shared and well processed data generate value and information. Therefore, more shared data, more data spaces and more data lakes are needed to generate more knowledge, more business cases and to be able to make better decisions and solve problems. If these data spaces are built and enabled, knowledge will be generated and the Data Economy will be promoted, which the European Commission has already quantified at 829,000 M€ by 2025.

According to Gartner, 50% of public administrations in Europe have already started to work on the creation of interoperability and data sharing structures. Through the European Data Strategy, the European Commission has already launched several initiatives to ensure data interoperability: Single Digital Gateway (SDG), European Interoperability Framework (EIF) or a recent initiative related to data spaces.

Challenge 5:

AI control and regulation

The great potential of AI makes it necessary to control and regulate its processes. In this regard, the European Union is making research to build up a far-reaching legislation. The draft Artificial Intelligence Act would classify systems by risk and stablish various development, use, and accountability requirements. European law-makers are still discussing the details and many insist on the need to encourage innovation in this technology and to protect citizens.

Challenge 6:

Ethics and treatment of data biases

The data and models that are developed in many areas may be biased, because the society where gaps exist will generate algorithms that reproduce them.

Therefore, ethical algorithms must be developed and the reasons behind the decisions of a given algorithm must be made transparent and explainable to the public.

Challenge 7:

Public-private collaboration

To address this challenge in an effective way, it is necessary to set out clear regulatory frameworks, promote trust and transparency, ensure equity and drive collaboration towards public benefit. Only through strong and accountable collaboration can the full potential of data be harnessed to build a more efficient, transparent and citizen-centric government.

4. Representative use cases of data-driven administrations

There are already real cases that show the intelligent use of data and AI in the public sector. At the global level, it is worth mentioning the following:

- **In the United Kingdom, AI models have been implemented to improve healthcare efficiency, with the outcome of an estimated 25% reduction in hospital waiting lists.**

- **In France, a satellite image surveillance system has been implemented, which has detected more than 20.000 undeclared swimming pools, equivalent to 10 million euros in taxes.**

- **In Singapore, AI, along with other measures, has helped the police identify patterns to prevent crime, and this has led to a 20% drop in the crime rate in recent years.**

- **In Finland, the government has set the objective of training its entire population in artificial intelligence.**

5. Regulatory frameworks and strategy, promotion and public policies

It is essential to set out regulations that promote the protection of personal data and the privacy of citizens, while facilitating the secure exchange of information between different government entities.

In addition, a comprehensive strategy is required to promote the effective use of data for informed decision making, the improvement of public services and the identification of areas for improvement in government management. It is also essential to foster collaboration between public and private sectors, as well as citizen participation, to drive innovation and the implementation of data-driven solutions.

Finally, public policies should be geared towards promoting transparency, accountability and trust in the use of data in the governmental sphere, ensuring that the fundamental rights of citizens are respected in this constantly evolving context.

Regulatory framework and the European data strategy

Europe found out that the technological space was underused and unregulated, and that there were initiatives in different Member States that took advantage of the technology, but lacked a framework for citizen protection or promotion of technology for business use.

The European Commission's starting point was to create a white paper in 2020 on data strategy, followed by two regulations on data governance and AI. The aim of these regulations is to make the entire ecosystem trustworthy, safeguard citizens' rights, protect privacy and build up secure channels for the use of data and AI. These legal elements are a horizontal framework on which specific implementing legislation in different sectors will now rest.

For example, in the health sector, a European data space has been created and one of the first specific regulations in this area has already been developed. In essence, Europe is taking important steps to regulate the use of data and AI, establishing legal frameworks to ensure trust and protect citizens' rights.

Conclusion

The main conclusion about how data can improve public administration is that the technologies, infrastructures, algorithms and data solutions necessary to make this possible are already available. There are large volumes of data in all areas, so there is a great need for data governance since this will help to start making the best decisions in the interest of citizens, as some public administrations are already doing.

Another conclusion is that data should be structured in information domains and also in strategic sectors in which there is public-private collaboration and interoperability between Administrations. Data can be used to promote and standardize non-vertical administrative processes. Data is not only numbers or codes, but also linguistic data expressed in natural language, with incredible potential not only for human-machine interaction, but also for structuring the economy.

impulse.
Digital Government Institute

NTT DATA

www.impulsedigitalinstitute.es