



# G20


SOUTH AFRICA 2025

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## ISSUE BRIEF ON AI AND DIGITAL TRANSFORMATION: CAPACITY BUILDING IN THE PUBLIC SECTOR



## Issue brief on AI and Digital Transformation: Capacity Building in the Public Sector

### Context

In its capacity as a resource partner to the South African G20 Presidency, UNESCO drafted an **Issue Brief on AI and Digital Transformation: Capacity Building in the Public Sector** which informed a Workshop on AI and Digital Transformation Capacity Building in the Public Sector during the second Task Force Meeting for Artificial Intelligence, Data Governance and Innovation for Sustainable Development, which took place on 11 April 2025.

Drawing on discussion at that workshop, this finalised Brief sets out good practices and provides inspiration for an action plan. It outlines what it takes to boost the capability of the public service to integrate new digital technologies for public sector transformation.

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### 1. In a nutshell

Artificial intelligence (AI) and digital transformation offer the public the promise of a more effective public sector - empowered with data-driven decision-making, predictive analytics, and improved citizen engagement. To achieve this, capacity must be built in the civil service: technical proficiency, digital management (including of infrastructure and training), and ethical oversight within governance frameworks. Drawing on [UNESCO’s AI and Digital Transformation Competency Framework](#), this Brief sets out – with country examples - how to navigate matters like assessing skills gaps, designing capacity-building strategies, dealing with infrastructural and governance issues, measuring efforts and developing a competency development plan.

Many civil servants are already using AI technologies and contributing data to these, sometimes without even knowing it – a phenomenon that can raise risks to state and citizen interests. Further, like many people, those in the public sector don’t always know when they could benefit from capacity-building, and many also over-estimate their actual levels of competence.

For governments, it is vital that their employees know how to use different AI systems, and how not to use them. Basic competencies include computation and critical thinking, and recognition of the range of AI tools, along with their affordances and their limitations as regards different tasks. But the imperative also translates differently for different levels and different departments in the civil service, meaning that one-size fits-all interventions will be inappropriate. The dynamic character of such complex technological changes sets the scene for ongoing and growing skills gaps. This in turn raises the problem for governments to find ways to systematically ensure a pace and range of competence building that is fit for ongoing purpose. The outcome will realistically one that includes balancing the range of trade-offs, such as between budgets and impact, transparency and security, privacy and data.

This brief sets out the key underpinnings for success in addressing the challenges. It shows that how inadequate competencies in the civil service can create risks of the public losing confidence that government’s AI use is inclusive, fair and subject to human-controlled oversight and appeal processes. This issue in turn requires that governments have a feedback loop between capacity building, consequences and public trust, as well as transparency and accountability in these processes – for

example, even publishing some of the algorithms being used. Further challenges for governments include building the need for competencies that ensure not only safety, but also value for money. An example is for civil servants to recognise when the core of data involved in AI operations does meet the criteria of quality and representativeness, and personal protection and digital security, within the context of many data sets that are questionable, intrusive or of little use.

Also in this brief is the challenge of needing to know what already exists in terms of abilities and skills initiatives within the public sector. This in turn points to the importance of working off regular surveys of competencies, as well as assessments of the results of training in terms of whether there is actual application and relevance. Experimental space to develop the application of AI systems within state entities may well also be called for, to ensure adaptation and innovation for customised purpose. Investment in local talent development and expertise, and local partnerships, needs to be mobilised and managed. All of this implicates governance architecture, such as which units within government are responsible for matters that come to a head in the matter of competencies. The sections that follow below provide more insight in how to implement solutions.

## 2. Introduction: what's involved for AI use in government

Digital technologies continue to affect public sector operations, policymaking and service delivery. Governments are proactively harnessing AI for productivity, enhanced responsiveness, and strengthened accountability, while also addressing associated risks and ethical considerations. These efforts are inextricably linked to the issue of competencies. Getting a clear picture of what's involved entails grasping inter-relations between digital transformation, AI systems and the role of the state in the wider ecosystem.

This Issue Brief operates with composite understandings as follows:

**Digital transformation** is defined by UNESCO as processes of accelerated development and pervasive use of digital technologies that generates new opportunities and challenges for sustainable development.<sup>1</sup> Despite high unevenness between different  $\Delta$  designed to operate with varying degrees of autonomy by means of knowledge modelling and representation and by exploiting data and calculating correlations.<sup>2</sup> In practice, the term refers to a wide range of networked digital technologies that use machine-learning to identify, classify and sort data, and to output new insights as well as synthetic products, including deepfake text, video and audio. Today, AI systems are key technologies in wider digital transformation processes, raising issues such as bias, data governance and intellectual property issues, as well as output accuracy, transparency and accountability.<sup>3</sup>

### Where the state fits in:

In influencing AI and digital transformation, states – as duty-bearers to their rights-holding citizens – have a dual role:

<sup>1</sup> UNESCO (2022) *Artificial intelligence and digital transformation: competencies for civil servants*. UNESCO. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000383325> (Accessed: 26 February 2025).

<sup>2</sup> UNESCO (2022) *Recommendation on the Ethics of Artificial Intelligence*. Paris: UNESCO. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000383325> (Accessed: 26 February 2025).

<sup>3</sup> Ibid. – Definitions are important for regulation purposes; this is just one easy to understand version.

- First, shaping their society's broader national environment for digital transformation (in an interdependent global context).
- Second, overseeing the same transformation within organs of the state, including ministries, departments, regulatory bodies, courts, legislatures, and other public sector entities.

New competencies within the state are needed in both spheres, including for managing the bridges between the internal and external spheres. These new know-hows include how to adopt and innovate with digital technology, as well as ensuring mitigation of risks of a range of possible harms. In this wider mix, AI is part of a broader perspective of managing digital and societal transformation. Amongst the competencies which states need for digital transformation are:

- Knowledge about a country's affordances in the full technology (and AI) stack, with regard to managing matters such as computer chips, cloud storage, data, foundational models, software applications and their related uses, risks and mitigations.
- Contextual infrastructural issues of managing electricity, water and digital waste.
- The need to build civil servants' insights into how digital transformation will vary across different state departments and the kinds of public service being performed – educational services, law enforcement, and social welfare all have diverse needs.
- Awareness about the potential differential impact on people of varied ability, age, digital connectedness and literacy, and how universal public benefit can be optimized.

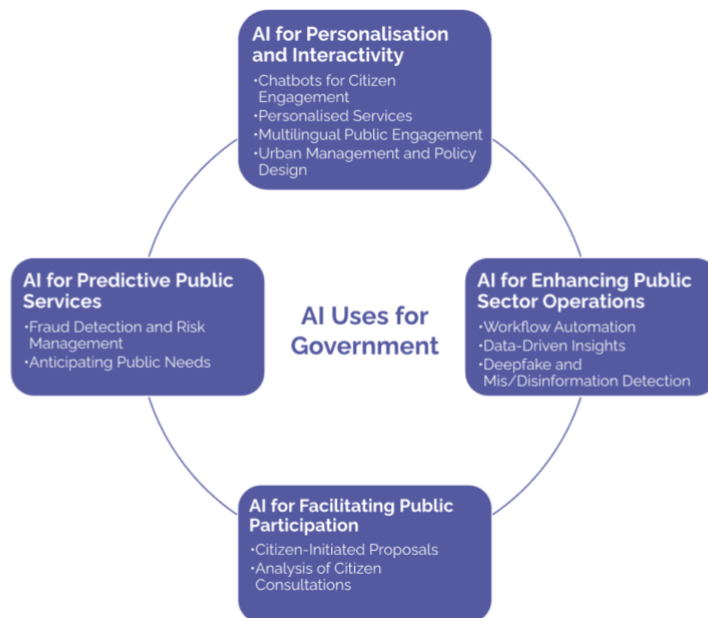


Fig. 1: Categories of AI Uses for Government.

### AI for Personalisation and Interactivity

Part of AI's power is in aiding public service delivery with personalised, efficient and accessible solutions. This intersects with services around identity, voting and payment systems, where individuals can receive help from AI-enabled improvements that also guarantee security and privacy protection.

By integrating AI tools like chatbots and multilingual language models, there can be better citizen engagement and streamlined operations.<sup>4</sup> Example cases are outlined below:

- **Chatbots for Citizen Engagement:** Rwanda<sup>5</sup> and Malawi<sup>6</sup> have used AI chatbots to enhance citizen access to information and services, showing AI's potential to overcome resource constraints. Finland's AuroraAI program proactively suggests public services based on life events, such as marriage or retirement, by simulating potential service paths.<sup>7</sup>
- **Personalised Services:** In Türkiye, the Ministry of Health's AI-powered tool, "Neyim Var?" (What's Wrong with Me?), delivers personalized healthcare recommendations.<sup>8</sup>
- **Multilingual Public Engagement:** Large Language Models (LLMs) tailored for local contexts enable multilingual public service communication, expanding inclusivity in governance in Nigeria.<sup>9</sup> In another example, SEA-LION, which stands for Southeast Asian Languages in One Network, is a family of open-source large language models (LLMs) developed by AI Singapore (AISG). This initiative aims to make LLMs more accessible and better suited to the region's linguistic landscape.<sup>10</sup>
- **Urban Management and Policy Design:** Digital twins like Rotterdam's simulation-based urban planning model improves infrastructure resilience and urban management.<sup>11</sup> In France, the Paris-Saclay municipalities use a digital twin for energy scenario simulations to assess environmental and financial impacts.<sup>12</sup>

### AI for Predictive Public Services

Predictive AI tools enhance the public sector's ability to proactively address citizen needs, mitigate risks and combat fraud. Capacity building in this context means developing the analytical skills of public servants. Examples are:

- **Fraud Detection and Risk Management:** Spain's Comptroller General uses AI to detect fraud in subsidies and grants<sup>13</sup>, while Brazil's Alice system evaluates risks in procurement processes to prevent corruption.<sup>14</sup>
- **Anticipating Public Needs:** Norway's Labour and Welfare Administration employed conversational AI during the COVID-19 pandemic to resolve 80% of citizen inquiries autonomously thereby providing prompt access to social benefits.<sup>15</sup>

### AI for Enhancing Public Sector Operations

<sup>4</sup> van Noordt, C., & Misuraca, G. (2022). Artificial intelligence for the public sector: results of landscaping the use of AI in government across the European Union. *Government Information Quarterly*, 39(3), 101714.

<sup>5</sup> 'Chatbot | Digital Umuganda' (no date). Available at: <https://digitalumuganda.com/chatbot/> (Accessed: 19 March 2025).

<sup>6</sup> *AI Chatbot Delivers Multilingual Support to African Farmers* (2024) NVIDIA Technical Blog. Available at: <https://developer.nvidia.com/blog/ai-chatbot-delivers-multilingual-support-to-african-farmers/> (Accessed: 19 March 2025).

<sup>7</sup> OECD (2024) *Governing with Artificial Intelligence: Are governments ready?* Paris: OECD Publishing. Available at: <https://doi.org/10.1787/26324bc2-en>.

<sup>8</sup> *Neyim Var? (What do I have)* (2023) OECD Observatory of Public Sector Innovation. Available at: <https://oecd-opsi.org/innovations/neyim-var-what-do-i-have/>, <https://oecd-opsi.org/innovations/neyim-var-what-do-i-have/> (Accessed: 19 March 2025).

<sup>9</sup> 'Nigeria launches first multilingual large language model for inclusive AI development' (2024) *Digital Watch Observatory*, 24 April. Available at: <https://dig.watch/updates/nigeria-launches-first-multilingual-large-language-model-for-inclusive-ai-development> (Accessed: 20 March 2025).

<sup>10</sup> *SEA-LION.AI* (no date) SEA-LION.AI. Available at: <https://sea-lion.ai/> (Accessed: 20 March 2025).

<sup>11</sup> Anderson, K. (2024) *Digital Twins and Urban Planning: Shaping Resilient and Sustainable Cities*, Viridis Initiative. Available at: <https://viridisinitiative.com/shaping-resilient-and-sustainable-cities/> (Accessed: 20 March 2025).

<sup>12</sup> OECD (2024) *Governing with Artificial Intelligence: Are governments ready?* Paris: OECD Publishing. Available at: <https://doi.org/10.1787/26324bc2-en>.

<sup>13</sup> OECD (2021) *Countering Public Grant Fraud in Spain: Machine Learning for Assessing Risks and Targeting Control Activities*. Paris. Available at: <https://doi.org/10.1787/26324bc2-en>.

<sup>14</sup> OECD (2024) *Governing with Artificial Intelligence: Are governments ready?* Paris: OECD Publishing. Available at: <https://doi.org/10.1787/26324bc2-en>.

<sup>15</sup> Ibid.

Automating routine tasks and generating actionable insights through AI can help to enhance operational efficiency and free up civil servants to focus on strategic functions. By integrating AI-driven automation and data analysis into workflows, government agencies are building internal capacity to manage resources effectively. Examples include:

- **Workflow Automation:** Sweden's Companies Registration Office uses AI to sort 60% of incoming emails, improving administrative workflows. Similarly, Canada employs robotic process automation to streamline repetitive tasks across federal departments.<sup>16</sup>
- **Data-Driven Insights:** The city of Amsterdam leverages AI to count people in public areas, informing traffic and safety policies.<sup>17</sup> In Australia, AI maps land use features from satellite imagery to improve disaster response and biosecurity measures.<sup>18</sup> In Togo, AI has been used to identify impoverished cantons to allocate social funds, while in Zambia, it has been deployed to address misinformation during election periods.<sup>19</sup>
- **Deepfake and Mis/Disinformation Detection:** Many novel AI-powered technologies can help detect deepfakes and misinformation, identify bots and strengthen national fact-checking programmes.<sup>20</sup> France's Datalab has built its own bot classifier on X, based on an analysis of the network of followers and following on a given account.<sup>21</sup> Japan's Ministry of Foreign Affairs has announced plans to create AI tools to automate analysis of disinformation generated by foreign actors.<sup>22</sup>

### AI for Facilitating Public Participation

Gauging public opinion, organising micro-referenda, engaging citizens in city budget planning, and categorising and analysing citizen input are all functionalities that benefit from integrating AI in terms of outreach, interface, and results analysis. Examples include:

- **Citizen-Initiated Proposals:** The city of Linz, Austria used Go Vocal's AI-powered platform to allow residents to submit proposals on the city on any topic, leading to 150 citizen proposals and 25 idea discussions being held by the city.<sup>23</sup> Code for Japan implemented Decidim, an open-source platform dedicated to participatory democracy, in local communities and prefectures to allow citizens to make proposals for community development.<sup>24</sup>
- **Analysis of Citizen Consultations:** The UK Government's Humphrey tool has a feature called Consult, which streamlines how the government analyses consultation responses. It uses AI to

<sup>16</sup> OECD (2024) *Governing with Artificial Intelligence: Are governments ready?* Paris: OECD Publishing. Available at: <https://doi.org/10.1787/26324bc2-en>.

<sup>17</sup> Wray, S. (2021) 'Why the City of Amsterdam developed its own crowd monitoring technology', *Cities Today*, 29 September. Available at: <https://cities-today.com/why-the-city-of-amsterdam-developed-its-own-crowd-monitoring-technology/> (Accessed: 24 March 2025).

<sup>18</sup> Ibid.

<sup>19</sup> Asiegbu, C. and Okolo, C. (2024) *How AI is impacting policy processes and outcomes in Africa*, *Brookings*. Available at: <https://www.brookings.edu/articles/how-ai-is-impacting-policy-processes-and-outcomes-in-africa/> (Accessed: 20 March 2025).

<sup>20</sup> UNESCO (2020) *Balancing act: countering digital disinformation while respecting freedom of expression*. UNESCO, International Telecommunication Union, and Broadband Commission for Sustainable Development. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000379015> (Accessed: 26 February 2025).

<sup>21</sup> VIGINUM (2025) *Challenges and opportunities of artificial intelligence in the fight against information manipulation*. Available at: [https://www.sgdsn.gouv.fr/files/files/Publications/20250207\\_NP\\_SGDSN\\_VIGINUM\\_Rapport%20menace%20informationnelle%20IA\\_EN\\_0.pdf](https://www.sgdsn.gouv.fr/files/files/Publications/20250207_NP_SGDSN_VIGINUM_Rapport%20menace%20informationnelle%20IA_EN_0.pdf).

<sup>22</sup> *Public authorities fund AI arsenal to combat fake news - Hello Future Orange* (2023) *Hello Future*. Available at: <https://hellofuture.orange.com/en/public-authorities-fund-ai-arsenal-to-combat-fake-news/> (Accessed: 21 March 2025); *The responses to information manipulation, including spread of disinformation* (no date) *Ministry of Foreign Affairs of Japan*. Available at: [https://www.mofa.go.jp/policy/pagewe\\_000001\\_00052.html](https://www.mofa.go.jp/policy/pagewe_000001_00052.html) (Accessed: 21 March 2025).

<sup>23</sup> Fillet, S. (2024) *Case Study: Citizen Proposals in Linz, GoVocal*. Available at: <https://www.govocal.com/case-studies/case-study-citizen-proposals-in-linz> (Accessed: 20 March 2025).

<sup>24</sup> Thévenet, A. (2023) *Decidim in Japan, Interoperable Europe Portal*. Available at: <https://interoperable-europe.ec.europa.eu/collection/open-source-observatory-osor/news/decidim-japan> (Accessed: 20 March 2025).

extract patterns and themes from the responses and turns them into dashboards for policymakers.<sup>25</sup>

### 3. Public sector competencies for government AI use

AI adoption in the public sector requires not only advanced technology but also a workforce that is equipped to manage, deploy and evaluate AI systems effectively. This requires the public sector to enhance its ability to upskill, attract and retain relevant digital talent. But digital transformation is not something to be solved merely by hiring in more IT experts and data scientists. Building broader capacity through targeted training and skills development programs ensures that civil servants in all functions have the know-how to address both opportunities and challenges associated with AI. While not all officials need to be able to make informed decisions (such as about the procurement and use of AI), a minimum level of competence is needed among all civil servants in order to understand and manage with how changes are affecting working conditions, productivity and risk mitigation.

UNESCO's [AI and digital transformation competency framework](#)<sup>26</sup> sets out three challenges to address to effectively manage digital transformation:



Fig. 2: Three challenges for digital transformation: Cultural and organisational barriers, data and infrastructure barriers, and human resource capacity gaps. Source: [UNESCO](#)

Progress in all these areas can unlock new value in the public sector. The capacity challenge directly affects the extent to which a society sees progress in the first two challenges: data, infrastructure, culture and organization.

UNESCO's framework groups the core capacities as follows:

- (i) Digital planning and design,
- (ii) Data use and governance, and
- (iii) Digital management and execution.

These core capacities include thirteen specific competence areas, elaborated in three proficiency levels: basic, intermediate, and advanced. Also in the framework are five attitudes that enable civil servants to pursue digital transformation effectively, which call for change management skills. These are: (i) Trust, (ii) Creativity, (iii) Adaptability, (iv) Curiosity, and (v) Experimentation. They cut across digital transformation in all its areas and stages.

<sup>25</sup> Johnstone, R. (2025) *Yes, civil servant: Meet Humphrey, the UK government's AI package for officials* - Global Government Forum, Global Government Forum. Available at: <https://www.globalgovernmentforum.com/yes-civil-servant-meet-humphrey-the-governments-ai-package-for-officials/> (Accessed: 20 March 2025).

<sup>26</sup> An abridged version of the framework is available at *Artificial Intelligence and digital transformation: competencies for civil servants* (2023). UNESCO. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000384963>.

AI technologies are advancing at a rapid speed, although there is debate about the emergence of artificial general intelligence (AGI), or general-purpose AI systems, including large language models, that could do almost all cognitive tasks a human can do.<sup>27</sup> There are predictions that the advent of AI agents will fundamentally change workforces and societies. Overall, the pace of AI rollouts highlights that the public sector cannot ignore the need for ongoing and experiential learning around these technologies. Initiatives like innovation contests, public challenges and user-centered design labs all serve to create opportunities for learning and collaboration around AI possibilities for problem-solving in the civil service.

Many countries around the world are increasingly adopting innovative programs to build AI capacity in the public sector, each tailored to address specific regional needs and priorities.

- **National digital transformation and AI strategies with public sector training components:** Singapore's National AI Strategy incorporates comprehensive public sector training and the AI Governance Framework to promote ethical AI adoption. Chile's National Artificial Intelligence Policy<sup>28</sup> integrates training programs to help public administrators deploy AI ethically. India's AI for All initiative<sup>29</sup> by the Ministry of Education fosters grassroots awareness and builds AI literacy among public sector workers and communities.
- **Government-led AI training programs:** Ireland has implemented an AI upskilling program for civil servants since 2021. This program offers short courses for civil and public servants interested in exploring how AI can enhance public service delivery. One of its key components is a free, open-access online course that provides participants with a foundational understanding of AI and guides them in designing potential AI projects for strategic investment. The UAE Government AI Camp<sup>30</sup> trains officials in leadership, ethical governance, and technology deployment. The UK's Government Digital Service operated the Digital Academy from 2016 to 2022, providing short-term non-formal training in digital skills for civil servants through courses on topics like agile methodology and product management, targeting both new hires and existing staff looking to upskill, including leadership.<sup>31</sup>
- **AI governance and ethical frameworks:** Canada's Directive on Automated Decision-Making equips civil servants with tools to ensure AI fairness, transparency, and inclusivity.<sup>32,33</sup>
- **Public-private partnerships:** The Data Science Nigeria initiative collaborates with government agencies to boost Nigeria's AI literacy and public sector planning capacity.<sup>34</sup>

<sup>27</sup> Roose, K. (2025) 'Powerful A.I. Is Coming. We're Not Ready.', *The New York Times*, 14 March. Available at: <https://www.nytimes.com/2025/03/14/technology/why-im-feeling-the-agi.html> (Accessed: 20 March 2025).

<sup>28</sup> Chile launches a national AI policy and introduces an AI bill following UNESCO's recommendations (2024) UNESCO. Available at: <https://www.unesco.org/en/articles/chile-launches-national-ai-policy-and-introduces-ai-bill-following-unescos-recommendations-0> (Accessed: 20 March 2025).

<sup>29</sup> AI For All (no date) *AI For All | Self learning online program*. Available at: <https://ai-for-all.in> (Accessed: 20 March 2025).

<sup>30</sup> UAE AI CAMP (no date) *Artificial Intelligence Office, UAE*. Available at: <https://ai.gov.ae/aicamp/> (Accessed: 20 March 2025).

<sup>31</sup> Sweeney, A. (2017) *The GDS Academy is here, Government Digital Service*. Available at: <https://gds.blog.gov.uk/2017/07/27/the-gds-academy-is-here/> (Accessed: 20 March 2025).

<sup>32</sup> *Directive on Automated Decision-Making (2023) Government of Canada*. Available at: <https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32592> (Accessed: 20 March 2025).

<sup>33</sup> *Governing with Artificial Intelligence: Are governments ready?* (2024). Paris: OECD Publishing. Available at: <https://doi.org/10.1787/26324bc2-en>.

<sup>34</sup> *Data Science Nigeria (2024) Data Science Nigeria*. Available at: <https://datasciencenigeria.org/> (Accessed: 20 March 2025).

Effective public sector capacity building for AI and digital transformation is only possible if it addresses knowledge and digital skills relevant to (i) infrastructure, (ii) decision-making and (iii) governance frameworks, as elaborated below.

#### 4. Digital infrastructure: the know-how that's needed

Having the right hardware, software and data in place is critical – but getting there, and making best use of these resources, depends on human capacities. Strong [digital public infrastructure](#) (DPI) as emphasised by the 2023 G20 under the presidency of India, is a cornerstone for effective AI adoption in the public sector. DPI enables the collection, processing, and use of data to train and to use AI foundation models and AI applications – all the while being cognisant of the need for public trust in digital services. DPI requires specific public service competencies, including an understanding of:

- **Interoperability**, including the use and building upon open standards and specifications with a technology-neutral approach that ensures that AI systems can relate to each other.
- **Modularity and Extensibility**: An extensible approach implies a building block or modular architecture to accommodate changes/modifications without undue disruption.
- **Scalability**: Using flexible design to accommodate any unexpected increase in demand and/or to meet expansion requirements without changing existing systems.

Other important capabilities related to digital infrastructure are digital investments, overcoming fragmentation, managing data, and procurement, as elaborated below.

##### Driving digital investments

Many government agencies still rely on outdated legacy systems incompatible with AI technologies. A report by McKinsey & Company notes that 60% of public sector IT budgets in the US are spent on maintaining legacy systems, leaving little budgetary room for innovation.<sup>35</sup>

In general, insufficient funding and resources are a persistent issue across much of the public service. This is why governments often prioritise maintaining inherited systems over investing in new technologies or training programs. Addressing this requires strategic allocation of resources and innovative funding mechanisms, as seen in Estonia's use of structural funds and joint procurements to modernize its digital infrastructure.<sup>36</sup>

Civil servants need competencies to contribute to investment frameworks that facilitate consistent digital and AI technology implementation while upholding transparency and ethics standards. This includes leveraging funding and value propositions that also uphold standards for transparency and ethics. Additionally, creating dedicated funding mechanisms can encourage AI adoption across various administrative functions, aligning individual projects with overarching policy objectives. Such incentives can include promotions, salary increases, certifications or recognition programs celebrating innovation and learning. Experiences to consider include:

<sup>35</sup> Balka, K., Heslin, B. and Risse-Tenk, S. (2022) *Unlocking the potential of public-sector IT projects*, McKinsey & Company. Available at: <https://www.mckinsey.com/industries/public-sector/our-insights/unlocking-the-potential-of-public-sector-it-projects> (Accessed: 20 March 2025).

<sup>36</sup> *Estonia AI Strategy Report (2021) European Commission*. Available at: [https://ai-watch.ec.europa.eu/countries/estonia/estonia-ai-strategy-report\\_en](https://ai-watch.ec.europa.eu/countries/estonia/estonia-ai-strategy-report_en) (Accessed: 20 March 2025).

**Finland:** The government supports public sector AI projects through its Artificial Intelligence 4.0 program, which provides targeted funding for AI experimentation and pilots, particularly in health, education, and transport.<sup>37</sup>

**Singapore:** The AI Singapore initiative includes a dedicated AI-for-Government program, offering grants and resources to support the integration of AI in public service delivery.<sup>38</sup> The Public Service Division (PSD) integrates structured upskilling into career progression pathways. Civil servants who acquire certifications in digital or AI-related fields, such as the government-backed "SkillsFuture" initiative, can accelerate their career growth, ensuring that professional development directly translates into tangible rewards.<sup>39</sup>

**Canada:** Through its Impact Canada Initiative, the Government has launched challenges and funding opportunities to develop AI-driven solutions for pressing public policy issues, including healthcare, climate change, and public safety.<sup>40</sup>

**Rwanda** has implemented AI-focused investment initiatives like the Rwanda Seed Investment Fund, designed to create a collaborative environment where the government partners with angel investors and venture capitalists to support AI startups.

**Brazil:** Since 1996, Brazil's National School of Public Administration (ENAP) has organized an annual Public Sector Innovation Competition to reward public servants for developing innovative solutions that improve public sector management and policies. The competition also runs a repository to enable knowledge-sharing across government.<sup>41</sup>

**Mexico's** Challenge Mexico (Reto México) supports multi-stakeholder collaboration to design scalable, sustainable solutions for public and private sector challenges. The initiative broadens the focus to include public and private sector needs.<sup>42</sup>

Public service managers need to be able to perform strategic cost-benefit analyses about AI adoption, focusing in on issues such as capital and infrastructure outlay, and likelihood of obsolescence and imperatives to upgrades. There are also the expenses to consider of initial and ongoing capacity development, as well as those of maintenance, monitoring and review. Against a backdrop of these variables, the benefits and cost-savings of AI adoption need to be evaluated.

### Addressing fragmentation

Fragmented and outdated infrastructure significantly hampers the ability to deploy and manage AI systems. Public sector departments often operate in isolation, hindering whole-of-government approaches to digital transformation. For instance, a McKinsey analysis of the US government noted that fragmented data-sharing protocols reduced cross-departmental efficiencies by over 30%.<sup>43</sup> In addition, research by Gartner revealed that most government Chief Information Officers (CIOs) face primarily nontechnical obstacles, such as siloed approaches, in deploying digital services.<sup>44</sup> Officials frequently lack the capacity to ensure interoperable digital systems across departments. Siloed data repositories (and legacy systems) prevent effective data sharing and integration and can result in experiences of redundant AI pilot programs with minimal scale-up potential. Fragmentation also

<sup>37</sup> Ministry of Economic Affairs and Employment of Finland Helsinki (2022) 'Artificial Intelligence 4.0 programme: Finland as a leader in twin transition – Final report of the Artificial Intelligence 4.0 programme', Publications of the Ministry of Economic Affairs and Employment Enterprises [Preprint].

<sup>38</sup> Home - AI Singapore (2022) *AI Singapore*. Available at: <https://aisingapore.org/> (Accessed: 20 March 2025).

<sup>39</sup> SkillsFuture Singapore | Homepage (no date) *SkillsFuture Singapore*. Available at: <https://www.skillsfuture.gov.sg/> (Accessed: 20 March 2025).

<sup>40</sup> Homepage | Impact Canada (no date) *Impact Canada*. Available at: <https://impact.canada.ca/en> (Accessed: 20 March 2025).

<sup>41</sup> OECD/CAF (2022) *The Strategic and Responsible Use of Artificial Intelligence in the Public Sector of Latin America and the Caribbean*. Paris: OECD Publishing.

<sup>42</sup> Ibid.

<sup>43</sup> Balka, K., Heslin, B. and Risse-Tenk, S. (2022) *Unlocking the potential of public-sector IT projects*, McKinsey & Company. Available at: <https://www.mckinsey.com/industries/public-sector/our-insights/unlocking-the-potential-of-public-sector-it-projects> (Accessed: 20 March 2025).

<sup>44</sup> Gupta, A. (2022) *The Top 5 Digital Transformation Challenges for Government CIOs*, Gartner. Available at: <https://www.gartner.com/en/articles/5-key-digital-transformation-challenges-government-cios-must-tackle> (Accessed: 21 March 2025).

creates barriers to using shared data pools, which are critical for AI algorithms to deliver meaningful results. Developing and adhering to a common approach must be part of public sector competencies on digital infrastructure.

#### Data management challenges for the public service

- **Data Fragmentation:** Siloed data repositories prevent the consolidation of high-quality datasets needed for AI model training. According to the World Bank's Digital Government Readiness Assessment (DGRA) toolkit, data governance frameworks in many developing countries are underdeveloped, leading to challenges in AI implementation.<sup>45</sup>
- **Low Data Quality:** Many developing countries face a critical shortage of trained personnel capable of managing, cleaning, and curating datasets effectively. This lack of capacity perpetuates low data quality and limits the integration of AI systems into governance or public service delivery. Moreover, much public data is poorly organised, inconsistent, incomplete or outdated, making it challenging to ensure accuracy, reliability, and usability for AI applications.
- **Representative data as key for localizing AI services.** Inclusivity in AI applications depends on inclusive data. Capacity building efforts for applicable public sector professionals should include expertise to understand, create and manage localized AI datasets, supporting linguistic diversity and preserving cultural heritage.

#### Competencies for procurement of digital infrastructure:

Sourcing digital infrastructure provision is normally part of overarching standard operating procedures in state bodies. But distinctive and novel issues are raised regarding procurement of AI services. Here, cross-sector collaboration is a resource that can go beyond the challenges of limited expertise in the state and the imbalance in knowledge regarding vendors of this kind of digital infrastructure. Advisory and development partnerships with academia, industry and international organizations can help create AI-inclusive checklists that cover, for example:

- Beyond the marketing pitch by vendors, interrogation of the actual limits of systems (e.g. of chatbots' risk of Generative AI "hallucinations").
- The data sets that have underpinned the training of the AI system on offer, and how challenges in that respect (e.g. linguistic, gender and copyright issues) may affect the down-stream applications being considered.
- The risk-assessments, stress-testing and adversarial red-teaming that were (and are being) undertaken to reduce system vulnerabilities.
- The vendor's practice and commitment about what happens to new data that is fed into AI applications by civil servants or the public.
- To what extent the state's dynamic data assets as inputs and outputs to AI can help in the quest for public value-creation more broadly.
- The service levels that can be guaranteed as regards ongoing customization, patching, support and maintenance of AI services.
- The environmental and energy impacts of the services on offer.

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<sup>45</sup> *Digital Government Readiness Assessment (DGRA) toolkit* (no date) World Bank. Available at: <https://www.worldbank.org/en/data/interactive/2022/08/22/digital-government-readiness-assessment-dgra-toolkit> (Accessed: 20 March 2025).

## 5. Decision-making: preparing public servants to do digital transformation

One of the primary challenges is the **widespread lack of digital literacy and AI-specific knowledge** among public servants. Many relevant officials are still unfamiliar with basic AI concepts, such as machine learning and data ethics. Building knowledge in these areas enables officials to better grasp the potential benefits and harms, and the opportunities and limits. Solutions include scalable, inclusive training programs like Finland's *Elements of AI*,<sup>46</sup> which target various proficiency levels and provide free, accessible content to diverse participants.

**Managing the AI Proficiency Gap:** Many public sector leaders and civil servants lack the necessary digital skills to effectively manage and deploy AI initiatives. This implicates advanced skills not only in AI fundamentals, but also data-informed decision-making, and digital management. A study by the European Commission found that only 61% of public sector workers in the EU had basic digital skills, which is insufficient to handle complex AI-driven projects.<sup>47</sup> A report of the Inter-American Development Bank highlights that “51 percent of the Latin American managers surveyed reported facing a severe or very severe shortage of data analysis skills, whereas 40 percent reported a lack of training for programming skills and software development”.<sup>48</sup> Advanced AI tasks include managing model deployment, anomaly detection and predictive analytics. The UK's National Audit Office 2023 report highlighted that public agencies lacked internal data scientists capable of customizing AI solutions for sector-specific applications, forcing reliance on external vendors.<sup>49</sup>

Capabilities in all these areas need continuous updating and adaptation. They also need to embrace higher-level thinking skills such as:

- **Data-informed decision-making** that optimizes the power of AI analytics and predictive modelling.
- **Agile execution** processes for accelerated AI deployment and adaptation.
- **Strategic foresight and systems thinking** for grasping the interconnectedness of AI systems within broader socio-economic and political contexts.

The OECD estimates that only 24% of public sector leaders in OECD countries have experience integrating foresight methodologies into AI-related policy design.<sup>50</sup> Scenario analysis is another significant skill for digital transformation.

### Capacities to manage cultural and organizational barriers

**Resistance to change and entrenched institutional hierarchies** pose added barriers to using AI in the public service. Some civil servants may push back against AI monitoring of their performance or the possibility of job redundancies. Competencies for change management can help address AI-specific challenges like:

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<sup>46</sup> *Elements of AI* (no date) *Elements of AI*. Available at: <https://www.elementsofai.com/> (Accessed: 20 March 2025).

<sup>47</sup> OECD (2023) 'Leveraging artificial intelligence for proactive delivery of public policies and services', in *Government at a Glance 2023*. Paris: OECD Publishing, pp. 140–141. Available at: <https://doi.org/10.1787/5702d250-en>; OECD (2024) *Governing with Artificial Intelligence: Are governments ready?* Paris: OECD Publishing. Available at: <https://doi.org/10.1787/26324bc2-en>; OECD (2024) *2023 OECD Digital Government Index: Results and key findings*. No. 44. Paris: OECD Publishing. Available at: <https://doi.org/10.1787/1a89ed5e-en>.

<sup>48</sup> Porrúa, M. et al. (2021) *Digital Transformation and Public Employment: The Future of Government Work*, IDB Publications. Inter-American Development Bank. Available at: <https://doi.org/10.18235/0003245>.

<sup>49</sup> National Audit Office (2023) *Digital transformation in government: addressing the barriers to efficiency - NAO report*, National Audit Office (NAO). Available at: <https://www.nao.org.uk/reports/digital-transformation-in-government-addressing-the-barriers/> (Accessed: 20 March 2025).

<sup>50</sup> OECD (2023) 'Leveraging artificial intelligence for proactive delivery of public policies and services', in *Government at a Glance 2023*. Paris: OECD Publishing, pp. 140–141. Available at: <https://doi.org/10.1787/5702d250-en>; OECD (2024) *Governing with Artificial Intelligence: Are governments ready?* Paris: OECD Publishing. Available at: <https://doi.org/10.1787/26324bc2-en>.

- **Overly Cautious Approaches to Experimentation:** A risk-averse culture often leads to limited experimentation with AI and digital transformation projects. At times, however, this may be justifiable: for example, AI-driven initiatives in the judiciary sometimes face resistance due to apprehensions about transparency and accountability and their impact on human rights. Each context needs to be addressed with proper sensitivity and respect.
- **Rigid Hierarchies:** Many public agencies lack agile workflows due to over-centralized decision-making processes. [UNESCO's Competency Framework](#) points out that such hierarchies delay can AI policy implementation, especially in countries with centralized bureaucracies.

### Leadership challenges

- **Limited Digital Leadership:** Only 18% of senior civil servants in the OECD Digital Government Index survey reported adequate understanding of AI system procurement and lifecycle management.<sup>51</sup>

## 6. Governance: the competencies to shape digital transformation

Government officials, parliamentarians and regulators need the skills to create conducive policies, laws, regulations and rules for the society as a whole. Implementers in the civil service need competencies to ensure delivery under these frameworks. Informed and ethical AI governance is needed for senior public administrators to ensure fairness, transparency, and accountability in AI deployments, which in turn are key for public trust and mitigating risks of malfunction (e.g. Generative AI hallucinations), discrimination or abuse.

### Regulatory Deficiencies

- **Absence of Comprehensive AI Guidelines:** Many public sector organizations work without clear AI governance and regulatory frameworks, making it difficult to implement AI initiatives confidently.<sup>52</sup> The lack of clear legal frameworks creates uncertainty and delays in adopting AI technologies. To address this challenge, countries like Argentina, Brazil, Chile, and Peru have established preliminary guidelines for AI governance, although there is no comprehensive model legal framework for AI use in Latin America.<sup>53</sup>

### Public Trust and Perception Issues

- **Transparency Deficits:** Only a small percentage of AI systems deployed in the public sector feature transparent decision-making processes. A study by the European Commission's Joint Research Centre highlights that a substantial number of AI applications in public services lack mechanisms for citizens to challenge automated decisions. This deficiency underscores the need for better transparency and accountability.<sup>54</sup> The OECD notes that “only 15.8% of countries currently have a policy instrument, such as a public algorithm register, to assist public institutions in explaining why and how they use algorithms.”<sup>55</sup>

<sup>51</sup> OECD (2019) *The Path to Becoming a Data-Driven Public Sector*. Paris: OECD Publishing. Available at: <https://doi.org/10.1787/059814a7-en>.

<sup>52</sup> Igbokwe, P.C. (2024) 'Exploring the role of Artificial Intelligence in Public Service Delivery in Anambra State, Nigeria', *Advance Journal of Business and Entrepreneurship Development*, 8(5), pp. 27–35.

<sup>53</sup> Giandana Gigena, F. and Pisanu, G. (2024) *Regulatory Mapping on Artificial Intelligence in Latin America*. Access Now. Available at: [https://www.trust.org/wp-content/uploads/2024/09/downloaded\\_file-167.pdf](https://www.trust.org/wp-content/uploads/2024/09/downloaded_file-167.pdf).

<sup>54</sup> Joint Research Centre (no date) *AI Watch - Artificial Intelligence in public services - European Commission, European Commission*. Available at: [https://ai-watch.ec.europa.eu/publications/ai-watch-artificial-intelligence-public-services\\_en](https://ai-watch.ec.europa.eu/publications/ai-watch-artificial-intelligence-public-services_en) (Accessed: 20 March 2025).

<sup>55</sup> OECD (2024) *2023 OECD Digital Government Index: Results and key findings*. No. 44. Paris: OECD Publishing. Available at: <https://doi.org/10.1787/1a89ed5e-en>.

- **Ethical Concerns:** As highlighted by UNESCO’s [Recommendation on the Ethics of AI](#), clear policies, regulations and guidance are needed on data privacy, algorithmic transparency, bias mitigation and independent mechanisms that can provide redress opportunity to aggrieved citizens, involving a human-in-the-loop. Public sector entities often meet difficulties in fostering trust in AI systems due to insufficient transparency and accountability mechanisms.<sup>56</sup> This is why many national AI strategies highlight the need for robust governance to build trust in public-sector AI applications.

*A well-documented case in the Netherlands involved AI used for welfare fraud detection, which disproportionately flagged individuals from minority backgrounds. The system lacked transparency, and public administrators were unprepared to assess its fairness or accountability. This sparked a public backlash, and in response to this, the Dutch Court of Audit has produced Guidance and Analysis of AI systems being used in the Netherlands.<sup>57</sup>*

### Skills in Digital Governance and Ethical Oversight

- **Functional Specialist Gap:** In the EU, the AI4GOV initiative emphasizes the need for staff to bridge levels of technical expertise with governance insights.<sup>58</sup> Many public sector organizations lack this role, resulting in either an over-reliance on technologists with limited policy skills or policymakers with insufficient technical knowledge.<sup>59</sup>
- **Skills for AI Governance:** Public administrators often lack formal training in implementing frameworks that ensure fairness, transparency, and accountability in AI systems. This gap often results in AI initiatives being susceptible to ethical and legal risks, such as bias and discrimination. Managers are not aware of the commercial imperatives behind frequent overhyping of AI applications or the need to ask critical questions from vendors about human rights, safety and environmental impact. Moreover, numerous cases of AI deployment in public service do not incorporate mechanisms for bias audits and algorithmic accountability measures.

### Addressing Risks and Fostering Trust

- **Regulating High-Risk AI:** Regulatory initiatives like the EU AI Act establish a tiered framework for classifying AI applications based on risk level, imposing strict regulations on high-risk systems. These include applications designed to influence voter behaviour or automate benefits assessments, where rigorous oversight, transparency, and accountability measures are mandated to mitigate potential harms.<sup>60</sup> Public service officials need to be capacitated with policy and implementation skills for risk assessment and management in AI adoption and use.
- **Algorithmic Accountability and Transparency:** In this context, public policy and the public service in some countries have seen algorithmic accountability measures and transparency frameworks, aiming to build confidence and ensure fair outcomes for automated decision-making systems. For instance,
  - In France, Etalab<sup>61</sup> guides government agencies on the legal framework and publishing requirements and is developing practical tools to create public algorithm registers,

<sup>56</sup> Rinta-Kahila, T. et al. (no date) *How to avoid algorithmic decision-making mistakes: lessons from the Robodebt debacle*, The University of Queensland Australia. Available at: <https://stories.uq.edu.au/momentum-magazine/robodebt-algorithmic-decision-making-mistakes/index.html> (Accessed: 20 March 2025).

<sup>57</sup> Rekenkamer, A. (2021) *Understanding algorithms - Report*, Netherlands Court of Audit. Algemene Rekenkamer. Available at: <https://english.rekenkamer.nl/publications/reports/2021/01/26/understanding-algorithms> (Accessed: 20 March 2025).

<sup>58</sup> <https://ai4gov-project.eu/>

<sup>59</sup> Misuraca, G., & Rossel, P. (2023) *Towards a Digital Governance and AI Compass for Policymakers and Regulators*. Report delivered to UNESCO.

<sup>60</sup> European Commission (2025) *AI Act*, European Commission. Available at: <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai> (Accessed: 20 March 2025).

<sup>61</sup> ‘Etalab – Politique publique de la donnée’ (no date). Available at: <https://www.etalab.gouv.fr/> (Accessed: 20 March 2025).

- allowing citizens to understand how algorithms influence government decision-making, fostering greater transparency and accountability.<sup>62</sup>
- New Zealand has published an algorithm charter, a set of commitments that signatory government agencies sign on to manage their use of algorithms in a fair, ethical, and transparent way, promoting public accountability in the government.<sup>63</sup>
- Universidad de los Andes in Colombia maintains a repository on AI systems in the public sector of Latin America and the Caribbean, aiming to bring more transparency to how AI systems are deployed by the public sector in the region.<sup>64</sup>
- **Combating Deepfakes and Mis/Disinformation:** Given the rise of deepfakes and misinformation/disinformation in critical activities such as elections and public health, the public sector has increasingly implemented national responses to identify and curtail the production and distribution of disinformation. National campaigns have also been launched to counter disinformation initiatives and to raise public awareness.<sup>65</sup> For example,
  - Indonesian government agencies have implemented 'CEKHOAKS!'<sup>133</sup>, a debunking portal that allows citizens to flag disinformation and check which content has been debunked.<sup>66</sup>
  - Brazil's Electoral Justice Permanent Programme on Countering Disinformation focuses on building public understanding of media literacy and threats of disinformation and identifying disinformation campaigns and countering its negative effects.<sup>67</sup>

Capacity building should also include the training of relevant officials on international AI standards and ethical principles, fostering an environment where human oversight (and redress) is central to AI governance. With such knowledge, public servants can confidently navigate the complexities of AI policy-implementation. Standards here include UNESCO's Recommendation on the Ethics of Artificial Intelligence. Relatedly, governments can also strengthen policy and regulatory frameworks to ensure that public sector AI initiatives respect human rights. Several countries have set up AI Safety Institutes to mitigate risks such as surveillance abuse, algorithmic bias, privacy violations and discrimination, while also fostering trust, accountability, and inclusion.<sup>68</sup>

## 7. Measurement for management

Effective monitoring of digital transformation and AI capacities in the public sector is fundamental for ensuring that investments in technology and related capacity lead to meaningful improvements in governance, service delivery and societal outcomes. Monitoring progress requires a structured approach grounded in robust data and clear indicators, as well as inclusive, collaborative discussions with key stakeholders. Various existing surveys and reports can serve as resources for states to develop

<sup>62</sup> Open Government Partnership (2021) 'Algorithm Accountability: What Government Can Do Right Now', *OpenStories*, 30 September. Available at: <https://www.ogpstories.org/algorithm-accountability-what-government-can-do-right-now/> (Accessed: 20 March 2025).

<sup>63</sup> *Algorithm charter for Aotearoa New Zealand* (no date) *data.govt.nz*. Available at: <https://data.govt.nz/toolkit/data-ethics/government-algorithm-transparency-and-accountability/algorithm-charter#commitment> (Accessed: 20 March 2025).

<sup>64</sup> Muñoz-Cadena, S. *et al.* (2025) 'Sistemas de IA en el sector público de América Latina y el Caribe (Versión V2)'. Universidad de los Andes. Available at: <https://sistemaspublicos.tech/sistemas-de-ia-en-america-latina/> (Accessed: 19 March 2025).

<sup>65</sup> UNESCO (2020) *Balancing act: countering digital disinformation while respecting freedom of expression*. UNESCO, International Telecommunication Union, and Broadband Commission for Sustainable Development. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000379015> (Accessed: 26 February 2025).

<sup>66</sup> *Ibid.*

<sup>67</sup> *Facts not Fakes: Tackling Disinformation, Strengthening Information Integrity* (2024) OECD. Available at: [https://www.oecd.org/en/publications/facts-not-fakes-tackling-disinformation-strengthening-information-integrity\\_d909ff7a-en.html](https://www.oecd.org/en/publications/facts-not-fakes-tackling-disinformation-strengthening-information-integrity_d909ff7a-en.html) (Accessed: 21 March 2025).

<sup>68</sup> *International Network of AI Safety Institutes: Mission Statement* (2024). Available at: <https://www.nist.gov/system/files/documents/2024/11/20/Mission%20Statement%20-%20International%20Network%20of%20AISIs.pdf> (Accessed: 20 March 2025).

adapted tools for measuring needs as well as progress in digital transformation at the competency level. Opportunities to refine measurement, including of impact of capacity-building initiatives, can be profitably created by engagement with civil society, academia and international organizations. While existing tools are invaluable for assessing digital transformation and AI capacities, they often fail to capture the full complexity of these processes. Many surveys lack detailed, sector-specific metrics that account for the unique challenges and opportunities in fields like healthcare, education, and public finance. Furthermore, most instruments focus on national-level data, overlooking critical disparities at regional and local levels that significantly impact the outcomes of digital transformation. Inclusivity and equity are also often neglected; metrics rarely consider the experiences of marginalized groups, such as women, persons with disabilities, and rural communities, leaving their needs unaddressed in policy and implementation. Moreover, emerging risks and ethical concerns—such as algorithmic transparency, data protection, and ethical AI deployment—are not adequately reflected in current tools. The lack of common benchmarks and standards across measurement instruments further complicates efforts to systematically compare progress or identify global best practices. Finally, future-readiness remains underexplored, with limited attention given to strengthening the resilience of digital systems against evolving challenges like cyber threats, misinformation, and economic shocks.

**Opportunities for Improving Capacity Measurement**

*To bridge these gaps, governments and stakeholders can refine existing tools and adopt new strategies for assessing digital transformation and AI capacities. **Expanding and adapting surveys** by incorporating emerging technology metrics is a crucial step. For instance, Brazil's [Cetic.br e-government survey](#) now includes AI-specific indicators, offering a model for tailoring sector-specific modules to address areas like public health and education. **Survey findings should inform tailored training programs** for public sector officials. **Forums for cross-government knowledge exchange** can provide valuable opportunities. Similarly, **engaging stakeholders in co-design processes** can ensure that metrics reflect diverse perspectives and capture the lived experiences of underserved communities. **Integrating inclusivity and equity metrics** into measurement frameworks is essential. Assessment methods are also needed for establishing the effectiveness of initiatives to build civil service competencies in AI, with consideration of using AI as a tool to do so.*

## 8. Action stations: producing a plan for AI competency development

Empowering the public sector for AI and digital transformation demands a **strategic and comprehensive approach**. An action plan to implement a digital transformation strategy (and especially the AI part thereof) should include a dedicated section on capacity-building. This in turn should be informed by assessment of capacity needs and priorities, and include methods to evaluate the success of initiatives under its auspices. Clear goals and budgets are also essential. The plan might also create specific targets (e.g. by when at least 80% of senior civil servants will have benefited from AI-specific training). Below is an indicative template that provides initial ideas for how to concretise a strategic vision for empowering public servants and which could serve as an example starting point for a plan.

Principle	Goal	Enabling conditions and capacities
Investment in digital	Modernize public sector digital infrastructure,	- Conduct <b>nationwide assessments of legacy IT systems</b> , costing critical upgrades in areas like data

<b>infrastructure and data governance</b>	including digital public infrastructure aspects for effective secure, ethical AI integration by 2030.	storage, network security, and AI readiness. <ul style="list-style-type: none"> <li>- Assess existing digital, data and AI competencies in public service leadership ranks</li> <li>- Develop <b>programs</b> to train public officials on digital infrastructure matters and related AI and data governance standards in partnership with national schools of public administration.</li> </ul>
<b>Inclusivity and universal accessibility to competency development</b>	By 2030, a majority of senior civil servants will have meaningful and equitable access to competencies as regards use and management of cutting-edge AI and digital tools.	<ul style="list-style-type: none"> <li>- Develop <b>accessible, multilingual e-learning platforms</b> (e.g., Massive Online Open Courses (MOOCs), virtual reality) that support offline functionality to reach areas with limited internet connectivity.</li> <li>- Establish <b>regional AI training hubs</b>, offering targeted scholarships for women, individuals with disabilities, and civil servants in underserved areas.</li> <li>- Design and deliver <b>sector-specific AI tools</b> tailored to the needs of rural or resource-constrained public sector offices.</li> </ul>
<b>Lifelong Learning and dynamic skill evolution</b>	Continuously upskill civil servants through lifelong learning programs, ensuring adaptation to technological advancements.	<ul style="list-style-type: none"> <li>- Introduce <b>tiered AI learning pathways</b> (e.g., Beginner, Intermediate, Advanced) with clearly defined competencies for each stage.</li> <li>- Partner with national schools of public administration, leading universities and tech companies to provide <b>certification programs</b> that offer stackable credentials for AI ethics, digital transformation, and governance.</li> <li>- Establish public sector <b>AI labs</b> with virtual sandbox environments, where civil servants can experiment with emerging technologies projects in a risk-free environment, driving practical learning.</li> </ul>
<b>Ethical AI governance and algorithmic transparency</b>	Ensure AI systems within the public sector are ethical, transparent, and accountable, respecting human rights, mitigating biases and providing redress.	<ul style="list-style-type: none"> <li>- Create <b>dedicated modules in training curricula</b> based on global ethics standards, such as UNESCO's Recommendation on the Ethics of Artificial Intelligence, covering topics like bias detection, algorithmic transparency, and privacy safeguards.</li> <li>- Form an <b>AI Ethics Advisory Board or Supervisory Authority</b>, comprising independent experts, to provide ongoing oversight and publish annual reports on AI governance including the competency issue.</li> <li>- Commit to measures that improve the transparency and <b>accountability of public sector algorithms</b>, such as by publishing an algorithm register or committing to an algorithm charter.</li> </ul>
<b>System-wide harmonization, cross-sector collaboration and strategic partnerships</b>	Contribute to a whole-of-government connected public sector, with respect to distinctive issues in different components, and leverage partnerships with	<ul style="list-style-type: none"> <li>- Ensure that <b>the national digital transformation strategy</b> operates at a sufficient level of generality that also recognizes levels of unity and diversity within different state organs.</li> <li>- Establish capacity to operate <b>Public-Private Partnerships (PPP)</b><sup>69</sup> that relate to AI infrastructure and</li> </ul>

69 A notable PPPs example is the one of Google with the Government of Nigeria, which includes contributing to the government's 3 million Technical Talents (3MTT) program, investing in educational initiatives that introduce AI to teenagers, and supporting an accelerator fund to empower Nigerian AI startups. See: *Africa's AI Moment: Building a future powered by technology and talent* (2024) Google. Available at: <https://blog.google/intl/en-africa/company-news/africas-ai-moment-building-a-future-powered-by-technology-and-talent/> (Accessed: 20 March 2025).

	international organizations, private industry, academia, and civil society.	capacity-building. - Organize <b>thematic AI knowledge-sharing forums</b> , focusing on emerging topics like data sovereignty, cross-border data sharing, and regulatory sandboxes. - Participate in <b>regional and global AI cooperation agreements</b> , enabling knowledge exchanges.
Agility and leadership for future-readiness	Prepare public sector leaders to anticipate technological disruptions, navigate challenges, and foster innovation.	- Launch <b>executive leadership training programs</b> in collaboration with international institutions, focusing on competencies for assessing adaptive governance and AI crisis management, and measurement matrices. - Introduce <b>scenario-based workshops</b> that simulate challenges in AI regulation, algorithmic discrimination, and data misuse, helping senior officials refine their decision-making processes.
Fostering innovation through safe experimentation	Establish public sector institutions as centres of innovation through regulatory sandboxes and experimentation.	- Develop <b>thematic regulatory sandboxes</b> for testing AI applications in health, education, urban planning, and environmental protection, with guidelines for ethical experimentation. - Incentivize innovation through <b>internal grant programmes</b> or recognition awards that fund AI projects proposed by civil servants. - Facilitate <b>inter-agency collaboration</b> on AI experimentation to break silos and promote knowledge-sharing.
User-centric AI and citizen engagement	Ensure public sector AI systems are accessible, equitable, and responsive to citizens' needs.	- Actively <b>engage citizen participation</b> through consultations and open forums in the design and implementation of AI systems. - Ensure public service can create <b>citizen feedback loops</b> to monitor and improve AI service delivery. - Develop capacity for <b>public education campaigns</b> to raise awareness, ensuring transparency and building trust among citizens.
Provide for measurement and assessment of capacity identification and interventions	Management requires clear indicators and data to guide capacity-building optimally, and to review in the face of changes and lessons arising.	- Create <b>measurement toolkits</b> for assessing AI capacity building in the public service, drawing from international instruments such as UNESCO's AI and Digital Transformation Competency Framework and tailoring them to local contexts.



## 9. Conclusion

### **Enhancing Public Sector Capacity for a Secure and Inclusive Digital Transformation**

A well-structured Action Plan for capacity building in the public sector can effectively align with international initiatives, supporting the broader goal of achieving a secure, equitable and inclusive digital transformation. This Issue Brief highlights how a well-prepared public workforce can benefit society and how governments can leverage AI and digital technologies to enhance public service delivery while mitigating risks such as bias, data privacy violations, lack of algorithmic transparency, and the absence of redress mechanisms.

A takeaway thought goes beyond the urgent and complex endeavour to upgrade AI competencies in the civil service. It is that the future holds out the prospect of using AI tools for such capacity-building, and then further using AI to assess AI's role in achieving effective capacity development, and also using AI for assessing the impact of such AI-powered improved competencies for the civil service to use AI.

## UNESCO's Support for G20 Members

UNESCO can assist G20 members in developing and implementing an Action Plan for capacity building. This is by offering strategic advice on AI adoption in the public sector, facilitating the integration of the AI and Digital Transformation Competency Framework, and supporting the establishment of specific training programs at national schools for public administration. These programs will equip civil servants with practical knowledge on AI usage and risk mitigation strategies, including also addressing misinformation and deepfakes. Through the sharing of best practices, technical assistance, and knowledge exchange facilitation, UNESCO can assist countries to implement robust capacity-building initiatives. This will prepare civil servants for the challenges and opportunities of the digital age, ultimately strengthening governance and improving public service delivery for citizens.

### About UNESCO's Work in AI and Digital Transformation

#### UNESCO's Frameworks and Tools for AI and Digital Transformation in the Public Sector

UNESCO has developed comprehensive frameworks and tools to equip the public sector with context-sensitive resources, adaptable by policymakers across different countries. In collaboration with the AI Capacity Building Working Group of the UN Broadband Commission, UNESCO created the [AI and Digital Transformation Competency Framework for Civil Servants](#). This framework has been used by [the Joint Research Centre of the European Commission](#) as a key resource for developing AI competencies in the European public sector and has also been adapted by the Government of India.

#### Capacity Building Initiatives

UNESCO actively engages with civil servants and governments through various capacity-building efforts, including:

- **Workshops:** Providing hands-on training and knowledge exchange platforms.
- **Online Training Courses:** Offering accessible learning opportunities for global participants.
- **Webinars:** Facilitating real-time discussions and updates on AI and digital transformation.
- **Conferences:** Facilitating knowledge exchange between Member States and other key actors.

These initiatives have already significantly strengthened the capacities of civil servants from over **33 countries**.