DATA, AI AND GOVERNANCE

Catalonia.AI

A technological road map towards a truly social Catalonia

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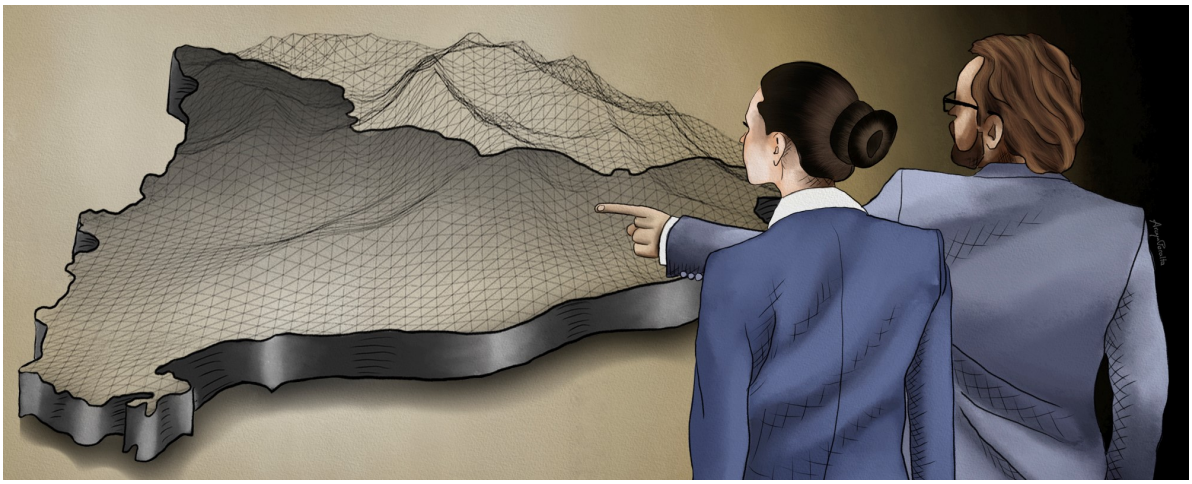

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In today's society, digital technologies are part of our everyday lives. We have fully embraced devices like the internet and smartphones; indeed, imagining our lives without them proves next to impossible.

We live in a globalised environment that changes at exponential speeds, and the setting is competitive, complex and demanding. In this playing field, digital technologies are a strategic lever to kick-start the country and attain both sustained economic growth and a unique positioning with great added value.

The societies with the most advanced economic development models are also the ones leading the way towards the digital society, with their technological sectors playing a significant role in their entire economy. Studies conducted by the International Telecommunication Union (ITU) have revealed a direct correlation between countries' investments in telecommunications and digital innovation infrastructures and the growth of their gross domestic product.

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The most digitally innovative countries generally have a public administration that drives digital innovation forward and promotes public-private partnerships as the unifying force for their development. Countries including Estonia, Finland and Singapore have embarked on a one-way road into the future, where the digital environment will play a decisive role in their new governance models.

That is why we at the Government of Catalonia feel deeply committed to promoting and implementing an ambitious digital strategy. We want Catalonia –an innovative country and leader in scores of areas– to also become an advanced digital nation, creating economic growth and social well-being.

Over 100 years ago, in the midst of an industrial revolution, Catalonia underwent a modernisation era that definitively influenced its economic and social development. Today, technological developments and the digital economy once again represent an opportunity for Catalonia to spearhead progress and social well-being in the twenty-first century. We have been an industrial country, and we will now be a digital country. If we are not a digital country, we will not be a social country.

Evidence of our certainty is that, for the first time, the Government of Catalonia has a Ministry for Digital Policy and Public Administration to pioneer these policies at the highest government levels. Further, there is a digital agenda that will catapult Catalonia to the heights of a world digital hub, via a strategy that is based on five core areas:

1. Empowered, trained and protected citizens
2. A country unified by its digital infrastructures and smart cities
3. A 21st-century government and administration that are open, digital and efficient
4. A cybersecure country, which protects its citizens, companies and institutions
5. Digital innovation as an engine for the new economy

This digital strategy for the country will enable and lead to its citizens' digital empowerment and the protection of their rights, via the drafting of the Charter for Digital Rights and Responsibilities. Catalonia will be unified by deploying fibre optics to even the remotest areas of the country. The administration will be transformed through new working styles and the production of proactive digital services. A public cybersecurity service will be commissioned via the creation of the Cybersecurity Agency of Catalonia, kicking off the implementation of a new digital industry, which will revolve around the development of advanced digital technologies such as 5G, blockchain and artificial intelligence.

The new social and political revolution is being shaped and developed at advanced digital technology research and innovation centres across the globe. Their innovations will be one important tangent that determines the future of societies and nations, and we must ask ourselves what role we want Catalonia to play in this digital revolution, as well as the role it

has already taken on.

Two antagonistic governance models for advanced digital technologies have arisen. On the one hand, the US-developed model, which is essentially aimed at economic interests, where companies control technology and data. On the other, the Chinese model, whose goal is to control citizens with technology, where the state is the party that governs data. In Europe – and therefore also in Catalonia – we have an obligation to envision an alternative model for the new digital world order. We deeply believe in a model in which data and technology are in citizens' hands, making it a people-centric model whose priorities are ethics and privacy.

This is the current milieu and the present digital strategy to make the nation of Catalonia a digital world leader and benchmark. From this starting point, at the Government of Catalonia we are developing specific country-wide strategies for ground-breaking technologies such as 5G, blockchain and artificial intelligence, in order to harness their untapped potential to the benefit of all of society.

5G will develop a new framework for intelligent connectivity; blockchain will provide new governance for the internet and digital environment; and artificial intelligence will improve data analysis capabilities and lead to process automation.

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Artificial intelligence will be one of the advanced digital technologies to have the greatest economic and social impact in the coming years. According to a study published by PwC, by 2030 artificial intelligence will cause the world GDP to leap by 14%. However, this increase will not be seen uniformly across the boards. Technologically developed countries will see the most economic growth and, consequently, the most high-quality jobs and well-being for their citizens.

Needless to say, many states throughout the world are eager to leverage artificial intelligence capabilities and have strategies in place for implementing this technology. Notable players in this arena are the United States, Israel, Canada, China, Singapore, South Korea, India and New Zealand and – within Europe – the United Kingdom, France and Finland.

The European Commission approved its strategy in this area in April 2018, with a plan coordinated with Member States to drive artificial intelligence development forward throughout Europe. More recently, on 19 February 2020, the European Commission published its white paper on the EU artificial intelligence and data strategy, which outlines the framework for developing artificial intelligence centred on excellence and confidence.

Similarly, on 18 February 2020, the Government of Catalonia approved an artificial intelligence strategy for Catalonia entitled Catalonia.AI. This strategy involves rolling out specific actions to strengthen the artificial intelligence ecosystem already in place in Catalonia and spearhead the production of knowledge, social and business applications, as well as the creation of artificial intelligence-based solutions aimed at fostering economic growth and improving people's lives.

The Catalonia.AI strategy will deploy a multi-sector, cross-cutting and people-centric plan, which will prioritise sectors like health, education, mobility, sustainability, the productive economy, the agri-food sector and public services. The action plan is defined via six broad core areas:

- Ecosystem: stimulate a cross-cutting governance model that provides support for developing a coordinated and globally connected artificial intelligence ecosystem.
- Research and innovation: strengthen research and innovation through the application of specific tools and establishing synergies between the administration, specialised research and innovation centres, and organisations that make intensive use of artificial intelligence.
- Talent: create, attract and retain expert talent that will drive the development of artificial intelligence solutions and knowledge transfers to society and, in parallel, train all citizens and professionals from other sectors to be ready for its impact.
- Infrastructures and data: have the infrastructures required to develop artificial intelligence and provide secure access to public and private data.
- Adoption of artificial intelligence: promote the incorporation of artificial intelligence as a driver of innovation in the administration and in strategic sectors including agri-food, health, education, the environment, mobility, tourism, culture and industry.

With an eye to executing the strategy, in October 2018 we created a working group. In addition to government members, several of the country's most renowned artificial intelligence experts also participated, providing their visions and ideas of the current and future development of artificial intelligence in Catalonia. We would like to express our appreciation for their essential contributions.

Based on the working group's conclusions, a document was drawn up that set out the foundations for Catalonia's artificial intelligence strategy. It was opened up to a participative process between July and October 2019, during which all interested individuals and organisations could give their opinions. The process concluded with a strategy shared by the different stakeholders, integrating the different viewpoints and sensibilities of the academic, business, public and social spheres.

Finally, after the strategy received the Government's stamp of approval, the Ministry for Digital Policy and Public Administration allocated it with an extraordinary budget of 10 million euros. In parallel, this money must act as a catalyst for public and private investment, and raise competitive funds from the European Commission, amongst other objectives.

This means that we have a strategy for our country that now requires both cooperation and participation from the entire artificial intelligence ecosystem in Catalonia. The truth is that we have an extremely strong foundation for moving forward.

Despite being a small country, we have an outstanding, internationally renowned and respected scientific and academic community in the field of artificial intelligence, situating our universities and research and technological centres amongst the most cutting-edge in all of Europe in this field. A few that merit particular mention are the Artificial Intelligence Research Institute (IIIA), the Barcelona Supercomputing Center (BSC), the Computer Vision Center (CVC), the Robotics and Industrial Computing Institute (IRI), and the Intelligent Data Science and Artificial Intelligence Research Centre (IDEAI-UPC), as representative examples of the extremely high levels of scientific excellence here in artificial intelligence.

We also have first-rate scientific infrastructures, including the Barcelona Supercomputing Center, which recently received European Commission funding to build the MareNostrum 5, which will multiply its current power by 17, making it the most powerful supercomputer in Europe.

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Finally, we should not forget the huge strength of our ICT sector, one of the most dynamic in the Catalan economy, with 16,000 plus companies, some 115,000 jobs and close to 20 billion euros in turnover. It has earned Catalonia a first-place ranking for the last four years as the top investment region in southern Europe. If we consider the field of artificial intelligence, we have 180 specialised companies, with a turnover of 1.35 billion euros that employs 8,500 workers, making us one of the most noteworthy European digital hubs.

One of the first initiatives we started up was the Centre for Innovation in Data Tech and Artificial Intelligence (CIDAI), which was established as a networking services centre. It will become a fundamental part of Catalonia.AI in promoting knowledge transfer and executing public-private projects between knowledge-generating organisations (universities, research and innovation centres and technology providers) and user companies and institutions that demand innovative artificial intelligence solutions. CIDAI follows the model for digital innovation hubs established by the European Commission and will focus its work on resolving the country’s needs, which is known as mission-driven research and innovation.

These projects employ artificial intelligence as a core technology for helping people and professionals in their daily lives. One example of this is the virtual assistant integrated into the app for confinement and de-confinement called ConfinApp, which is aimed at answering

citizens' main queries and concerns about the crisis. A further innovation is the use of real-time data and predictive models for early detection of new COVID-19 outbreaks or to warn of any impending epidemics much earlier.

In summary, Catalonia has the abilities and potential to lead the development and implementation of artificial intelligence in southern Europe, thus becoming a world technology hub in artificial intelligence. That is the target we are working towards through Catalonia.AI.

To finish, I would like to stress the more human side of the strategy we have started. As mentioned earlier, artificial intelligence will have a great impact on different business areas, which in some cases are already successfully implementing it to optimise their production processes and sharpen their competitive edge. In parallel, it has the potential to significantly transform society and our relational and behavioural models, as well as how we all coexist and live together. Intensive debates are taking place on the benefits for society and the potential dangers of misusing this technology (right to privacy and lack of control, and non-discrimination). Systems based on artificial intelligence entail wonderful opportunities, but also certain risks that must be prevented and mitigated.

At the Government of Catalonia, we are fully aware of these issues and consider them absolute priorities. For this reason, we have pushed to approve the Charter for Digital Rights and Responsibilities, in which one of the first and main core working areas is ethics in the use of artificial intelligence and algorithms.

Through the Catalonia.AI strategy, we are in complete alignment to comply with the commitments set out in the charter with regard to algorithmic ethics and technological humanism. We must employ artificial intelligence to increase people's abilities and not to replace their intelligence, and it must contribute to augmenting individual and collective well-being.

We are committed to developing artificial intelligence-based systems that are secure and reliable, and designed to ensure privacy and ethics that draw on transparent and verifiable criteria. We must also be particularly aware of situations that could affect vulnerable groups, ensuring that the algorithms on which these systems are based do not have illegal or unethical biases, either direct or indirect.

It may seem contradictory to speak of humanising through technology, and even more so via artificial intelligence, but that has been our focus since the outset and it is the essence of Catalonia.AI, the artificial intelligence strategy of Catalonia.

Jordi Puigneró

Jordi Puigneró i Ferrer és enginyer màster (MENG) en Sistemes d'Informació per la Universitat de Surrey, Anglaterra (1992-1997). La seva carrera professional s'inicia al departament d'informàtica del Deutsche Bank a Frankfurt (1997- 2001) i l'any 2001 s'incorpora a IBM-Barcelona com a consultor sènior i cap de projectes informàtics i noves tecnologies. En l'àmbit institucional, ha estat regidor de l'Ajuntament de Sant Cugat del Vallès (2005-2013) i tinent d'alcalde de Governació, Seguretat, Mobilitat i Tecnologia. Des del novembre de 2013 dirigeix les polítiques TIC del Govern de Catalunya, primer com a director general de Telecomunicacions i Societat de la Informació (2013-2016), més tard com a secretari de Telecomunicacions, Ciberseguretat i Societat Digital (2016-2018) i, des del juny de 2018, com a conseller de Polítiques Digitals i Administració Pública.