

Al in the public sector

A European Perspective

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The views expressed are those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.

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JRC research

- Fully policy-relevant and world class knowledge production
- Priorities driven knowledge and competence management
- One JRC anticipating emerging issues, understanding complexities and bridging silos
- Addressing challenges of research (information deluge, multidisciplinarity, integrity, reproducibility)





Road to the adoption of AI by the public sector

• An evidence based Approach





16 Recommendations

Over 50 Actions

at different levels of operational governance





Road to the adoption of AI by the public sector

- 1. Provide an educated picture of the State of the Art of Al in Europe
- 2. Identify challenges and opportunities, areas of intervention and potentials
- **3.Outline Initiatives and activities** in support to progress of AI in the PS
- 4. Provide a dedicated framework and possible actions for key stakeholders at all levels
- 5. Identify **policy options** and **research avenues** for the future



an **actionable plan**

based on *concrete evidence* supported by *examples*, ruled by *common needs and opportunities*, supported by *initiatives and policies* at all levels



Area 1: Area 4: Area 3: Area 2: Promote an EU value-oriented, Apply and monitor sustainability Enhance coordinated governance, Build a shared and interactive AI inclusive, human-centric through value-oriented AI impact convergence of regulations, digital ecosystem and trustworthy AI assessment co-created and capacity building in the public sector frameworks 1.1 2.1 3.1 4.1 Harmonise and complement EU *Create an EU-wide network of governance* Support multidisciplinary research and Set up an EU observatory on AI, built regulations to promote humanbodies for a streamlined management of AI knowledge creation amongst European on a pan-European network of AI centric and trustworthy AI-enabled in the public sector universities and Research and national observatories, to gather, public services for all citizens Development (R&D) institutions around AI share, and collectively manage best 2.2 for the public sector practices and experiences learned Design national and European capacityfrom different stakeholders in the 1.2 building programs for public sector 3.2 Promote the adoption of ethical public sector throughout Europe innovators aiming to develop and/or adopt Build a common European Data Space for principles, the development of Al in support to the digital transformation of public sector bodies and their operators, 4.2 quidelines and the identification of public services drawing from the compilation of relevant Develop and apply umbrella impact mitigating measures to minimize AI datasets and related Registries assessment frameworks based on key the risks of deployment of AI by the 2.3 throughout Europe influencing factors to measure the public sector Build upon and promote the use of use and impact of AI in the public regulatory sandboxes for public 3.3 sector 1.3 administrations, allowing experimentation Reinforce and advance existing initiatives Develop and promote dedicated AIof AI-enabled solutions in controlled on open data and interoperability 4.3 enabled solutions based on coenvironments Promote AI in the public sector in 3.4 creation approaches to increase support to sustainability while Share reusable and interoperable AI relevance and citizens' and 2.4 developing sustainable AI, in Optimise funding in support to AI in the components at all operational levels of businesses' trust and confidence in compliance with environmental public sector to promote the spreading and European public administrations the use of AI by the public sector principles, and leveraging on civic scaling of reusable solutions engagement and participation 3.5 Create a European marketplace for 2.5 Promote the development of multilingual *GovTech solutions in support of public* quidelines, criteria, and tools for public sector digital transformation procurement of AI solutions in the public sector throughout Europe

A Roadmap for the Adoption of Artificial Intelligence in the Public Sector in Europe

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	orekted by the operators of their cancele implementation in specific caniests					
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	Factors to be identified another. Tractors to be identified on of others for EU-complexit applications and use of A, beyond those applied to the related assumement of mobility underlying betrekning; The rever to identify and focus on potential areas when high relate of A, applications are likely to control the most, or case the most density; The need to collect and scattere both good and had practices to acquire experiment with the control ensure; The need to conferd (a loss to be ensured with listen both, predictions, methodologis, and ensured by the control control.					
	when recovery and, above all, identify and apply mitigation measure relevant to their contexts and specific use; - The need for constant monitoring over time.					
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Annexes

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	the creation of mational registries to maritar the mariet around A and help in mariter the mineral criteria and down by Bill consistence.					
H	Set up an Artificial Intelligence Working Group specifically dedicated in the					
	public sector at the fungases level					
H	Menter Sales is Methy course, down of the address lovel is measured II is the					
	public sector within the EU Working Group.					
H	kinetify Al champions who wasking a second a provide addre and applicance					
	to local administration					
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	The development of dedicated capacity-building programmes would guit an advantation load of independence, and bistor capability to could relevant whitten					
	for public administrations' specific seeds.					
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	standardination activities and guidelines on how to assess and test AL					
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	internationalizous-border facilities and networks, which would require the					
	development of common criteria for cross-operationalisation					
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		Develop procurement guidelines at the EU level, providing directions and criteria					
- 1		for developing suffered quicklines in compliance with EU principles and requiations					
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		Create an 'Al research and knowledge alliance' of European universities					
- 1		and other research and development institutions working with the public					
- 1		sector to promote the development of a common agenda and dedicated curricula					
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Promote a catalyst role of AI for environmental sustainability to allow mampins of beneficial uses of AI in different application areas			
Premete sublikable AI as a mandalory prerequisite in AI strategies of patie administration and governments, both at the international and instanced weeks industry in patie processments frameworks, in compliance with EU values and environmental unionability principles.			
Develop and apply certification and tabelling approaches based on common sustainability principles aligned to EU endergreentid policies, like the Green Deal and the United Nation: Sustainable Development Goals			
Permite active dwic orgagement, operand under different term of citizens incoverent in the management of public good, especially when addressing common challenges and civil functionential rights			
Develop impact assessment frameworks in support of surficientials on patiexplory practions and co-conden approaches, dowing from the learning and pro-aches insulanment of citores and liver Communities of Practices specifies at the targeted level of intervention			

EU Landscape

Al use in the Public Sector





European landscape on AI

1. Analysis of the AI national strategies with a focus on the public sector

2. Inventory of use cases of AI in the public sector

3. In-depth case studies

 European landscape on the use of Artificial Intelligence by the Public Sector



1. National Strategies





Download here!



Al Case Inventory

686 AI Cases collected and validated

How we collect cases?

- Country repositories or research studies
- News articles
- Responses to our Al Survey

n.b. the cases are not statistically representative. No comparison can be done among the different countries



Organisation Features	Service Descr	iption Features	Value of Service Features	Artificial Intelligence Features						
Responsible Organisation	Process type	<ii level<="" th=""><th>Improved Public Service</th><th>Al Domain</th></ii>	Improved Public Service	Al Domain						
 Central Government Regional Government Local Government Private sector Academic-Research Non-governmental Community led Consortium 	 Enforcement Analysis, monitoring and regulatory research Adjudication Public services and engagement Internal management 	Application type • Smart Recognition processes • Engagement management • Financial management and support • Information analysis processes • Management of auditing and logging • Data sharing Management • Monitoring policy implementation • Prediction and planning • Predictive enforcement processes • Service integration • Service personalisation • Supporting inspection processes • Taking decisions on benefits • Internal primary processes • Internal support processes	Application type • Smart Recognition processes • Engagement management • Financial management and support • Information analysis processes • Management of auditing and logging • Data sharing Management • Monitoring policy implementation • Prediction and planning • Predictive enforcement processes • Service integration • Service integration • Supporting inspection processes • Taking decisions on benefits • Internal primary processes • Internal support processes • Internal management processes	 Personalised Services Public (citizen)-centered services Increase quality of public information and services More responsive, efficient, public services New services or channels 	 Reasoning Planning Learning Communication Perception Integration and Interaction Services Ethics & Philosophy 					
Geographical Extent	Recipients			Improved Administrative Efficiency	II level					
 Local Regional National Across Countries 	 G2C Government to Citizen G2B Government to Business G2G Government to Government 			 Prediction and planning Predictive enforcement processes Service integration Service personalisation Supporting inspection processes Taking decisions on benefits Internal primary processes Internal support processes Internal management processes 	 Prediction and planning Predictive enforcement processes Service integration Service personalisation Supporting inspection processes Taking decisions on benefits 	 Prediction and planning Predictive enforcement processes Service integration Service personalisation Supporting inspection processes Taking decisions on benefits 	 Prediction and planning Predictive enforcement processes Service integration Service personalisation Supporting inspection processes Taking decisions on benefits 	 Prediction and planning Predictive enforcement processes Service integration Service personalisation Supporting inspection processes Taking decisions on benefits 	 Cost-reduction Responsiveness of government operation Improved management of public resources Increased quality of processes and 	AI Subdomain
Functions of Government I	Data input				 Better collaboration and better communication Reduced or eliminate the risk of corruption and abuse of the 	 Knowledge representation Automated reasoning Common sense reasoning Planning and Scheduling 				
 Defense Economic affairs Education Environmental protection 	 Dynamic Data Historical Data Location Data		law by public servants Enabled greater fairness, honesty, equality 	 Searching Optimisation Machine Learning Natural Language Processing Computer Vision 						
 General public services Health Housing and community amenities Public order and safety Recreation, culture and religion 	Status		Improved OpenGov Capabilities	 Audio Processing Multi-Agent systems Robotics and Automation Connected and Automated vehicles 						
Social protection	 In development Implemented Not in use anymore Pilot Planned 		 Increased transparency of PS operations Increased participation in government actions Improved public control and influence on government actions 	Al Ethics Al Philosophy						
				Commission						

Download here!



Al Cases by Country



n.b. the cases are not statistically representative. No comparison can be done among the different countries



Published cases: Joint Research Centre Data Catalogue - Selected AI cases in the public sector - European Commission (europa.eu)



AI Cases by Technology

ML is the main AI technology, even though the spectrum of opportunities is varied





Al Cases by Status

Several cases are already implemented and in use in daily operations





AI Cases by Geographical Extent

Most of the cases are at national level, even though the local one plays an important role



Process & application type

Al is used for variegate purposes, from service personalisation to predictions



Benefits

Benefits are almost equally split between improving public service and administrative efficiency



Lesson learned

_ AI is widespread

Public organisations should start considering AI not only as a research and innovation area but also as a set of solid and available technologies for improving the administrative machine. Moreover, they should start preparing themselves for a distributed and common use of AI in all public sector areas

_ Need of in-house expertise

Public administrations should consider in-house knowledge on AI for the – partial or complete – internal development of AI, for adapting of the system developed by external suppliers and/or for ensuring proper management of procurement activities.

_ Balance of in-house vs external development

Given that most likely public organisations would need support for developing an AI system, they should carefully select the proper partner(s) and/or suppliers and balance internal and external development.



Lesson learned

_ Need of trustworthy AI

Risks should be systematically assessed with a structured and well-defined procedure, avoiding any form of discriminatory and unfair use of the AI system. Proper mitigation measures should be identified for ensuring a human-centric use of AI. This needs to become a routine for public organisations.

_ General awareness

Public administrations should start considering AI as a technology that will affect the daily routines of most employees, hence start thinking about the wide dissemination of basic knowledge on how algorithms work and how to deal with AI enabled solutions

_ Technology is only half of the story

Public administrations should be aware that the technical effort for coding an AI system is only a small portion of the effort needed for the implementation thereof. Introducing an AI solution requires a general awareness of AI but also new task allocation and, when needed, new roles and positions within a given organisation.



Useful Links

AI Watch. Road to the adoption of Artificial Intelligence by the Public Sector.

https://europa.eu/!jNQg8p

AI WATCH. European landscape on the use of Artificial Intelligence by the Public Sector.

https://europa.eu/!dK7jk6



Unique features of the public sector

and pre-requisites for good governance of public administrations



Unique Features of the Public Sector

- It is driven by the *rule of law* (e.g. understanding scrutiny and accountabilities, apply equity, transparency, consistency in decisions and redress whenever needed)
- Its primary objective is Public Value Creation
- **Its mandate** being achieving the **public good** for its diverse communities (protection of citizens and promotion of well-being at large)
- **Public sector administrations** operate within highly diversified and **complex political, cultural and socio-economic ecosystems**
- Public administrations **differ** from private sector organizations in a number of fundamental characteristics underpinning their **values**, determining their **objectives**, **instruments**, **roles** and **relationships** with other actors
- Besides providing services, governments also regulate most of socio-economic activities of citizens, and businesses. Consequently, the exercise of such powers requires that the public sector **conform to administrative law, and to ethical and human rights principles**



Prerequisites for AI application in the PS

Fundamental questions:

- Where AI is most relevant?
- What are the most important sectors that would benefit from it?
- And, **Who/which** users will ultimately benefit from such digital transformation?

Fundamental prerequisites:

Be **relevant** (to the actual needs), **useful** (usability is actually defining the real value of the services -better than existing alternatives e.g. in health), **necessary** (where no other valid alternatives –e.g. environment), **wanted** (never imposed to the final users), **accepted** (amongst equally valid alternatives), **suited to/preferred by** the target contexts/users (not disrupting underpinning values and needs e.g. education *-cognitive development*), **attractive** (e.g. appealing and users friendly -not leading to dystopic approach), nourishing and **enriching/empowering** (not as an escape room to hide from reality), **accountable and measurable** (governance should be aligned to public interest), and **respectful** of Public Sector mandates, underpinning principles, and social values (institutions should monitor responsibilities and impacts).

Commission

Prerequisites for AI application in the PS

To reflect these prerequisites, AI based services have to show:

- clear added value for the users (being them Public Administrations or citizens and businesses) with reference to existing solutions,
- respect proportionality between benefits and risks has to be assessed and taken into account and, last but not least,
- **ethics**, **law and human rights** implications have been carefully examined and addressed with the necessary means before taking any decision.

Let's remember.....

- Technology is always context related and strongly depends on its use, even within the same sector (e.g. education)
- Good public administration is transparent and explainable. if the enabling technology is not, just use something else until it is....!

THANK YOU

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