



JRC CONFERENCE AND WORKSHOP REPORT

ARTIFICIAL INTELLIGENCE for the Public Sector

JRC and DIGIT Science for Policy

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7-9th
June
2022
webinars

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June
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Policy Round Table

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JRC CONFERENCE AND WORKSHOP REPORT

ARTIFICIAL INTELLIGENCE for the Public Sector

JRC and DIGIT Science for Policy hybrid conference

7-9 JUNE 2022
& 22 JUNE 2022

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ABSTRACT

The Public Sector plays different roles with regard to Artificial Intelligence (AI). First, it acts as regulator, establishing the legal framework for the use of AI within society. Second, governments play also the role of accelerator, providing funding and support for the uptake of AI. Third, public sector organisations develop and use Artificial Intelligence. To explore these roles, with particular emphasis on the latter, the Joint Research Centre (JRC) and the Directorate-General for Informatics (DIGIT) of the European Commission jointly organised a webinar series and a “science for policy” conference in 2022. This report includes the conclusions of each one of the webinars, together with the material and main findings of the closing event. It reveals recent challenges, opportunities, and policy perspectives of the use of AI in the public sector, and distils a set of short takeaway messages. In a nutshell these findings are (i) AI in the public sector implies multi-stakeholders; (ii) experiment first, scale-up later; (iii) trustworthiness is a must; (iv) there is a need for upskilling public sector to be ready for the AI revolution; and (v) adapt procurement for digital and AI innovation. The report concludes that the AI promise is high for the society and in particular for the Public Sector, but the risks are not to be minimized. Europe has the ambition to succeed as a whole in the digital transition powered by data and by AI-based applications, and wants to do it the European way, by putting citizens in the centre of this transformation. We hope that, with the results of these discussions, we have been able to contribute to this necessary debate, which is key to make this Europe’s Digital Decade.

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1 INTRODUCTION

Traditionally, the Public Sector has played two main roles with regard to Artificial Intelligence. On the one hand, it acts as regulator, establishing the legal framework for the use of AI within society. Additionally, government has played also the role of accelerator, providing funding and support for the uptake of AI. There is, however, a third role for Public Sector, which is the one of developing and using Artificial Intelligence. Exploring further this particular role was one of the main aims of the “science for policy” conference organized jointly by the Joint Research Centre (JRC) and the Directorate-General for Informatics (DIGIT) of the European Commission.

The use of AI by government brings a series of clear opportunities, as stated below:

- ▶ It can help improving public services delivered to citizens through more personalization or improved support;
- ▶ It can innovate public services by creating new ways of serving citizens;
- ▶ It can enhance internal procedures as AI can process large volumes of information quickly and efficiently;
- ▶ It can support a more informed decision-making

process through analysing more and more diverse data sources.

The opportunities brought by AI are evident but they are not exempt of risks. Some of those are common to the use of AI in any other sector, like those associated to personal data protection or avoiding biases in data or algorithmic systems. There are, however, specific risks linked to the particularities of public administrations. The discussions during our conference aimed to unveil some of them and to jointly discuss potential solutions to overcome them while maximizing benefits.

Aiming to achieve that goal and through a series of on-line sessions, a relevant set of speakers from civil society, academia, industry and policy making covered several aspects of the use of AI within public sector:

- ▶ The regulatory perspective;
- ▶ Trustworthiness of AI applications in public sector;
- ▶ AI in practice and implementation strategies for government;
- ▶ Bringing AI closer to citizens
- ▶ The conclusions of the debates were brought



Johannes Hahn



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Mariya Gabriel

together later in a high level policy round table, with the presence of Commissioner Johannes Hahn and Directors-General Stephen Quest, from the JRC, and Veronica Gaffey, from DIGIT.

This report includes the conclusions of each one of the on-line workshop, together with the keynote delivered by Commissioner Hahn and the one that Director-General Quest delivered on behalf of Commissioner Mariya Gabriel.

2 EXPLORING FOUR FACETS OF AI IN THE PUBLIC SECTOR

The webinar series and final event examined recent challenges, opportunities, and policy perspectives of the use of AI in the public sector. In their opening, Natalia Aristimuno (DIGIT's Director for Digital Services) and Francesca Campolongo (JRC's Deputy-Director for Innovation and Growth) set the scene providing the overall scientific and policy context, and at the same time underlying the mutually enforcing activities carried out by various services of the European Commission.

In their interventions, they underlined how AI and digital transformation of the public sector are high on the Commission's agenda, and it is also one of the four cardinal points of the Digital Decade policy programme led by DG CONNECT (Directorate General for Communications Networks, Content and Technology). The Commission is a public administration itself, and one that is very seriously considering the use of AI for its own administrative needs. The Commission has been working on a dedicated action plan named "AI@EC", that should become exemplary in terms of technology use, transparency and trust. Furthermore, digital transformation of the public sector could be a driver for a trusted, fair, inclusive, value-driven digitalisation of Europe. thinkSuffice to say that public expenditure often accounts for more than 50% of a country's GDP, and that public sector performs specific duties that rely on high levels of accountability – as, stressed in the 2020 Berlin declaration on Digital Society and Value-based Digital Government.

In this context, the use of AI is a crucial testing ground to achieve these goals, as the technology itself has to be proved trustworthy for citizens. The JRC is thriving to understand the **social, economic, and environmental impacts of technology-driven transformations**, to inform EU policies that could reap their benefits and minimize the negative impacts. The transformative potential of AI has been in the JRC's radar for a long time already, being foresight a key part of its mandate. Staying ahead of upcoming technological trends is thus essential to provide strategic and forward-looking input to policy making. AI research at the JRC reflects the two strands highlighted by the European strategy on AI: making the most of the technology to foster economic growth, while respecting the rights and wills of our citizens, protecting them from unlawful uses of those technology. This applies also to the research done regarding the use and impact of AI in the public sector, which for a long time now the JRC has been conducting hand in hand with colleagues in DIGIT.

On top of working very closely together, DIGIT and the JRC collaborate with DG CONNECT and other key DGs on matters related to digital transformation. The JRC brings its scientific

approach, excellence and advice, DIGIT has the implementation expertise and operational responsibility as IT provider. The better these two sides cooperate, the better we can help design policies. The better we can advise other DGs such as Connect in policy development. The better we can also support policy implementation on the ground, in the Member States.

The ongoing work still bears a rich set of open questions related to the use of AI in the public sector, that served as input for the four webinars and the final round table. Some overarching questions can be resumed as:

- ▶ For **regulating** the use of AI in the public sector, what are the regulatory barriers and gaps when using AI for the public good? Are there challenges to the current regulatory setup? Is any regulatory aspect missing from the picture? Are there challenges of interoperability?
- ▶ For the **implementation and adoption of AI** in the public sector, which mechanisms and tools are needed? Which good practices already exist? How can those be best shared across the EU?
- ▶ When it comes to **research** on AI in the public sector,

When it comes to research on AI in the public sector, where do we need more research and scientific advice to keep advancing?

where do we need more research and scientific advice to keep advancing? How can the results reach relevant stakeholders across the entire EU (where relevant also at regional and local level)?

Each of the four webinars elaborated on these questions from a dedicated perspective. Regulatory matters were highlighted first, followed by debates related to ethics and privacy. Implementation strategies for adopting the use of AI in the public sector were discussed, before closing the webinar series with reflections on the relationships with citizens and smart communities. Those webinars took place between 6th and 9th of June 2022 and were attended by a mix of public servants, policy makers, academics, industry representatives and various other practitioners.

2.1 The regulatory perspective

This first webinar offered the opportunity to present and discuss regulatory aspects with regulators at different administrative levels, practitioners, and academia – who shared their experiences, needs and challenges. The session particularly emphasised the future of regulating AI, especially in the European Union context, and it included a flash news update on the negotiations of the AI Act (that were still ongoing at the time of the event). Throughout the session, we distilled the main messages into statements and questions serving as inputs to the three targeted sessions that followed later in the week. The participants were challenged to discuss provocative and bold statements on the adoption and implementation of AI; and trustworthy AI; and engaging civil society and communities.

The speakers for this event included:

- ▶ Fernando Vilariño, Professor, Autonomous University of Barcelona, Member of the European Network of Living Labs (ENoLL);
- ▶ Paul-Antoine Chevalier, AI Lab Chief, French Inter-ministerial Directorate for Digital (DINUM);
- ▶ Christian Rupp, Chief Digital Officer (CDO), Chairman Innovation Mine, Board Member of the German national eGovernment competence centre (NEGZ);
- ▶ Lorna Schrefler, Policy Officer, Directorate General for Research and Innovation, European Commission; and
- ▶ Yordanka Ivanova, Legal and Policy Officer, Directorate-General for Communications Networks, Content and Technology.

Apart from the guests featured on the agenda, the event was attended by people with diverse backgrounds yet with a shared interest in AI (see Figure 1 and Figure 2). Overall, the audience was composed predominantly

by representatives of the public sector, covering almost three quarters of the 99 respondents to the initial poll of the event. In comparison, less than one fifth of the respondents represented academics, and just 6% (6 out of 99) of the respondents represented the private sector. Many answers provided by the audience to the pool question “What comes to your mind when you hear the three words: AI – public sector – regulation?” focused on the word “complexity”. Other threads emerging out of the pool included relevant European policies, as well as ethics, trustworthy AI, opportunities and limitations, but also bureaucracy, risk assessments, and citizens’ rights. Those initial insights were used to open the debate and dive deeper into the challenges of regulating AI for the public sector, with particular focus on the European context.



Figure 1

Results from the initial poll of the first webinar: 'Which sector/context are you coming from?'



Figure 2

Word cloud produced during the first webinar: 'What comes to your mind when you hear the words "AI - Public Sector - Regulation"?'

2.1.1 Practical experiences on regulatory aspects of AI

As the [European Network of Living Labs \(ENoLL\)](#) and one of their recent projects ([DT4Regions](#)) representatives affirmed, protecting citizens against the misuse of AI is important, but it is not sufficient. It is also crucial to give them the opportunity of participating in our green and digital transition – the chance of being actors and not just factors of the transformations that we are experiencing. Three essential challenges were highlighted: (i) frameworks for mutual learning; (ii) instruments for implementing anticipatory regulation, articulated in an acceptable and agile way; and (iii) sharing of concrete examples that help the transfer of actionable knowledge. ENoLL and the JRC kicked off the [Joint Working Group for Regulatory Learning](#), a collaboration open for participation, which will develop a shared understanding of how some of the existing challenges can be addressed.

The [French Inter-ministerial Directorate for Digital \(DINUM\)](#) introduced two main work streams. On the one hand, they provide applications directly for citizens, such as apps supporting automated decisions (before humans take the actual decision) or improving the experiences of digital public services users. On the other hand, DINUM develops applications for civil servants, helping them to do their job better or simply faster. One example is an app supporting inspections, from businesses to nuclear sites inspections, by automatically processing past reports and highlighting aspects to be aware of. These applications are designed also taking into account the privacy regulations, such as the General Data Protection Regulation (GDPR). It is important we keep exchanging experiences, to help public institutions all over Europe to understand the possibilities, practical limitations and pitfalls. The medial domain offers a leading example, with the creation of ethical committees and the appropriate sharing and use of large data sets. Through sharing these experiences, we thus can achieve the ethical and lawful use of data.

From the [German ‘Innovation Mine’](#) we learned about the municipal perspective, where staff with limited suitable training need to implement increasingly complex tasks. Here, AI does have the potential to fundamentally improve the public administration, especially in four areas. First, the end-to-end automation of administrative tasks, including document processing. Second, the interaction between citizens and civil servants, as well as between civil servants. Third, anomaly detections, such as real time detection of errors or potential fraud. And fourth, assistance in decision-making processes using advanced data analytics.

The latter is considered the most complex area, because in addition to transparency, it requires a participatory approach to create the final public services.

All the above is a challenge for the public administration, which needs to balance between consistency and change, while preserving stability and a legal role. Life-long learning of civil servants is required to assist them in the digital transformation of the public sector.

The European Commission participants who focus on [research and innovation](#), emphasised the need to anticipate in regulation, the so called ‘adaptive regulation’.

From the public sector, and especially the regulator’s perspective, it is important to go into more detail, also for the use of AI. How does this work in practice, under the duty of care? How to make sure that

the regulators are not ‘running behind’ the innovators? How to avoid obstructing valuable innovations, while also avoiding under regulating potential risks?

We still need to use the lessons learned from regulatory sandboxes or living labs to regulate AI in the appropriate way. Among these lessons, we know that more systemic roles and procedures should help us to navigate the innovation space, including the uses of AI in the public sector. We need to think of a system that will help us to move beyond anecdotal cases, so that appropriate and acceptable approaches of using AI in the public sector can be adopted across the EU. For this to happen, regulators need to be equipped with the required technical knowledge and skills to understand innovative ideas and their possible implications, whether they are positive or negative.

2.1.2 Opinions on existing reference frameworks and tools

Looking into the experiences, the re-interpretation of already existing regulations is a challenge, and it requires lawyers or other experts with legal skills working closely with the teams that are developing AI-related projects for the public sector. The actual problem is not necessarily the regulation, but its interpretation. People equipped with the required skills and knowledge of all relevant legislations are a rare resource. A past project carried on with the French Ministry of Justice provides a good example: the objective was to calculate payments to compensate personal injuries. At the stage of project planning, it was unclear if the intended use of data was legal or not. By the time the Council of State confirmed that

the project could go ahead, several years had passed and the project was abandoned. Germany experienced similar situations, in the context of applying AI to buildings and related public sector obligations. In this case, many technical solutions were available (i.e. digital twins, image recognition, systematic recording of road conditions, predictive planning, etc.), but the emerging technologies required ethical and legal standards to be developed.

These spaces for experimentation on the one hand, and adoption of innovative solutions in the other hand. We need courage to work across different sectors and policies. One essential policy areas is open data. What does open data really mean? How can you link data from various sources? Who is the owner of the data? Who is the owner of the results?

Building the close dependency between AI and data, recent discussions in France considered three aspects. The first, opening the data for the entire ecosystem of users. The second, sharing the data between public administrations, by using Application Programming Interfaces (API). The third, exploiting the data within the public sector to increase the efficiency of public services. Successful examples are the business registries or the question-answer datasets providing a valuable resource for texts in French, and complementing the many open datasets for English texts. Furthermore, processes are put into place to make non-open data available to researchers.

The required frameworks and tools, including the ethics, legislation and standards, need to consider that the results might not be known from the start. The experiments are not linear and mostly do not result in a product as envisaged at the beginning. From a regulators perspective, it is important to understand that following an agile approach implies being able to react.

The co-creation of digital solutions requires enlarging the debate to be more inclusive, transparent, and address challenges that single institutions cannot address by themselves. The approaches combining the different skills needed to really understand regulatory aspects of AI in the public sector, involving public servants early on, might help to reduce bureaucracy and adopt solutions more widely. At the same time, these approaches highlight failures and successes for different actors. So, tools are needed to identify and address criticalities, and to take decisions. We need to answer questions such as: How to preserve fundamental right values in the process? What does this all mean in practise? How can we create safe spaces, such as sandboxes or the living labs, to explore these topics?

2.1.3 Support to experimentation and implementation

Throughout the discussions, we recognised the need for adaptive regulations that should be implemented in systemic ways, while products and services might even evolve in parallel. We also recognised that we do not necessarily know how to do this yet. This is partially due to the recent and fast developments of digital technologies, such as AI. The instruments that we create are explicit spaces for experimentation and understanding their way of working. The 'test before invest' approach, as promoted by the European Digital Innovation Hubs, is the most promising way ahead, allowing mutual learning and scaling up of promising solutions. However, due to the complexity of the topic, it will take time to determine the best societal impact out of the opportunities, while mitigating the inevitable risks.

So, what is the best approach to evaluate the successful application of AI in the public sector? For example, we can compare services with and without AI. Among horizontal application areas, better regulation, policy design, and consistency checks between

policies, are appealing areas of experimentation. We should remember that the use of AI is highly case-dependent, and general estimates do have their limits. Monitoring systems or performance indicators might need to be defined specifically for each case. Furthermore, AI might enrich the evidence available for policy making, being this identifying new sources or patterns in existing ones.

An important topic to consider is the actual **decision making**. In the final decision making, should we let a certain degree of autonomy to algorithms or leave to humans that prerogative? Today, it does not seem to exist a single solution. AI cannot be managed or regulated in one single way, as its own definition changes over time. Especially when experimenting with autonomous decision-making by machines, **simulations** turn out to be highly valuable. The Computer Vision Centre in Barcelona, applying this approach for autonomous driving, offers a good example. In this case, where the use of AI is also highly relevant for the public sector, the development of the simulations relied on open-source software, allowing for transparency and full scrutiny. The simulations might even evolve into experimentation spaces that can then be applied

to new use cases of AI, thus contributing to the wider innovation ecosystem and mutual learning.

When talking about **innovation**, we also need to consider what role **businesses** play in the actual use of AI for the public sector. Here, it will be important to allow for joint experimentation and ensure a level playing field for industrial actors to participate, including small and medium enterprises. The GovTech sector provides good opportunities. Fostering the collaboration between public and private actors, especially at local level, will require good communications, besides regulations, including data sharing across sectors. Another important aspect to consider is the revision of public tendering, which will foster the AI work with start-ups and will generate more innovative public services.

During the session, it emerged that many ongoing experiments, such as living labs or sandboxes, happen ‘under the radar’, as the Council Conclusions recently suggested. There is a need to uncover what is currently happening and to make this knowledge available. This is particularly true for SMEs, local public administrations, and those actors having difficulties to navigate the complexity of the wide EU landscape. The communications should not only address funding opportunities, but also the places where experiments take shape. In this way, we will be able to assess whether the innovative use of AI is applicable and valuable for the public sector. Important questions still remain: how do we insure that ideas are spread from virtuous public administrations? And vice versa, how do we help public administrations that are ‘followers’ in innovation?

Soon, there might be enough ethical guidelines, legislation, and standards at our disposal to govern the use of AI for the public sector. We also keep leaning via experimental spaces that become increasingly available. Yet, **we are also left with political and cultural challenges**. Rather than only focusing on regulatory aspects for the use of AI, we need to communicate about the regulations and their interpretation. We should **address the lack of skills and knowledge** and demystify the nature of AI solutions, which will be increasingly used for public governance. Most importantly, we need to understand how data can be used and linked, where AI can help, and how to design AI systems in a fair way. It will be essential to identify and **engage all relevant stakeholders and beneficiaries**, address public opinion concerns and reactions on how AI is used by public institutions.

While progressing along these lines, it is important to anticipate the upcoming AI Act, which has been proposed by the European Commission and is currently negotiated with the European Parliament and Council. With this regulation in the pipeline, we need to learn now how it should be implemented, understand how to address the risky cases, and to prepare guidelines and best practices.

2.1.4 Live updates from the negotiations of the AI Act

Negotiations on the Artificial Intelligence Act occurred in parallel to the Conference session, so it was possible to provide a live update from the European Commission on the most recent discussions. From the round of feedback completed under the French presidency of the Council, we learned that some significant changes were made to the original proposal. The changes included a **reinforcement of sandboxing** and more opportunities for real world testing in safeguarded ecosystems for innovation, that interconnect public and private actors. In addition, the request for standards has been strengthened, to ensure safe and accurate AI solutions. As important note, the fast technological progress will also imply that the **requirements for those standards** are going to evolve. In this regard, a preliminary mandate has already been given to the European

Standardization Organization. The changes also reinforced the **support to SMEs**. On the high-risk use cases, important for the public sector because of their specific duties under the rule of law, it was included additional support measures for SMEs and for the public procurement.

Overall, the number of amendments made to the original proposal underlined the commitment of the Parliament to this important topic, and they helped to enlarge the scope, covering the artificial intelligence general purpose and protecting European fundamental rights. The contributions from the Parliament also suggested more obligations for public authorities to register their systems in public registries, proposal highly supported by the Commission and based on existing practices, from Finland at national level and Amsterdam at local level.

Under the Czech presidency, final positions will become available, and they will leave to the adoption of the Artificial Intelligence act in the second half of 2023, opening

We recognised the importance of supporting and organising partnerships across public administrations, as well as with other partners such as businesses and civil society, via open innovation projects.

the common two-year period for transposition. With this horizon, the preparations for the implementation need to progress alongside, and need to be ready once the legislation comes in place. This will ensure a smooth transition with sufficient support tools, guidelines, etc. ready for citizens, businesses, and public authorities to feel comfortable and knowing what to do.

The **participation** to the discussion for shaping this piece of legislation is of great importance, as agreed by the panellists. Making the **process around this regulation as inclusive as possible** is one key step along the path to digital transformation of the public sector. Likewise, the approaches to implement it will respond to inclusive and transparent mechanisms, and we must keep learning about expectations and needs of the different players involved along the way.

2.1.5 Take away messages

From the discussions, we identified several key messages linked to the notions captured at the beginning of the event (highlighted below in italics, see also Figure 2):

- A. Open experimentation partnerships:** We recognised the importance of supporting and organising partnerships across public administrations, as well as with other partners such as businesses and civil society, via open innovation projects (*Dedicated exploration spaces, Opportunities, Boundaries, GovTech*).
- B. Analysis and assessment:** We identified the need to enable learning from experimentation and implementation projects with sound scientific analysis, including legal analysis. Regulators, users and practitioners will be supported in choosing the regulatory and practice options (*Monitoring and evaluation, Adaptive regulation, Manage risks, Limitations, Efficiency, Safety*).
- C. Implementation support:** We also acknowledged the need to provide a range of support tools for public administrations, so that they can conform to the regulatory context. This consideration can be shaped as an ‘AI in public sector implementation toolbox’, including list of trustworthy systems, common vocabularies, standards, data access, citizen involvement and accountability tools (*Complexity, Trust, Explainable, Fairness, Data availability, Public good*).

D. Skills and resources: Furthermore, we recognised the need for effective training, skilling, and exchange of practice for mutual learning, by supporting the development and exchange of training tools and expertise that cover legal, technical, organisational, and social aspects (*Inadequate skills, Trustable, bias, Bureaucracy, Definitions*).

E. Public sector as trailblazer for ethical AI in Europe and seizing the opportunity: We underlined the necessity to support the use of open, transparent, and accountable AI, including the wise use of procurement to share the risk and advancing the appropriate use of AI in the public sector. This will benefit innovative companies, start-ups, and other innovators in the EU (*Ethics, Fairness, SMEs, Procurement*).

The immediate feedback on the session was very positive. The assessment on the importance of the five takeaway messages, in a scale from one to five, confirmed all of them as very important. All of them scored an average of 4 points or more, with the “implementation support” scoring the highest.

In addition, the online participants engaged actively and provided valuable feedback. Some of the most prominent questions from the audience included:

- ▶ What would be the correct approach to evaluate the successful application of AI in public sector? Is there a method specifically developed for AI applications?
- ▶ What does the Commission think about using an enforcement mechanism, such as GDPR, to check breaches of any regulation that will come forth in the rapid AI evolution?
- ▶ At European level, do you have an ombudsperson for AI to advise European Member States on how to ensure the innovative use of data, and transparency on the use of the algorithms?
- ▶ How do you think we should allocate regulatory compliance when an AI solution is developed by the public and private sectors working in partnership?
- ▶ What is the future of the regulatory sandboxes? What are the specific challenges to create them? Are there any sandboxes already in place to test AI?
- ▶ How can the topic of ethics in AI be tackled while ensuring equity, protection, and balanced commercialisation for the private sector?

2.2 Trustworthiness of AI applications in public sector

The topic of trustworthiness of AI applications in the public sector is highly connected with the other subjects discussed at the conference. Indeed, one of the main goals from the regulatory perspective (webinar 1) is to gain trust from citizens (webinar 4) when AI systems are put into practice (webinar 3). If citizens are not willing to accept new technologies in their everyday lives and in their interaction with the public administrations, useful AI solutions could be rejected. As a consequence, the government decision making may lose legitimacy. A clear and **comprehensive ecosystem of trustworthiness is key** for the confidence of individuals and communities in new technologies and in the public sector. For this reason, the European Commission's High Level Expert Group (HLEG) on Artificial Intelligence identifies "Trustworthy AI" as a "foundational ambition".

An important challenge to achieving trust in AI is its **reliance on data**. For public AI solutions to work, citizens need to ensure that their sensitive data and their privacy is safe with the public administrations. They also need to be sure that their data will

not be used to develop AI tools that potentially harm them or the most vulnerable parts of the population. Trust is also important **within public institutions**, to enable intra-institutional data sharing between the unit working on the implementation of the AI system and the unit managing the protection of the data. Thus, it is important that government agencies understand what influences users' acceptance of innovations to develop human-centred and AI-driven public services. This approach will ideally provide citizens with accessible, relevant and personalized services.

The goals of the session were to (1) highlight the importance and identify **challenges and opportunities in terms for trustworthiness** of AI solutions in the public sector, (2) **raise awareness on citizens' concerns** and describe potential threats to fundamental rights of AI in the public sector, and (3) **identify conditions and activities that promote trustworthiness** in public sector AI solutions, both for policy agencies that need to adopt these solutions and for citizens that need to accept these solutions.

For this purpose, the session brought together speakers from policy, academia and civil society. In chronological order, speakers were:

- ▶ Barry O'Sullivan, Professor at the School of Computer Science & IT at the University College Cork, working in the fields of AI, ethics and public policy. From 2018 to 2020 he was the vice chair of the European Commission's High Level Expert group on AI and president of the European AI association.
- ▶ Stephan Grimmelikhuijsen, associate professor at the Utrecht School of Governance, focusing on transparency and citizen trust in government.
- ▶ Slava Jankin, Professor of Data Science and Public Policy at the Hertie School of Governance in Berlin and director of the Data Science Lab that, among other activities, focuses on data science and AI solutions for common good.
- ▶ Ingrid Bellander Todino, Head of the Fundamental Rights Policy Unit at the EC's Directorate General JUSTICE.
- ▶ Sarah Chander, Senior Policy Advisor at the civil and human rights organization European Digital Rights (EDRI).
- ▶ Claudia Prettner, Legal and Policy Advisor at the civil and human rights organization AmnestyTech.

This section summarizes the main contributions of the speakers, as well as the identified challenges and opportunities towards trustworthy AI in the public sector.

2.2.1 Trustworthy AI – A European perspective

Many people perceive AI as a magical power that will change the way the world works. While this may be true in some respects, it is not necessarily a helpful view when it comes to understanding and controlling the influences that AI will have on our society. The term AI was coined by emeritus Stanford professor John McCarthy and colleagues in 1955 when they set out to automate many aspects of human intelligence. While many of the topics and tasks discussed then are still topics of major AI conferences today, AI today is more an umbrella term for many scientific subfields. There is no common definition of AI, but a working definition for this session is "AI is the development of computer systems that perform tasks that normally require human intelligence". Today AI is ubiquitous in our lives, e.g. in search engines, music recommendations, news recommendations, email spam filtering and many other tools of everyday use. We use AI all the time, which is why it is important to ensure that its use does not produce harms.

Because AI is different from previous technologies in some ways, it creates new systems and processes that could be harmful if this technology is misused. First, AI is different from traditional programming. In traditional programming, an expert defines rules and mechanisms to process data inputs and generate outputs, and turns them into a programme. In contrast, experts in Machine Learning (ML), a major subfield of AI, do not write the programme. Instead, the machine extracts rules and mechanisms from examples of data inputs and outputs. For that reason, problematic input data might produce problematic and unwanted outputs.

Second, AI systems have poor common-sense knowledge of the domain in which they are operating. For instance, an AI system based on data from EU court case descriptions (i.e. counts of single words and expressions) can predict their outcomes with 86% accuracy, without understanding legislation or even the meaning of the words and the language used [VNO2019]. That is, AI approaches can produce useful outcomes without understanding the working domain, and it is difficult to ensure that these systems robustly produce the wanted results in unknown future conditions.

Third, while some AI systems are technically easy to build, it is hard to create AI systems that have real world impact. For example, it could be shown that most AI systems built to detect and prognosticate COVID-19 during the pandemic had no useful impact [RDT2021]. This example shows that AI is not the technology that will solve all our problems.

Fourth, AI can produce and perpetuate societal biases as shown by numerous studies and examples [BG18, RMT19]. Other harmful uses of AI are reflected in social scoring or mass surveillance systems. Therefore, **it is important to think about the ethical implications of AI use.** However, due to high geographical variation, there is no global agreed upon the set of ethical values for AI [ADK2018]. Hence, it is important to establish a definition of “Trustworthy AI” from a European perspective, as the way we see it in the EU is not necessarily the same as how it might be defined in other parts of the world.

The EC established in 2018 the High Level Expert Group (HLEG) on AI. They proposed a definition of Trustworthy AI [EC19] that has three core characteristics: (1) lawful, (2) ethical, and (3) robust. This definition translates into the seven key requirements for trustworthy AI depicted in Table 1.

Table 1

Seven key requirements for trustworthy AI, as defined by the EC’s HLEG on AI.

The 7 Key Requirements for Achieving Trustworthy AI	
Human agency & oversight	AI systems should enable equitable societies by supporting human agency and fundamental rights , and not decrease, limit or misguide human autonomy .
Robustness & safety	Trustworthy AI requires algorithms to be secure, reliable and robust enough to deal with errors or inconsistencies during all life cycle phases of AI systems.
Privacy & data governance	Citizens should have full control over their own data , while data concerning them will not be used to harm or discriminate against them.
Transparency	The traceability of AI systems should be ensured.
Diversity, non-discrimination & fairness	AI systems should consider the whole range of human abilities, skills and requirements , and ensure accessibility .
Societal & environmental well-being	AI systems should be used to enhance positive social change and enhance sustainability and ecological responsibility .
Accountability	Mechanisms should be put in place to ensure responsibility and accountability for AI systems and their outcomes.

Source: Barry O’Sullivan, based on “Ethics guidelines for trustworthy AI” by the European Commission’s High-level expert group on Artificial Intelligence [EC19].

Currently, the EC’s efforts toward trustworthy AI are marked by the AI Act [EC21], a proposal for a unified regulation of AI across all EU member states. The AI Act aims to foster the development of human-centred AI by taking a risk-based approach, where risk refers to both robustness of AI systems (and thus reliability) and fundamental rights. That is, AI applications that pose a higher risk, will be faced with stronger legal obligations.

Naturally, all seven requirements are considered important for achieving trustworthy AI. However, the transparency requirement is deemed a priority, as complexity and opacity (the “black box” problem) are very AI-specific challenges. Furthermore, **transparency could be considered as the key concept towards fulfilling the other six requirements** and bringing us a big step closer towards trustworthy AI.

Finally, given the geographical differences in ethical values, **it is important that the EU takes a leading role** in defining trustworthy AI from a European point of view and to make sure that these values are not just respected by Europeans, but by any organisation, company or other entity that wants to operate on the European market.

The need for in-house capacity building AI in the public sector is motivated by the fact that AI is already widely used in many parts of public administration.

2.2.2 The academic perspective

AI in the public sector could potentially yield many benefits, such as higher efficiency, more responsiveness or even more fairness in public services. In addition, AI could be used for proactive policy making, i.e. to address public problems before they occur. However, there are still many challenges to achieving trustworthy AI in the public sector. There are some examples of AI systems in public administration which produced harms to citizens. Another challenge is the **lack of trusted data sharing** structures between peer entities within the public sector, to enable the unit that manages useful administrative data to share it with a peer unit that wants to implement an AI system based on this data. Currently, some of the most urgent challenges centre on the role of two requirements for trustworthy AI in public sector: (1) Transparency and (2) Capacity in terms of skills and resources.

In this session, the importance of transparency for trustworthy AI in public sector is motivated by a national scandal around an algorithmic decision-making system for fraud detection in childcare benefits in the Netherlands [Amnesty2021].

One of the crucial issues was that biases in the algorithm had led to discriminatory outcomes in tax fraud prosecution, where victims of this system had trouble challenging the prosecution due to lack of transparency.

There are two important dimensions of transparency: accessibility and explainability.

Accessibility means availability of code, model, data, where this may not be sufficient as most people do not have the skills to make use of this type of access. Therefore, another element to accessibility is to enable auditing of AI systems by external experts, e.g. for bias and functionality evaluation. Explainability deals with the fact that often algorithms are “black boxes” and it is not clear how they reach a particular outcome. Thus, the outcomes need to be explained, e.g. through “explainable AI”, where explanations should also be tested for their understandability [HMK18]. In addition, explainability is only useful for trustworthiness if algorithms can give personalised reasons to individual outcomes, so that individuals are given the option to challenge decisions that directly affect them.

Grimmelikhuijsen [G2022] investigated the question to what extent these two elements

of transparency (accessibility and explainability) can influence the perceived trustworthiness of AI and bureaucrats in the public sector in a survey experiment with 1000 Dutch participants. The results show that accessibility is a necessary but not sufficient condition, whereas **explainability is crucial to achieve trust** by citizens in public sector decisions. Nevertheless, accessibility is important to ensure accountability, especially in potentially invasive policy measures. To achieve this, we also need to make sure that transparency requirements are not gamed, ignored or unnoticed. Therefore, it is important to not only focus on “fixing” algorithms at the micro level but to establish regulatory regimes and strengthen democratic control over algorithm use through participatory design mechanisms and periodic audits.

The need for in-house capacity building AI in the public sector is motivated by the fact that AI is already widely used in many parts of public administration, where applications vary in terms of data use and sophistication [AI Watch2022] but many AI systems are generated and implemented within the same organisation [ESC2020]. Many of the challenges and negative examples of AI in the public sector could indeed be addressed or prevented with public **computational resources and employees that are skilled in AI**. Other benefits of in-house capacity building in AI include: it would guarantee data privacy and security; it ensures accountability and compliance; it enables to incorporate domain, political and organisational expertise; it creates an iterated development environment, where AI models can dynamically adjust to changes in processes; it allows to dynamically implement learnings from deployment and roll-out; it enables better informed procurement and it also signals competence in the field of AI which increases trustworthiness [KJH2022]. Finally, when building capacities in AI, it is also important to consider skills in the area of solution development (including causal analysis, ethics and law, decision theory, and policy making) which is equally as important as data science and AI skills.

2.2.3 The citizen perspective

The protection of fundamental rights and human safety when an AI system is put into use is a key premise to trustworthy AI and consequently to the proposal for a regulation on AI in the EU, the AI Act. In fact, the AI Act includes provision to enhance the effective enforcement of already existing EU rules. This is because the risk that can arise from AI in governance can be different from the risk of more traditional

policy making tools, due to AI-specific challenges related to complexity, opacity and the scale in which processes are made more efficient. This section summarizes the AI Act's proposed provisions to ensure trustworthy AI and the amendments and additional provisions that AI regulation should include to achieve trustworthy use of AI in both the private and the public sector from a citizen-centric perspective.

Risks that arise from the potential uses of AI in public sector include: (1) existing practices, such as surveillance, can become more effective and therefore more invasive, causing potentially chilling effects and create fears of restricted freedom of expression; (2) the automation of public sector decisions that significantly affect people's lives; (3) discriminatory outcomes due to biased input data or biased AI development practices; (4) increased opacity in decision making processes and the enforcement of fundamental rights protection due to the complexity and black box properties of AI.

To address these risks, the AI Act includes requirements on documentation and testing, as well as requirements on human oversight, data governance,

accountability, robustness and accuracy of high-risk uses of AI systems. In addition, it includes clauses on the proportionality of AI systems use in high-risk areas (such as law enforcement). The AI Act also requires that users must have appropriate understanding of AI tools. Especially if users are public sector employees, which already have accountability and transparency obligations under their existing national legislation. Note that the AI Act will apply to high-risk uses of AI systems without distinction between public and private entities. One key objective is to help users with information about the system to assess the legality of the system they envisage, and to adopt or avoid it where necessary.

To ensure that these provisions are met, and consequently trustworthy AI can be achieved, the AI Act proposal empowers supervisory authorities (with access to AI expertise) that are in charge of fundamental rights enforcement. Furthermore, making use of AI in the public sector requires capacity building in all EU Member States.

Therefore the EU works with its Member States on investments, research and fostering skills under the coordinated action plan on AI. In fact, the AI Act can be considered as a game

changer. It will help the users of AI systems, including those from the public sector, to use AI systems in full compliance with fundamental rights. That is at its heart a human-centred approach which fosters a development towards trustworthy AI.

Nevertheless, from a civil society perspective, stronger regulation of AI systems, including amendments to the AI Act proposal, is urgently needed to prevent any further harms to fundamental rights and safety (such as it has been seen in past negative examples of AI use in the public sector) and an ultimate erosion of public trust. Therefore, civil society representatives stress the importance of being aware of not necessarily the AI system but also the contextual use and urge legislators to look at how AI systems potentially exacerbate existing conditions of social inequalities, marginalization, and societal concerns. In addition, legislators should make a distinction between harms that emanate from AI systems not being accurate or technical mistakes and harms stemming from AI systems being used in processes inherently impacting people's rights. While the former harms can be addressed with a regulation on AI, the latter

requires broader conversations on restricting or prohibiting the use of AI systems. Furthermore, civil society representatives demand a debate about how AI systems, when implemented in the public sector, often bring dependencies on the private sector and corresponding computational structures. This may limit the possibility of public sector institutions to control AI systems' impact and provide the necessary information about the functioning of these systems. This also requires a discussion about potentially conflicting motives between the public and private sector. Further demands for amendments to the AI Act included: (1) Prohibiting all AI systems that pose an unacceptable risk to human rights; (2) Mandatory human rights impact assessments for high risk systems and for all public sector use of algorithmic decision-making systems; (3) Meaningful transparency and explainability on the use of AI systems and (4) Clear and accessible redress and remedies for those that have suffered human rights harms from the use of AI systems.

2.3 AI in practice and implementation strategies

Picking up from the previous session on trustworthy AI in the public sector, this session dealt with the implementation of AI in public sector organisations.

The main goal of the session was to reflect on the challenges for implementing AI in the public sector, and how to address them. For achieving this goal with comprehensive approach, the session included the perspectives of academia, practitioners from public administrations, and the private sector. The session has hosted several speakers that brought their perspective to the topic. In chronological order, the session has been opened by Luca Tangi from the Joint Research Centre with the presentation of the recently published science for policy reports “AI Watch. European landscape on the use of Artificial Intelligence by the Public Sector”¹ and “AI Watch, road to the adoption of Artificial Intelligence by the

public sector”². Then Liviu Stirbat, of the European Commission’s Directorate General for Research, Science and Innovation discussed the opportunities for transforming the public sector with AI with an interview to Miguel Valle del Olmo, Deputy Director General at the Spanish Secretariat of State for Digitalisation and Artificial Intelligence. The session has been closed by a panel of experts from academia who discussed the challenges of AI in the public sector and the way ahead.

The panel experts were Marieke Van Putten, Senior Innovation Manager at the Dutch Ministry of the Interior and Kingdom Relations; Arūnė Matelytė, Manager at GovTech Lab Lithuania; Jonathan Bright, Head of AI for Public Services at the Alan Turing Institute; and Roberto Barcellan, Head of Unit at the European Commission’s Directorate General for Informatics. The panel was

¹ Tangi, L., Van Noordt, C., Cometto, M., Gattwinkel, D. and Pignatelli, F., AI Watch. European landscape on the use of Artificial Intelligence by the Public Sector, EUR 31088 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-53058-9, doi:10.2760/39336, JRC129301. <https://europa.eu/ldk7jk6>

² Manzoni, M., Medaglia, R., Tangi, L., Van Noordt, C., Vaccari, L. and Gattwinkel, D., AI Watch. Road to the adoption of Artificial Intelligence by the Public Sector: A Handbook for Policymakers, Public Administrations and Relevant Stakeholders, EUR 31054 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-52131-0, doi:10.2760/693531, JRC129100. <https://europa.eu/ljNQg8p>

moderated by Carlos Torrecilla Salinas, Head of the Digital Economy Unit at the Joint Research Centre. The whole session was chaired by Leontina Sandu, Head of the Interoperability Unit, Directorate General for Informatics, European Commission. After an introduction on the state of the art in the uptake of AI in the public sector, the panel discussion revolved around the **challenges ahead that public administrations need to face**.

2.3.1 The state of the art in the uptake of AI in the public sector

The recently published report “AI Watch. European landscape on the use of Artificial Intelligence by the Public Sector”, presented by Luca Tangi, provides the result of the mapping of the use of AI in public services. 686 use cases of AI in the public sector has been collected and analysed. The findings highlight that the use of AI by public administrations is growing and several organisations are already using AI in their daily operations. For example, findings show that the 31% of the cases collected are already implemented and in use. This evidence was the starting point of the session and highlights how, nowadays, the discussion on AI in the public sector is not anymore a theoretical discussion on something that will affect the public sector in the future, but is a contemporary compelling discussion, as it has to do with changes touching public administrations nowadays.

On the same line, Miguel Valle del Olmo explained how Spain is dealing with the introduction of AI in the public sector, starting from the definition of a strategy and moving towards several real-life projects inside the public sector. He was citing successful examples already implemented in Spain that brought tangible positive results. Among them, a successful chatbot for helping citizens and companies on VAT management, that has significantly reduced the volume of required email exchange. Another example is the use of AI for detecting fraud in drugs prescription developed in Galicia. A third example has been deployed by the Ministry of Justice on the introduction of a legal dictation system, an AI solution that allows an automatic transcription of voice notes of legal text, capable of transcribing 160 words per minute with an accurate legal terminology.

Roberto Barcellan, highlighted how the European Commission started to experiment with AI. For example during the Future of Europe Conference the EC developed an AI solution for the automatic translation of the comments by the citizens. Another example is the summer time consultation where 4

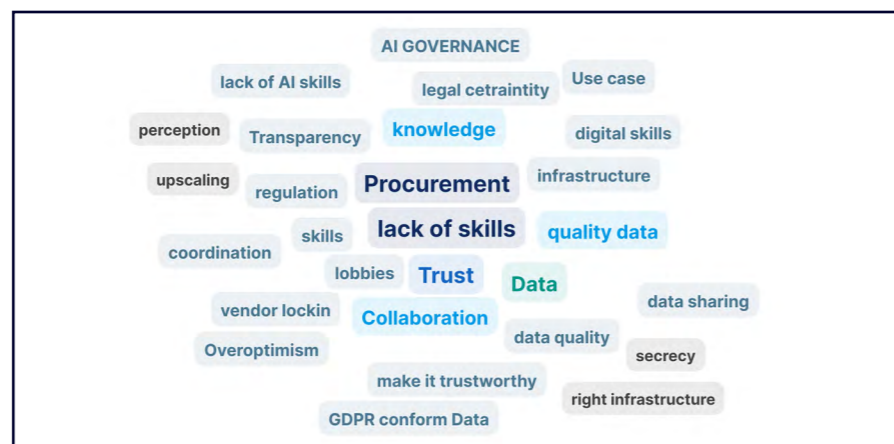
million contributions have been collected; the analysis of those comments would not have been possible without the AI used for processing them.

2.3.2 The challenges that public administrations are facing

Given that several public administrations are nowadays dealing with the uptake of AI, the discussion revolved around the challenges related to this. All the workshop participants have been asked to answer to the following question: “what are, in your experience, the biggest challenges for implementing AI in the public sector?” The answers have been collected in a word cloud, as reported in Figure 3. The word cloud has been then discussed by all the speakers. Five main classes of challenges have been highlighted: Trustworthiness, Cooperation, Procurement, Data, Skills and Human Resources.

Figure 3

Challenges of AI –
word cloud



2.3.2.1 Trustworthiness

Ensuring a trustworthy use of AI has been pointed out as one of the main challenges for the public sector. As mentioned by Miguel Valle del Olmo there is a natural concern about the effects that AI systems might have on citizens. Issues like lack of accuracy, biases or lack of supervision might affect the health and safety of citizens or their fundamental rights. If this happens, public administrations do not only risk to harm citizens, but they also build a large resistance against the use of AI.

This element poses an important challenge for the public sector that can be properly resumed with the words of Jonathan Bright:

“If we don’t have AI perceived to be trustworthy, AI will fail. Being trustworthy does not mean being perfect, it is inevitable that AI will make mistakes. This does not mean that it is useless, but that we need manage risks and to have procedure to activate when mistakes happen. We need to detect and monitor the failures and then thinking about a way of correcting them, and a way for improving the system in the future.”

The challenge of AI being trustworthy is at the core of the discussion of every public administration. It is also questioning national governments on how to support their administration in a trustworthy use of an AI system. In this direction, as reported by Marieke Van Putten, the Netherlands are developing instruments that will be at disposal of all public administrations for ensuring an ethical use of AI.

2.3.2.2 Cooperation

Another important challenge for the public sector is **putting in place proper agreements for cooperating** in developing and using AI. The cooperation needs to be both among public administrations and with the private sector. The variety of competences and the resources needed for developing an AI system require public and private organisations to come together as a team for a successful development and use of AI.

On the cooperation among governments, Marieke Van Putten reported the positive trend that she is observing in the Netherlands. Using her words:

“If you want to do it better, you want to cooperate. Compared with the past there is more willingness to cooperate across governments. In the Netherlands, if people are working on similar projects, they tend to work together for overcoming the challenge of the need of expert, with a multidisciplinary nature. This allows Dutch public administration to not limit themselves to buy solutions from outside, but also to develop them internally.”

Fostering cooperation might also mean, for certain cases, moving towards a centralisation of the service as there are often many different actors working in parallel. As suggested by Miguel Valle del Olmo, it is interesting to explore the possibility to centralise AI services and products to a certain extent, and then provide access – for example through API – so that different authorities could use them.

Not only internal cooperation, but also cooperation with external actors is an important challenge. In this direction, ‘GovTech’

Universities can provide new solutions to new problems, and they are in a privileged position for exploring new use cases of AI.

is an important option. It pushes for a cooperation between public administrations and start-ups for the development and use of innovative solutions in the public sector. As explained by Arūnė Matelytė, the involvement of start-ups is essential especially because the public sector can benefit from fresh ideas developed in a flexible environment. This element become necessary when complex problems have no clear answers, and require a high level of co-creation and cooperation for reaching a feasible solution.

Moreover, the last important element mentioned was the collaboration with university and research institutions. In this direction Miguel Valle del Olmo explained how this type of cooperation is necessary for supporting the uptake of AI in the public sector. Universities can provide new solutions to new problems, and they are in a privileged position for exploring new use cases of AI. They are in the position of achieving the desired goals with a correct approach and in a responsible way. Jonathan Bright echoed, and he highlighted that universities can be a valid alternative to private companies.

2.3.2.3 Procurement

Procurement becomes a challenge as public organisations often do not have enough resources to fully develop AI internally. Procurement is already a complex topic for public administration and AI is bringing it to a higher level of complexity. Public administrations have not only to ensure the quality and accuracy of the output, but also the explainability and transparency of the algorithm, and its non-discriminatory nature.

For ensuring this, internal competences are needed, for avoiding vendor lock-in, the purchase of non-explainable solutions or even fraudulent behaviours by the supplier. To this end, Miguel Valle del Olmo brought to the attention the emblematic example in Utah with the Banjo start-up³. The company received a 20 million USD contract even though it did not have the AI technology it claimed to have. For avoiding these types of behaviours, Miguel Valle del Olmo highlighted the importance of defining protocols, spreading knowledge among public servants, publishing guidelines of public procurement, and lastly, knowing the framework that the AI regulation – the AI ACT - will introduce.

Arūnė Matelytė is in a privileged position for discussing about procurement, the key for a positive cooperation between public organisations and start-ups. She highlighted the importance of a proper procurement process. In her words:

³ <https://www.deseret.com/utah/2021/4/14/22375665/utah-banjo-surveillance-personal-privacy-white-supremacist-audit-law-enforcement-kkk>

“ *It is not necessary to add new procurement methods, the methods are not the problem. The challenge is that public administrations don't know how to work with them. For AI development, public administrations have to move from buying a solution to trying to solve a challenge. Nowadays, public administrations are used to write technical specification for buy a solution, the habit of a public servant is to write everything down in details, and this is an issue for procuring AI. Moreover, even when launching a proper procurement procedure, they don't have the skills to evaluate the best company. Lastly, procurement has a lot of oversight, public administrations need to be able to distinguish between innovation and scaling up. If there is no such distinction people get scared to be punished if the system will not scale up. And this is an obstacle for innovation.*”

For sustaining this thesis, Arūnė Matelytė brought an example from Lithuania, where 47 AI pilots were purchased using a method called “design contest”. In the past, this method has been used almost exclusively for architecture, but it can easily fit with innovation purchases, even though it has been never applied to them.

2.3.2.4 Data

A third important challenge is the collection of a large amount of high-quality data. Large datasets are needed for training an AI system, moreover data needs to be of high-quality, as low-quality data automatically brings to biased AI systems.

Collecting data is a complex and time-consuming activity. Roberto Barcellan explained the approach of the European Commission towards data collection:

“ *The European Commission started from data: first we designed a data strategy, then an AI strategy. EC have a long tradition on high quality data, with excellences. An important effort has always been made for knowing our datasets and for curating them. We need to remember that good quality input provides good quality output. For example, for a speech to text technology the EC invested in hiring interprets for training the system. AI brings a new dimension on the work that an expert can do. Before introducing AI in daily operations EC creates test areas to experiment and evaluate the data quality and test the AI solution.*”

On the same line, Miguel Valle del Olmo highlighted how data is important and linked the data challenge with the challenge related to scarce workforce. Human resources are needed to collect the data to

train the models and algorithms. Allocating people to this task might imply the disruption of daily activities of business units. This is a very prominent issue, especially in the context of limited human resources.

2.3.2.5 Skills and human resources

The last class of challenges is related to the human aspect, i.e. the quantity of human resources, as well as the skills needed.

Lack of human resources has been indicated as an important issue in Spain. Miguel Valle del Olmo highlighted that one of the most limiting elements in the Spanish public administration is the scarce human resources. When developing AI, the AI specialists need a significant amount of support from the business units in order to continuously train and test the algorithm. Finding these experts is a challenge.

Moreover, a generalised lack of confidence in the algorithm is challenging the public sector. As pointed out by Miguel Valle del Olmo:

“ *Some public servants doubt the accuracy of the algorithm for giving good solutions. There is an initial rejection of the tool, because there is a perceived lack of control. This is often linked to a lack of understanding of the technology and what to expect from it. In this context, there is the need of training people on the basics of artificial intelligence to support its deployment. Public servants need a basic understanding of what AI can do and what it cannot do, and how to work with it.*”

In the context of scarce human resources, **the public sector has also difficulties in attracting AI talents**. As Marieke Van Putten highlighted, we need to leverage on the important societal challenges that public servants are called to solve in order to attract talents. In this direction, the city of Amsterdam is a good example to follow and learn from. Another good example of practise is Lithuania where, as explained by Arūnė Matelėytė, public administrations started offering people one year contract for a high-level project. With this proposal, they were able to attract a lot of people as a short commitment is an easier decision for them to make. Moreover, after one year, a relevant number of the people remained because they like the level of responsibility and the purpose of their work. An advantage in Europe is **the ethical and fair European approach on AI**, unique in the world. As Roberto Barcellan explained, this represents a leverage for attracting young people.

However, sometimes these types of solutions are not enough for covering the capacity needed and public administrations should find alternative ways

for filling the gap. As explained by Arūnė Matelėytė, many talented people decide to create their own start-up. Hence, Govtech is an opportunity for take advantage of this knowledge for solving public sector challenges. The European Commission is also facing the same issue in attracting talents, as reported by Roberto Barcellan, and is solving it by hiring external experts.

2.3.3 Session Main highlights

In synthesis, the main highlights of the session are:

- ▶ **Proper skills are needed and are nowadays lacking.** Specific skills and profiles, but also a general and widespread awareness of the basis of AI are necessary to successfully develop AI.
- ▶ **Collaboration is key.** No public administration can tackle this issue alone: local and regional administrations are key in this process as well as the collaboration with external actors, private companies, start-ups and universities.
- ▶ **Trustworthiness is a key feature of AI application,** hence ensuring trustworthiness is a key challenge for public administrations. Trustable solutions require trustable data. Moreover, a correct procurement process is necessary for ensuring the purchase of explainable and trustable solution.

In this context, AI has an enormous opportunity for improving the public sector and public service delivery, in the words of Miguel Valle del Olmo:

“ *Today, public administrations have more, and more complex functions to perform. It is important to have the support of technology to provide the best services possible to society. This is particularly important in a context of inflation, raising prices and limited resources.*”

2.4 Bringing AI closer to citizens

European cities and regions increasingly represent testbeds for technological innovation and are adopting AI and digital solutions in an agile, efficient and citizen-centred manner. This session addressed the question of

how to bring AI closer to citizens and foster smart communities in alignment with EU values and with current policy, regulatory and market developments.

With the goal to raise awareness, stimulate knowledge sharing and

encourage collaboration across borders, the session provided examples of innovative AI applications and policies focused on the specific needs of local administrations and communities. Good practices were identified for bringing AI closer to citizens, including the development of appropriate tools, mechanisms and activities to support an effective and trustworthy implementation.

The speakers included practitioners and decision-makers from cities and local administrations, as well as representatives of the European Commission, regional and city networks, think tanks and academia. They shared their perspectives and experiences of implementing AI at local level, and highlighted the importance of engaging with, and bringing tangible benefits to citizens. In order of appearance, the speakers were:

Welcome and introduction

Carlos Torrecilla Salinas
*Head of Digital Economy Unit
Joint Research Centre, European Commission*

Opening remarks

Eddy Hartog
*Head of Unit, Directorate General for Communications Networks,
Content and Technology, European Commission*

Panel 1

Moderator: Michael Mulquin, MIMs Ambassador, Open and Agile Smart Cities (OASC)

David Osimo, Director of Research, Lisbon Council

Giovanni Sileno, Civic AI Lab, University of Amsterdam

Jens-Peter Schneider, Professor, Institute for Media and Information Law, University of Freiburg

Slim Turki, Senior Researcher, Luxembourg Institute for Science and Technology (LIST)

Soenke Zehle, Researcher in Media Theory at Academy of Fine Arts Saarbrücke

Panel 2

Moderator: Federica Bordelot, Senior Policy Advisor, Eurocities

Nicola Graham, Smart City Operations Manager, Smart Dublin

Marc Pérez-Batlle, AI Lead, Barcelona

John Paul Farmer, Chief Innovation Officer and President, WeLinkCities (former CTO for New York City)

Stefania Sparaco, Project Manager, Digital Transformation for Regions (DT4REGIONS)

Closing remarks

Carlos Torrecilla Salinas
*Head of Digital Economy Unit
Joint Research Centre, European Commission*

Leontina Sandu
*Head of Interoperability Unit
Directorate General for Informatics, European Commission*

2.4.1 Setting the Scene: an overview of the policy context and state of the art

The session was formally opened by the Head of the Digital Economy Unit at the European Commission Joint Research Centre (JRC), Carlos Torrecilla Salinas. He highlighted the frontline role played by cities and local administrations in providing public services to citizens. He touched upon the previous webinar discussions, addressing the regulatory perspective, AI trustworthiness, and implementation strategies. Reference was also made to

a recent JRC report on AI use cases in the public sector, which includes examples at local level⁴.

Next, an opening keynote was delivered by Eddy Hartog, Head of the Unit dealing with smart communities at DG CNECT. He outlined the policy context and emphasised the importance of AI for fostering economic and social opportunities, and fulfilling the ambitions of Europe's Digital Decade with the twin digital and

⁴ Tangi, L., Van Noordt, C., Combetto, M., Gattwinkel, D. and Pignatelli, F., AI Watch. European landscape on the use of Artificial Intelligence by the Public Sector, EUR 31088 EN, Publications Office of the European Union, Luxembourg, 2022.

green transitions. At the same time, he emphasise the need bring AI closer to citizens and communities at local level, and that this is a two-way street. The Living-in.EU movement, in this regard, co-creates the digital transformation together with cities and communities in a manner that is aligned with the EU rules, values and vision for AI ('the European way')⁴. This includes helping cities to develop technical specifications for standardisation, Model Contract Clauses for procurement, algorithmic registries and Minimal Interoperability Mechanisms.

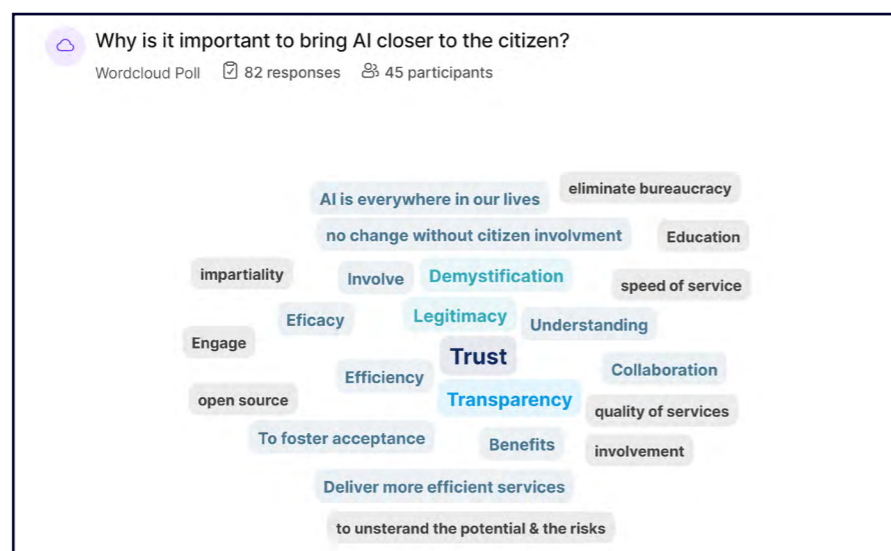
Recognising these links to broader digital transformation processes, the two expert panels highlighted the need for cities and communities to be ready for the future, bringing positive

4 <https://living-in.eu/>

impact and benefits to citizens. Michael Mulquin from the OASC network, served as moderator for the first panel, which discussed governance and participation mechanisms, technical tools and organisational enablers. He invited participants to contribute to a 'word cloud' on "Why you think it's important that we bring AI closer to citizens". The responses highlighted that one of the **key challenges** is how to **ensure that AI-based decisions are made in a trustworthy and transparent way**. It was noted that AI is often used for public sector applications that may be perceived to impact citizens negatively (e.g., fraud detection or surveillance). Very important is also to focus on interventions where AI is applied with the aim to benefit and support citizens and provide better services.

Figure 4

Second word cloud produced during the fourth webinar: 'Why is it important to bring AI closer to the citizen?'



The second panel, moderated by Federica Bordelot from Eurocities, focused on practical implementation. Representatives from various cities and regions presented examples of how they are proactively engaging with citizens and deploying AI for public benefit. Via an online poll, participants were invited to rank a series of **practical challenges** for bringing AI closer to citizens at local level. The results were as follows: 1) Guarantee public safety and protection from risks to fundamental rights 2) Data quality 3) Private data access 4) Skills development 5) Clear liability rules. Other challenges included the disruptions to the labour market and the need to carefully consider the language we use when describing technology to citizens. The panel also discussed **key success factors** for applying AI and data science at local level.

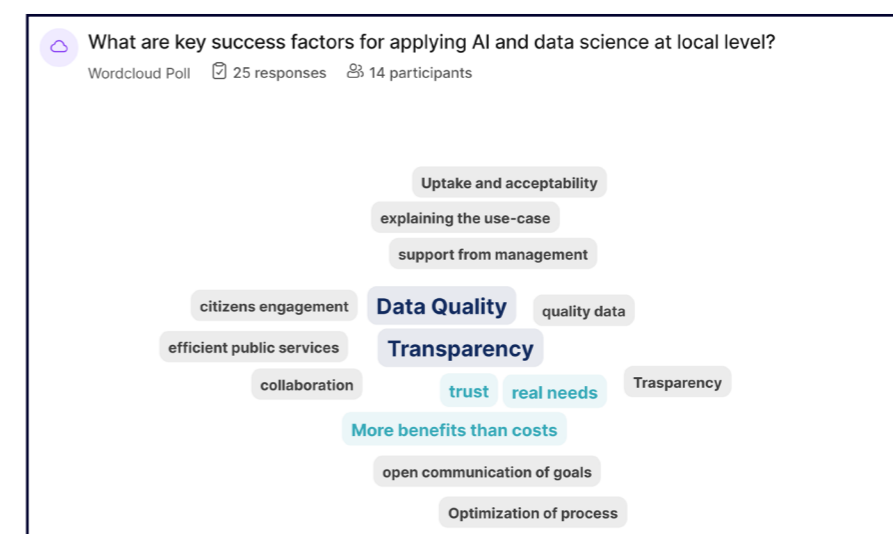


Figure 5

Results from the poll of the fourth webinar: 'Ranking practical challenges for bringing AI closer to citizens at local level'

Figure 6

Second word cloud produced during the fourth webinar: 'What are key success factors for applying AI and data science at local level?'



Throughout the session, speakers discussed **enabling conditions** from both a technological and an organisational perspective. They outlined the ongoing work on the **development of tools and mechanisms** to support an effective and trustworthy implementation of AI at local level. For example, various instruments to help spur innovation and de-risk projects, such as sandboxing and piloting, the development of local digital twins, urban data platforms and dashboards, ethical frameworks for AI and data governance, and models for AI procurement and for citizen participation.

The session was closed by Carlos Torrecilla Salinas, together with Leontina Sandu, who highlighted common themes across all four webinars in the series, and also emphasised the valuable contribution that scientific research and advice can make in this area.

2.4.2 Common themes and challenges

While cities and communities may face different challenges and find themselves at different stages of AI adoption and implementation, some common themes emerged during the panel discussions. This can open up opportunities for mutual learning and collaboration, with cities and communities adapting approaches and setting priorities according to their own specific needs and context.

Some of the main challenges encountered included: data access and management; technological readiness and infrastructure; digital literacy, skills and capacity-building (both of policy-makers and citizens – for example Smart Dublin is offering training through an Academy of the Near Future⁶); resourcing; scaling, sustainability, and a lack of appropriate procurement processes.

⁶ <https://smartdublin.ie/academy-of-the-near-future-smart-cities-education-programme/>

Figure 7

Introduction to the Academy of the Near Future



Source: www.nearfuture.ie, as presented by Nicola Graham during the webinar

Other key themes included: the importance of engaging with the public, and for support in building a trustworthy ecosystem and governance framework for AI implementation; the need for strong partnerships and collaboration; and the availability of dedicated spaces for testing and experimentation. It was also noted that in a dynamic regulatory and market environment, it can be useful to develop an implementation 'toolbox' with solutions that can be replicated, as well as to establish some common methodologies and create standard processes to check conformity with regulation. Several of these themes are further elaborated on below:

Trust: and **Public engagement**

Trust and public engagement surfaced as common themes

across all of the webinars. There is a need to reduce the threshold for public involvement in the planning and implementation of AI projects, at both regional and local level. As it emerged during the event, if the willingness of citizens to trust and accept new technologies in their everyday lives and in their interactions with public administrations is low, then there is a possibility that potentially useful AI solutions may be rejected and municipalities may lose legitimacy.

The citizen needs to be seen as **both a user and as a co-creator** of AI-based public services and applications, rather than as only a recipient or subject. There is a need to redefine and prioritise citizen involvement at the early design stages, for example

through the inclusion of citizen science data streams, co-validation of data, decentralisation of infrastructures and research on user-centricity. This can help to make systems more adaptable, resilient and human-centred. It was suggested that Service co-design is a mature methodology that can, and should be used in AI-based public service design and delivery.

Figure 8

Contrasting the role of citizens as users as compared to creators

Citizens-as-User vs Citizen-as-Co-Creators

- current policy maker **focus on tech-centric innovation**
- citizens appear as users of “smart” services, not **co-creators of intelligent systems**
- **redefine citizen role** involvement at early design stages, citizen science data streams, co-validation of data, decentralization of infrastructures (example: coops)
- citizens don’t know best but help others **explore a wider range of perspectives**
- **citizen empowerment** can accelerate, drive, and enhance green + digital transitions and become the frame of ai use in the public sector
- define **added value of intelligent systems** (efficiency, sustainability, transparency)

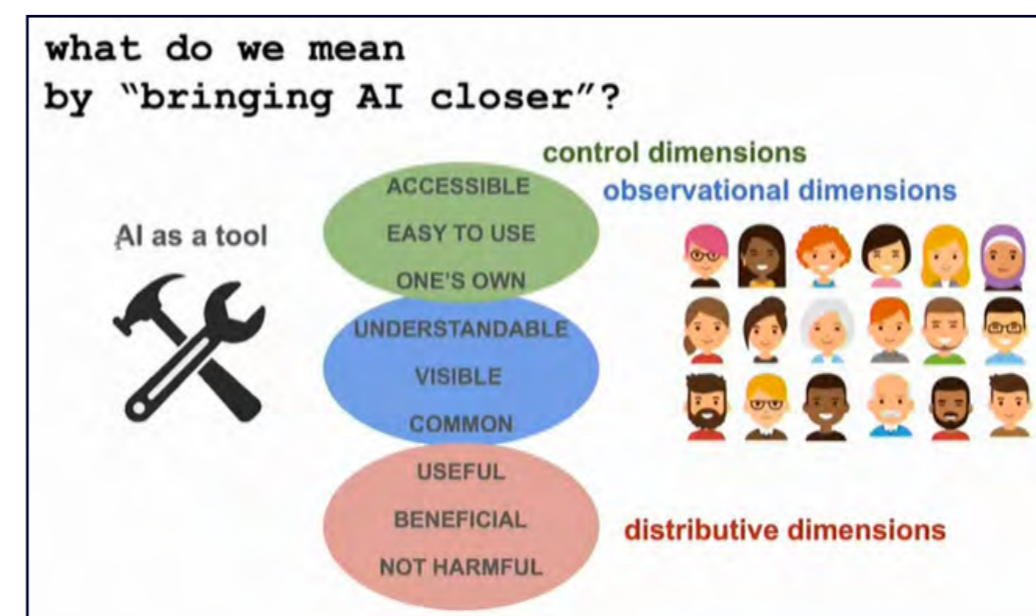
Source: Soenke Zehle, as presented during the webinar

The added value of using AI and data-driven services should be clearly defined and communicated to the citizen. Attention should also be directed towards the purpose for which AI is used, and not just the process. Instead of focusing primarily on cost reduction and efficiency, greater emphasis should be placed on using AI and digitalisation to provide **innovative, improved and more accessible public services**. This includes welfare-related applications that can directly benefit citizens and help improve their daily lives. This will also help to increase trust in the use of such technologies.

For example, the city of Helsinki aggregates health and social care data to identify gaps in service provision, and it provides proactive automatic pre-primary education allocation. Similarly, in Portugal, data is aggregated to proactively identify people suitable for reduced social energy tariffs. On this theme, David Osimo from the Lisbon Council shared some reflections from a recent blog on, ‘Building Human-Centric Public Services: From Data Minimisation to Welfare Maximisation’⁷.

⁷ <https://www.usercentricities.eu/news/blog-post-building-human-centric-public-services-data-minimisation-welfare-maximisation>

Giovanni Sileno from the Civic AI Lab in Amsterdam presented some examples of cities that, through the ComuniCity project, are conducting pilots with an emphasis on the inclusive co-design of AI services together with citizens, including hard-to-reach communities (e.g., Porto, Amsterdam and Helsinki). It was noted that it is essential to establish **open communication channels with citizens** in order to establish their needs and raise awareness concerning the opportunities and challenges of AI. Citizens should also be provided with the means to contribute with useful data – for example through citizen science efforts and hackathons/datathons. He suggested the metaphor of **AI as a tool for all**, ideally accessible, common, useful, beneficial and not harmful.



Source: Giovanni Sileno, as presented during the webinar

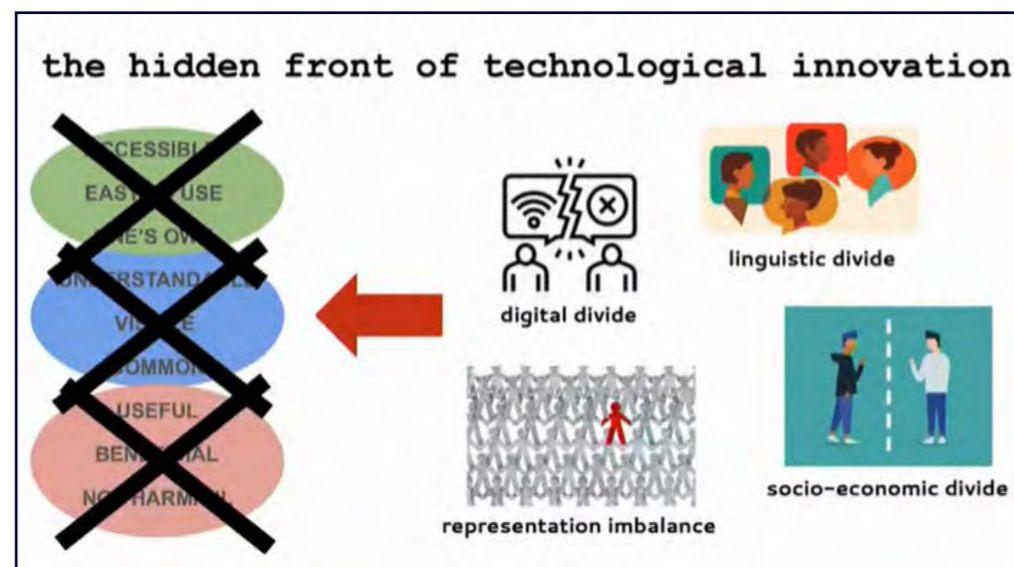
Several speakers highlighted the risk of hidden frontiers and divides in technological innovation: digital, linguistic, socio-economic, regional and representational. Stefania Sparaco, from DT4REGIONS, emphasised the link to territorial cohesion and the need to place **peripheries at the centre** of digital transformation efforts, to avoid exacerbating existing divides. Attention should therefore be paid to **fostering digital inclusion**. In particular, young people should also be part of the process, like in the Smart Dublin’s design workshop that engaged with children. A vibrant ecology of AI can bring in and involve diverse groups of people.

Figure 9

Explanation of “bringing AI closer: AI as a tool for all”

Figure 10

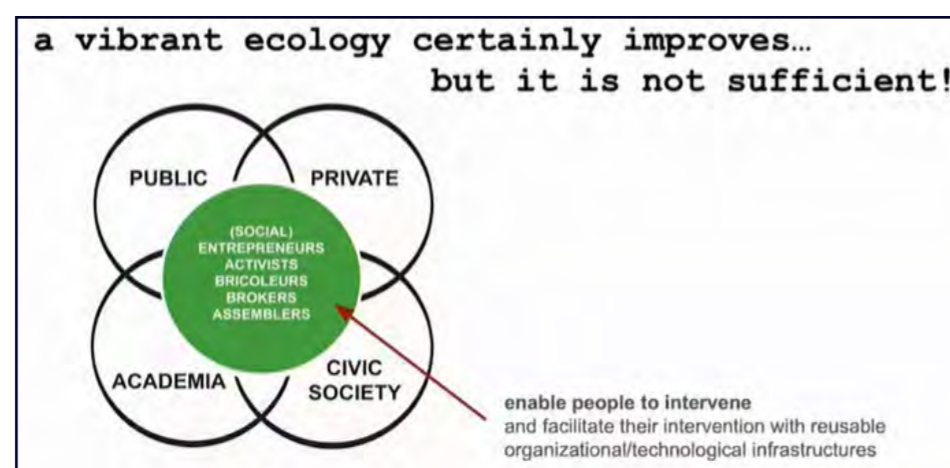
The hidden frontiers of technical innovation



Source: Giovanni Sileno, as presented during the webinar

Figure 11

A vibrant ecology is not sufficient



Source: Calzada, I. (2020). Democratising smart cities? Penta-helix multistakeholder social innovation framework. *Smart cities*, 3(4), 1145-1172, presented by Giovanni Sileno during the webinar

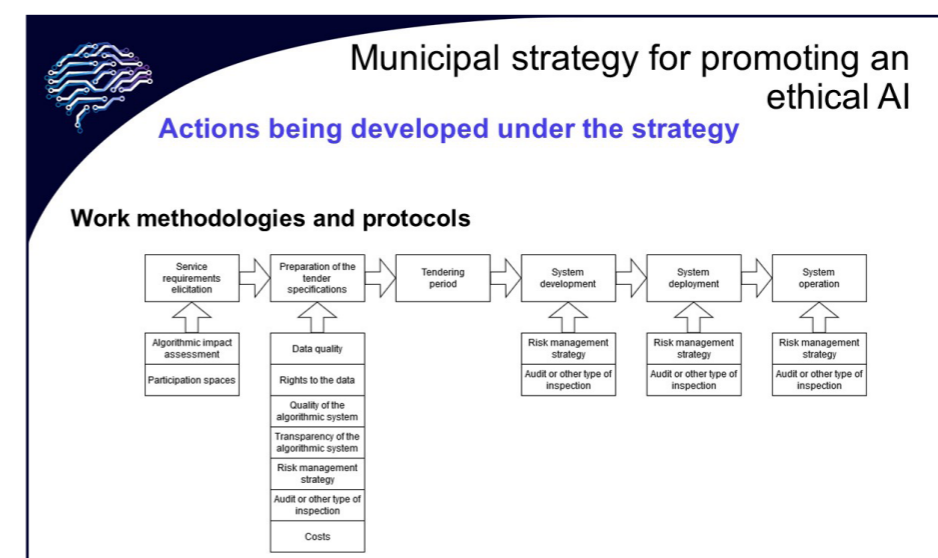
Support for AI Governance and Implementation:

Speakers noted a gap between early and late adopters of using AI in public administrations. They observed differences in awareness, vision, availability of data and models, digital infrastructures, budget, human resources and skills. It is important to consolidate governance structures at national/local level, and the cooperation and collaboration across cities and regions. Finally, it was emphasised how essential is to embrace ecosystem diversity and recognise the different roles and profiles that can contribute to innovation.

Framework strategies: Speakers outlined the role that regional and local governments can play in the implementation of national AI strategies. Also, they mentioned the **utility of establishing a guiding framework or strategy for AI at local level**, as done in Barcelona and New York City. John Paul Farmer explained how the New York AI Strategy served as a baseline for creating a shared understanding of the technologies, their uses, benefits and risks. The process of developing the Strategy involved mapping responsibilities and resulted in the creation of a community of practice and engagement around AI. In Barcelona, Marc Pérez-Battle described how, at municipal-level, a strategy has been developed for promoting the ethical use of AI ('Governing Principles for an Ethical Impetus to AI') and corresponding actions are now being implemented, including algorithmic impact assessments and audits.

Figure 12

A municipal strategy for promoting ethical AI



Source: Marc Pérez-Battle, as presented during the webinar

Common Tools, Methodologies and Mechanisms: Speakers pointed out the important role that can be played by cities coalitions and by regional networking promoting an effective and ethical governance and implementation of AI. This via developing common requirements and disseminating good practices,

as well as facilitating spaces for collaboration and mutual learning (e.g., Eurocities AI Lab⁸, the Open & Agile Smart Cities Network - OASC⁹, the Cities for Digital Rights Coalition - CDDR¹⁰ and DT4REGIONS¹¹).

8 <https://eurocities.eu/>
9 <https://oascities.org/minimal-interopability-mechanisms/>
10 <https://citiesfordigitalrights.org/>
11 <https://dt4regions.eu/>

The collaboration will enable cities and communities to replicate and scale solutions.

For example, Nicola Graham explained that Smart Dublin had recently become a signatory of the Living-in.EU declaration, and that as an active member of the CCDR, it is also engaged in a digital rights governance project, coordinated by UN Habitat, CCDR, Eurocities, and UCLG. It was one of four European cities selected in an open call in March 2022 to pilot the Project and is currently developing a digital rights education module for public servants.

In other areas that pose particular challenges for the implementation of AI and local data-sharing ecosystems, we learned how a number of cities are working together through these networks on the development of common methodologies, tools and protocols. The collaboration will enable cities and communities to replicate and scale solutions. This includes the development of Standard Contractual Clauses (SCCs) for public organisations wishing to procure an AI System developed by an external supplier. The aim is to increase confidence of public buyers in the AI services they procure, as well as to improve citizen trust, as also supported by the European Commission¹².

¹² These standard clauses are based on the standard clauses for the procurement of algorithmic systems developed by the City of Amsterdam in 2018 (<https://www.amsterdam.nl/innovatie/digitalisering-technologie/algorithmenai/contractual-terms-for-algorithms/>).

Simple standard mechanisms for interoperability are also being elaborated (Minimum Interoperability Mechanisms or MIMs¹³) as a set of practical capabilities based on open technical specifications. They provide the technical foundation for procurement and deployment of urban data platforms and end-to-end solutions.

Additional initiatives are also underway to increase the transparency and accountability of AI at local level. For example, Barcelona, Helsinki and Amsterdam, together with Eurocities, are working on municipal registers of algorithms. These provide citizens with clear information on AI systems and algorithms which may directly affect them. A set of EU Model Rules on Impact Assessment of Algorithmic Decision-Making Systems Used by Public Administration was presented by Jens-Peter Schneider from the European Law Institute. The aim is to provide a process of accountable self-reflection to help balance the needs of innovation and risk management. The Rules can also be applied at local and regional levels of governance and are aligned with the risk-based framework currently being proposed for AI

¹³ <https://oascities.org/minimal-interoperability-mechanisms/>

governance at EU level. They offer a systematic process for assessing the risks of using AI in the public sector, and for those systems deemed to be of high risk, they aim to combine an expert audit with a democratic public participation process. The reports are designed to be public and can thus help support transparency, as well as promoting the dual outcome of **improving both the quality of services and enhancing trust by citizens**. However, **explainability of AI remains a challenge and is still a barrier** for citizens in the process of checking algorithms.

2.4.3 Take-away Messages, Highlights, Outcomes

From the discussions, we can present the following core findings and challenges:

- A. Technological versus citizen focus:** People are sometimes overly-focused on technological innovation, rather than on consulting, communicating and co-designing with citizens and communities in order to deliver useful AI-based services and applications. Citizen engagement and empowerment should become the frame of AI use in the public sector.
- B. Testing and Experimentation:** There is a need for dedicated testing facilities. Piloting can also serve as a useful mechanism to de-risk AI projects.
- C. Tools for Implementation support:** The development of 'Toolboxes' and common processes to support implementation can facilitate scaling and replicability, as well as help to ensure transparency, accountability and regulatory conformity.
- D. Procurement:** It is important to develop flexible processes for the procurement of innovative solutions, that also allow small, innovative companies to participate and that are focused on the real needs of the public sector. Ethical guidelines for procurement should be developed.
- E. Data:** A data strategy is key. For the development of innovative AI applications, there is often a need to bring different data flows together and to expand and sustain these flows. It is also important to integrate data from citizen science efforts in order to complement existing data and facilitate the relationship between public authorities and citizens. Data models should also be made more open and available for reuse.

- F. Networks for collaboration and learning:** Networks of cities and regions can provide fora for peer learning, collaboration and sharing of experiences. At the same time, it is important to embrace diversity, with cities and communities adapting approaches to their own specific needs and context.
- G. Skills and capacity-building:** a noticeable gap exists between the early and late adopters of AI at local level, and there is a need to bring in specialised technical expertise, as well as to deliver training and upskilling to existing staff. In addition to improved data literacy, greater literacy is required in broader digital transformation efforts (including policy, legal and social aspects) for both policy-makers and community members.

Online participants also engaged actively throughout the Q&A section and in online polls.

3 DISCUSSING IMPLICATIONS OF THE USE OF AI FOR THE PUBLIC SECTOR

Once the webinar series elaborated on four distinct yet interrelated perspectives of using and regulating AI for the public sector, the actual implications were distilled in two round table discussions and a closing session, which took place in-person in Brussels on the 22nd of June 2022. On the one hand,

the legitimacy of using AI in the public sector was challenged. It was debated which uses of AI are appropriate with social norms and conformant with existing legislation, and which not. The results were contextualised within the policy and implementation responsibilities of public institutions at different

levels of government. The second round table, on the other hand, concentrated on the potentials of using AI in the public sector to stimulate innovation and growth. This discussion was contextualised by the role of the public sector as a regulator and as an implementer

of new technologies, underlining the high economic capacity and standard-setting powers of public procurement. Both discussions featured high-level representatives from international, European and regional institutions, as well as academics.

3.1 AI for the public sector, the legitimacy challenge

The legitimate use of AI for the public sector was discussed with three distinguished guests:

- ▶ Mario Nava, Director General for Structural Reform Support (DG REFORM) at the European Commission, with a long career in financial markets regulation, supervision and stability, resilience, and transparency.
- ▶ Virginia Dignum, Professor at the Department of Computing Science MIT-huset at Umeå university with a research focus on human and societal aspects of AI.
- ▶ Barbara Van Den Haute, Chief Executive Officer at Digitaal Vlaanderen, that's the support structure for the Flemish region and all municipalities in Flanders on digital transformation.

3.1.1 Examples and lessons learned

The conversation started with a few initiatives on AI in government. The first initiative reported has been developed in Flanders, where *Flanders Investment and Trade*, a public-private company working in 150 countries, designed an AI strategy with the support of EU funding. Given the complexity of their work, this organisation found AI a good ally for being more efficient and effective. Results have shown how AI was a game-changer, deeply changing employees' way of working in a simpler and more effective way.

Another example, financed by DG REFORM, is a large project involving four European countries in the migration pathway of birds from North America to South



Mario Nava



Virginia Dignum



Barbara Van Den Haute

When talking about transparency, there is a need to address it from this social, technical perspective.

Africa, passing through Europe. By analysing data from their migratory movements, several important pieces of information can be derived on climate change. The amount of data to analyse is huge, hence AI can offer an extremely valid support.

3.1.2 Public Sector role in AI development and adoption

As pointed out by Virginia Dignum, the **public sector has an important and delicate role in AI development** and adoption. The first important element to clarify is that for the public sector is never a solely matter of efficiency, while, at the opposite, it is a **delicate balance between efficiency and respect for the citizens** and their rights.

In doing it, one of the biggest challenges is procurement. Most likely the public sector will use tools developed by private companies, however, there is very little guidance for responsible public procurement of AI. For doing it, training public servants is essential. As reported by Mario Nava, the European Commission is moving in order to support Public Administrations in this direction; in particular, in the Technical Support Programme, one of the flagship areas is the

professionalisation of public servants on public procurement.

Another important challenge, highlighted by Barbara Van Den Haute is the **collection and management of high-quality data**. While the private sector can provide a solution, it cannot provide data. This is strongly related to interoperability. A nice motto suggested by Barbara is “no AI without IA” – i.e. that is impossible to create a valid Artificial Intelligence solution without a proper Information Architecture. On the other hand, as explained by Virginia Dignum, there is also the risk to go in the opposite direction and see data as the unique metric for deciding what is a problem and if a problem can be solved, i.e. if there is no data, we can forget about solving a problem. However, data is always about the past, and public administrations need to be careful in basing all the tools and solutions on a ‘data metric’.

3.1.3 Trust & transparency

As explained by Virginia Dignum, when talking about transparency, there is a need to address it from this social, technical perspective. Transparency is not just about opening algorithmic black boxes, on the contrary, it is also about opening the organisational black

box and being **transparent on decision-making** (who is deciding and why), as this is what finally citizens are caring about.

In the direction of creating a trustworthy society, the Flanders are working on an extremely interesting project on data sovereignty, giving citizens real data control. As reported by Barbara Van Den Haute, the project is based on so-called data vaults. The project aims at providing each citizen with a personal data vault. Thanks to these vaults citizens don't have to share their data anymore, but only the result. For example for child allowance, companies or public administrations don't have to know all the details on your data, such as the pay slip. The only information needed is a ‘yes or no’ on the eligibility and the data statistics. This project is now ongoing with a few use cases. The first one is on the diploma, where citizens don't have to share with third parties their diploma anymore, but only the results of the diploma. These data vaults can be the future data sources also for building algorithms. This might be an answer to data portability which is now an element that Barbara Van Den Haute considered still weak in the GDPR.

In order to involve people and build trust, the recipe proposed by Mario Nava is built on three elements: commitment, commitment and commitment. The first commitment is at the political level, the second is the level of the state organisation and the third and most important is at the level of people. Artificial intelligence is offering the public sector the great opportunity to engage with many people, hence we should be open to take and leverage on this opportunity.

3.1.4 Final expectations by the panellists

Before closing the panel discussion, all the speakers had the opportunity to close with one sentence on a wish and an expectation they have around this topic. These final sentences have been here reported quoting directly the panellists.

Barbara Van Den Haute: “The legal interoperability between the different frameworks is really a problem. For example in GDPR the rules are not one-on-one match with the rules, in the Data Space Association. What we would like to see is a joint analysis of all these frameworks. We can offer you a lot of concrete use cases that you can use in this analysis.”

Virginia Dignum: “Two things, education and research. The first thing – education- is knowing that we don't really understand. This is really

crucial for transparency: not all of us are aeroplane pilots, we should not pretend to have the same information as the aeroplane pilots. Second, research, I think that we as Europe in general need to be much more daring in the type of investment that we are putting into fundamental research, not just application,

but really the fundamental, the change of paradigm. We need to invest in the next step of AI.”

Mario Nava: “I think we need to construct the evidence-based policy making. We all know doing policy without evidence base is very risky and if we have evidences we can do a much better job.”

3.2 AI for the public sector, an engine for innovation and growth

The discussion on **innovation and growth** elaborated on possible public sector actions to support the use of AI, and to become a trailblazer and a trustworthy partner for public service innovation. It featured a panel of three experts, representing international, European and regional dimensions:

- ▶ Carlos Santiso, Head of Division, Digital, Innovative and Open Government, Organisation for Economic Co-operation, and Development (OECD), with a renowned track record in the fields of digital government, democratic governance, development finance and foreign aid.
- ▶ Hilde Hardeman, the Director General of the European

Commission’s Publications Office, which provides publishing services to all EU institutions, bodies, and agencies, and already applies AI in daily operations.

- ▶ María Pérez Naranjo, Director General for Digital strategy at the Digital Agency of Andalucía; a young agency that spearheads digital transformation at the regional level, and currently investigates usages of AI.

3.2.1 Supporting the update of AI in the public sector – at different scales

Operating at the regional level – with the overall administration employing 250.000 people and serving more than 8.5 million

citizens – implies that the Government of Andalucía has access to vast amounts of data and many potentials for using AI. The region is benefiting from a well-established higher education system and competitive advantages to attract the talents. This creates an integrated and productive AI ecosystem. Currently, AI is used by the Digital Agency for two main purposes. First, to understand current and future needs of citizens (for example, for predictive risk modelling). Second, to improve the quality and efficiency of public service provisions (including the use of chat bots and robotic-process-optimization).

The Publication Office (OP) of the European Union offers more specific services that include the use of AI, as part of their role that changed from the initial publishing house, established more than 50 years ago, to today’s data, information, and knowledge management hub. With the ambition to make the benefits of the EU widely known and to unlock the power of data, the OP does not only publish the legal text of the Union but also manages and provides access to data and many more well-trusted resources issued by the public authorities of Europe and third countries. As part of this mandate, which includes the provision the infrastructure to make trusted data available for re-use (e.g., for machine learning, and to contribute to European data spaces), the **OP uses AI to provide better and more personalised services**. Among other, this includes the use of intelligence assistants for improved query answering and machine translations to the languages of the EU.

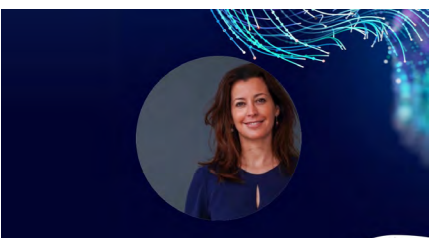
Extending the scope of the debate to the OECD underlines the need for international collaborations and multi-lateral solutions, especially as we are at a critical moment of digital transitions influencing the way governments work, and public services are delivered. Leveraging the benefits, also for social spending, needs to be balanced with the risks, for example, related to the ethical and responsible use of AI. This ensures that technology works for democracy, and not against it. In the political context, debates need to concentrate on democracy at the core of digital transformation, reinforcing societal values and digital rights. The OECD sets standards in this arena, and helps developing supporting tools and frameworks (e.g. partnership on AI since 2020), and examines how member countries make use of the above. Especially supporting the use of AI in the public sector, a 2019 report provides an assessment framework for AI strategies. Some strategies highlight other usages of AI in the public sector, especially as a booster for anti-corruption, transparency, and accountability in the public sector.



Carlos Santiso



Hilde Hardeman



María Pérez Naranjo

3.2.2 Recommended first steps for innovating with AI in the public sector

Sharing their experiences, the Andalusian Digital Agency (ADA) explained how they started their work by addressing crucial aspects of the operational environment they operate in. The corner stone was a unified digital strategy that was both supported by all stakeholders within the administration and aligned with EU policies. ADA was created just one year ago to concentrate all the resources needed to address digital issues. These issues concerned internal processes, and interactions with the citizens, following a collaboration approach with public and private actors. Those responsibilities were previously divided across different regional institutions. ADA also helps to **improve the management of EU-funds**, take advantage of **economies of scale**, to improve **efficiency**, and to **attract private sector investments** to the region. The latter is essential for the regional government to fulfil its key role in leading the digital transformation of the economy and society.

The establishment of **European Digital Innovation Hubs** has become an essential element on this matter. Already established successes, for example in cyber security, they will now be

replicated and scaled up around AI, not only as a key technology for the public sector but also an essential driver for economic development. Small and Medium Enterprises (SMEs) need to be particularly considered, due to their high share of economic productivity in the region. The Andalusian AI Strategic Plan has just been launched to pinpoint the required short and long-term actions later this year. At the same time, first steps could be taken to incorporate basic AI technologies (chat bots and virtual assistants) in the regional administration, including areas, such as, health care, taxes, families, and public employment. These applications are continuously tested by public servants, but also with citizens and the private sector. It has already been recognised that these evaluations and feedback loops must be reinforced in the future, considering more ambitious use cases (e.g., speech recognition for inclusion).

Moving from the experiences of the Publication Office, it is recommended to start with a pragmatic and stepwise approach. The starting point is to focus on the problems that could be solved with the AI, for example: How to publish information for people that are visually impaired? How to ease the mapping of EU law with relevant national Laws? How to

ensure that public tenders, usually published in one official language, can be read by potentially interested companies? From there, workable solutions might be identified, for example, using chat bots, semantic technologies, machine translation, etc. While working on these problems and related solutions, the wider framework needs to be understood or shaped. For the laws on AI and data, practical risks need to be identified together with mitigation measures. Here, it is particularly important to ensure transparency about what is done or what is missing, including explanations of how the applied algorithms work and how they deliver results. Together with the use of well-curated and quality data, this is required to ensure accountability of any public institution, and to remain trustworthy when applying AI in the public sector.

When it comes to concrete developments using AI, it is important to avoid re-inventing what already available elsewhere. Here, the existing observatories and partnerships can be used to identify existing or similar solutions, and to reach out to the ones responsible. Finally, for the implementation, it is important to start with pilots, ensure awareness of the new solution under development, and be able to reply on appropriately skilled people, including the experts, but also anybody else in an organisation. For both, **communities of practices** can be created within an organisation to ensure mutual learning and a shared understanding across the entire institution.

3.2.3 Actions to make AI in the public sector a true engine for innovation and growth

Overall, the fundamental role of data should not be overlooked. While innovating within the public sector by using AI, it is equally important to ensure that the many rich data sets that are collected by governmental institutions are made available to innovators in appropriate ways, to boost public value and the economy. This does not always mean to make all data available as open access, but it does mean to **provide access to well-curated and high-quality data** in ways that it can be easily used for further processing, and under well-defined conditions. Data are valuable representative of societies and communities. Also the White House proposal on an AI Bill of Rights stressed the importance of **inclusivity**. The most vulnerable communities need to be protected from an inappropriate use of AI, for example, because of biases imposed by the data used in machine learning. Related cases emerge in a lot of OECD member countries.

When it comes to the development of standards, it is essential to scope the issues well from the beginning and to set standards that are fit for the

purpose of using AI in the public sector. Once available, standards should be applied in national, regional, and local contexts. Many countries already developed AI strategies or are currently developing them, often including chapters dedicated to the public sector. The 2019 OECD standards have already been adopted by such strategies in 46 countries. Also, the UNESCO's principles on AI ethics provide a valuable resource that is yet to be applied and be made more actionable for the public sector. Many of these practical standards for the public sector are coming up. One was just adopted in Canada, to regulate automated decision making, and mandating ex-ante algorithm impact assessments and related risk management. The UK develops algorithm transparency standards and pilots them in different ministries. Also, the UK and the United Arab Emirates provide standards to embed higher-level principles within the rules for public procurement of AI-based solutions. These could be also used within the AI Bill of Rights.

As an overall recommendation, experiments need to be carried out before adopting and scaling up any AI-based solution. Many countries (Chile, Colombia, Estonia, Finland, Lithuania) are already developing experimentation spaces, such as regulatory sandboxes, to gain hands-on experience with the use

of AI. The experimentation can also be linked to public procurement for innovation, where the EU has already been successful with other technologies in the past. These are proven instruments to work with the private sector, including start-ups, on innovative solutions that are tailored for public services, to absorb new digital solutions faster.

For any of the above, it is essential to 'get the governance of AI in the public sector right'. In the case of Spain or the United Arab Emirates, as an example, they govern the deployment of AI in the public sector centrally. This reflects the driving role of AI for the digital transformation of the public sector. **Centralisation helps to minimize fragmentation in the way that technologies are deployed**, by enabling the provision and use of common guidance.

Engaging with auditors in debates and experimentation in a proactive way can drive more progress within the innovation ecosystem, especially when it comes to the use of digital technologies and data. By engaging with auditors directly, they can change their misperception of their role, from obstructing innovation to enabling it. Developing the standards collaboratively with the people that might later audit the applied algorithms will help to make public institutions less risk averse.

4 KEYNOTE BY COMMISSIONER GABRIEL

*[Delivered on her behalf by Stephen Quest,
Director General of the Joint Research Centre]*



Dear ladies and gentlemen,

I am pleased to address you on behalf of Commissioner Gabriel.

Thank you to JRC and DG DIGIT colleagues for organising this conference.

It is essential to understand the vital role Artificial Intelligence can play in improving our public administration and their services.

The innovation potential of Artificial Intelligence in the public sector is not only about delivering the same services faster.

It is also about coming up with new and disruptive ways to deliver services that help meet the needs of people ranging from traffic management to healthcare delivery to processing tax forms.

I believe we can transform our public administration through an inclusive and human-centred use of AI.

This means that the use of AI in public services must operate within a clear data strategy and a robust ethical framework built to uphold the trust of the people it serves.

During this conference, we have had the opportunity to learn about the current Artificial Intelligence uptake in Europe.

We saw how the expansion in the usage of Artificial Intelligence by public administration is growing significantly.

However, we have also learnt that the landscape is still rather unequal.

While public sector officials are increasingly aware of the transformational impact of data and AI-powered solutions, the data needed for AI solutions to be developed and deployed is often neither accessible nor discoverable.



Many Governments and administrations perceive their role toward Artificial Intelligence as that of mere regulators and not of active beneficiaries of the technology.

Let me mention two other barriers currently preventing the uptake of Artificial Intelligence technology in the public sector and which we need to turn into opportunities.

First barrier, many Governments and administrations perceive their role toward Artificial Intelligence as that of mere regulators and not of active beneficiaries of the technology.

They still see Artificial Intelligence as a research area and not as a solid technology already available and ready to use to improve the administrative machinery and daily routines.

This is why it is so important to be frontrunners and lead by example.

I want to highlight a few projects we have been working on.

One of them is using Artificial Intelligence to manage parts of Horizon Europe, our main research programme.

We use an AI-based platform to provide insight and support to applicants to self-assess their proposals before submitting them.

This feedback can help applicants submit better proposals and try different ideas before investing in drafting complete proposals.

We are also piloting an internal screening programme, where we assess many research project proposals using AI techniques. And this first trial has already had some good results.

Thanks to the deployment of this technology, we can better identify connections between elements that often appear unrelated at first glance.

This allows us to design more robust portfolios of scientific projects and helps us address the objectives of missions dedicated to Clean Oceans or Fight against Cancer.

The second barrier is not having the confidence and the right skills to use AI systems or make strategic buying decisions for AI-powered tools.

Uncertainty about ethical considerations adds further layers of complexity. As a result, buying decisions can be delayed or very few known suppliers used.

It is essential for users of AI, and that is all of us, to have a certain level of insight into how AI works so that we can understand its implications.

Adopting digital solutions in government will require an investment in digital skills.

When looking at Artificial Intelligence investments in the EU, the skills category has the largest share of investments made by the public sector.

Overall, it accounts for over 3.6 billion euros or 22% of the total Artificial Intelligence investments in Europe.

Part of these investments are put into our education system and, more specifically, into improving our educator's digital competencies.

Teaching professionals in all education sectors, from early years to adult learning, need to be equipped with the confidence and competence to use AI effectively.

This is why a High-Level Expert Group I launched less than a year ago is already finalising practical guidance to support educators on AI's ethical and pedagogical use.

The guidelines will be presented in October, accompanied by a training programme for researchers and students on the ethical aspects of AI, and will include a target of 45% of female participation in the training activities.

The Digital Education Action Plan offers targeted funding for teachers and other education staff through Erasmus+ to enhance their digital competencies.

Today, we will listen to discerning perspectives from the academic world and representatives of public administrations who are at the forefront of this transformation.

Such exchanges will guide us towards the ultimate goal of a successful digital transformation: to improve the quality of life for all European citizens, thanks to the delivery of innovative and accessible public services.

I wish you a fruitful discussion.



5 KEYNOTE BY COMMISSIONER HAHN



Ladies and gentlemen,

Thanks to Artificial Intelligence, the global GDP could be up to 14% higher in 2030 (according to a PricewaterhouseCoopers study). This clearly shows: Artificial Intelligence has become an area of **strategic importance**. Not only its economic potential is huge, but it can also benefit our societies manifold: from improved medical care to better education. **It is thus a game-changer – also for our public administrations.**

This is a great opportunity: we need to define and apply this technique to unleash its full potential for citizens and businesses and the public interest as a whole. And the **European Commission has to be a frontrunner.**

Therefore, when this conference asks the question “Artificial Intelligence – what is in for the public sector?” my answer is very clear: **A lot is in for public services and thus for the public!**

Artificial Intelligence for better public services

We are already seeing more and more Artificial Intelligence in our daily life. Let me give you an example: On 9 May, the European Commission presented the outcomes of the “Future of Europe Conference”. The Conference relied on a platform that allowed European Citizens to interact among themselves in their own languages. The engine behind this multilingual real-time interaction is an AI solution (eTranslation) enabling a multilingual dialogue. This is a good example of how **Artificial Intelligence facilitates engaging with European citizens.**

Artificial Intelligence will also enable us to manage the large data volumes, which we as public services handle. This means, we can **deliver a better service to citizens and businesses** – with improvement on three levels:

- A. Effectiveness and efficiency:** By automating routine tasks, we can not only accelerate procedures but also free scarce public resources to deliver a better service.
- B. Fairness:** Artificial intelligence is wilfully blind and thus strengthens neutrality and equal treatment – provided, of course, that we address potential bias and ensure accountability and oversight
- C. The speed of decision-making:** With Artificial Intelligence, we can speed up complex processes, especially in data analysis. This supports informed policy-making, administrative decisions and impact assessment.

Including Artificial Intelligence in complex decision-making processes also has a **positive impact on a democratic level**. The “Have Your Say” portal of the European Commission is a good example. This portal collects the input of public consultation and its smart analytics tools provide a first analysis. In situations like the Summertime Consultation that took place a few years ago, when the Commission received almost 4 million citizens’ contributions, you can really appreciate the support of the “digital workers” that Artificial Intelligence provides – to do what humans cannot do in a short time-span.

While Artificial Intelligence allows **real-time interaction and an efficiency gain**, it also helps us to reduce fraud and error, predict public health crises and allocate resources more efficiently. Thereby, it **strengthens trust in public services.**

Artificial Intelligence in public services is a matter of trust

Trust is key. To be a frontrunner in Artificial Intelligence, Europe – and in particular European public services – need **to make it safe and trustworthy**. Therefore, we proposed the **Artificial Intelligence Act**. As this is the first law on Artificial Intelligence by a major regulator, it also has the potential to set global standards – as we did with our data protection rule. The Artificial Intelligence Act **guarantees the safety and fundamental rights** of people and businesses by providing AI developers, deployers and users with clear requirements and obligations.

For public services, challenges are formidable and expectations high – rightly so because we speak about the public sector and its particular mandate. This has come out clearly across the webinars in the run-up



Combining Artificial Intelligence with our democratic values is even more important as this technology is developing fast – and we need to set the framework now, anticipating Stephen Hawings’ warning: “Computers will overtake humans with AI in 100 years. When that happens, we need to make sure the computers have goals aligned with ours”

to this conference. Therefore, accountability, explainability and ethical principles define our Artificial Intelligence environment of trust:

- ▶ We need to ensure **accountability** to the public and all individuals concerned.
- ▶ We need **to be able to explain** and prove: what data are being used, on what basis, for what purposes, and how it affects the public and individuals; and
- ▶ our ethical principles have to be embedded in all AI use.

Combining Artificial Intelligence with our democratic values is even more important as this technology is developing fast – and we need to set the framework now, anticipating Stephen Hawings’ warning: “Computers will overtake humans with AI in 100 years. When that happens, we need to make sure the computers have goals aligned with ours”

The public sector needs to **guarantee our principles not only once but continuously**, in order to win the trustworthiness that is crucial for the use of Artificial Intelligence in the public sector.

I will contribute to this endeavour by leading the Commission to use Artificial Intelligence via the **AI@EC initiative**. It will foster the ethical use of trustworthy Artificial Intelligence systems for supporting the European Commission policy-making and its functioning – **in line with the Artificial Intelligence Act**.

The potential of the public sector for AI

Setting standards for Artificial Intelligence and applying it to public services does not only save time and money for citizens but also fosters a **favourable environment for the digital economy**.

The public sector has a **massive push and pull factor**: if it invests in technologies that are fair, open, inclusive, interoperable, and accountable, this translates into business activity. It means **innovation made in Europe and innovation made in accordance with EU values**. Our value-based business environment can become an important asset when competing on a global level with regimes and systems that cannot be trusted.

Therefore, European public services need to be avant-garde as this also offers a **massive competitive advantage for Europe’s tech and startup ecosystems**, which are rich, dynamic, and anchored locally and across the EU.

Ladies and gentlemen,

Of course, this is a **common endeavour**, hence we are promoting **via the Govtech initiative** closer cooperation among Member States and the Commission also in this area. In this context, I would like to stress the **importance of interoperability**, which has to be the fundament for our digital European house. It translates our European idea of finding better solutions together into the digital age and it allows the European public administrations to understand each other and trust each other. We will soon present our strategy for interoperability and I am convinced that will it will contribute to Europe’s success: finding artificial intelligence solutions together and improving our European public services in general.

The digitalisation of public services is a matter of trust in our democratic polity: According to a McKinsey study, residents who are satisfied with a public service are nine times more likely to have confidence in the government. This makes digitalisation – and in particular the use of Artificial intelligence – in public administration highly political.

Therefore, we are responsible to **steer the Artificial Intelligence intelligently** – and this means the European way – based on values and principles: in the spirit of working together for better results, efficiency and trustworthiness. This is not only economically important, but it is now also in our hands to **safeguard digital sovereignty and democracy**. Therefore, I am looking forward to working with you on **making the European public services a frontrunner for Artificial Intelligence**.



6 CONCLUSIONS AND POLICY RECOMMENDATIONS

As we have shown in the different sections of this report, the use of Artificial Intelligence in Public Sector has certain particularities that deserve special attention both for the benefits it can bring, to government and the whole society, but also for the risks it poses, that can question the legitimacy of Public Administration, if decisions are based on opaque and biased algorithmic systems.

The discussions during the conference covered a broad spectrum of topics, ranging from the regulatory role that public sector has with regard to AI to the impact of AI to local and regional administration, passing through the specific needs of trustworthiness or discussing which practical approaches could be used to bring AI projects to reality in the public sector.

Throughout the report, we have been able to present the main takeaways from the discussions, however, we would like to synthesize here some of them:

- ▶ **AI in the public sector engages multi-stakeholders:** The development of trustworthy AI solutions for government requires the implication of multiple partners, within and outside public administrations. From within, there will be the need of involving decision-makers, policy experts, legal and technical departments. From outside, private sector, civil society and AI experts, in a multidisciplinary sense, would need to be involved in the definition of trustworthy AI-powered innovative public services. Approaches like GovTech could be explored to find relevant partners for AI projects.
- ▶ **Experiment first, scale-up later:** AI projects in the public sector will require margin for experimentation, to enable learning in order to ensure success. Testing facilities, sandboxes, controlled experiments,

adaptive regulation approaches will be needed for a start. Nevertheless, for AI to go from pilot to full implementation, proper AI governance and ethical frameworks, reusable components, and proper data fit-for-AI are needed.

- ▶ **Trustworthiness is a must:** There are several applications of AI in the public sector that could fall under the category of high-risk. Government cannot afford the deployment of opaque and biased AI systems that would lead to unfair decisions, as its own legitimacy can be at stake. Sound ethical frameworks rooted in the EU legislation and proper governance will be required for a successful deployment of AI within governments.
- ▶ **Need for upskilling public sector to be ready for the AI revolution:** There is a need of AI specialists to develop trustworthy solutions for the public sector, internally within governments but also externally. Furthermore, the public sector will need to do a general upskilling of the civil servants, in order to ensure proper interpretation and oversight of the output of AI systems that will power the future public services.
- ▶ **Adapt procurement for digital and AI innovation:** It is important to develop flexible processes for the procurement of innovative AI powered solutions, that also allow small, innovative companies to participate and that are focused on the real needs of the public sector.

As shown throughout the different sections of the report, the AI promise is high for the society and in particular for the Public Sector, but the risks are not to be minimized. Europe has the ambition to succeed as whole in the digital transition powered by the data and AI revolution and want to do it the European way, by putting citizens in the centre of this transformation.

We hope that, with the results of these discussions, we have been able to contribute to this necessary debate, which is key to make this Europe's Digital Decade.

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LIS OF ABBREVIATIONS

ADA	Andalucian Digital Agency
API	Application Programming Interfaces
CDO	Chief Digital Officer
CTO	Chief Technology Officer
DG CONNECT	Directorate General for Communications Networks, Content and Technology
DG REFORM	Directorate-General for Structural Reform Support
DIGIT	Directorate-General for Informatics
DINUM	French Inter-ministerial Directorate for Digital
DT4Regions	Digital Transformation for Regions
EDRi	European Digital Rights
ENoLL	European Network of Living Labs
GDPR	General Data Protection Regulation

HLEG	High Level Expert Group
ICTAI	International Conference on Tools with Artificial Intelligence
JRC	Joint Research Centre
LIST	Luxembourg Institute for Science and Technology
MIMs	Minimum Interoperability Mechanisms
ML	Machine Learning
NEGZ	German national eGovernment competence centre
OASC	Open and Agile Smart Cities
OECD	Organization for Economic Co-operation and Development
OP	Publication Office
SCCs	Standard Contractual Clauses
SMEs	Small and Medium Enterprises

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