National Audit Office

REPORT

Use of artificial intelligence in government

Cabinet Office

Department for Science, Innovation & Technology

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HC 612

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National Audit Office

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Cabinet Office
Department for Science, Innovation & Technology

Report by the Comptroller and Auditor General

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Gareth Davies
Comptroller and Auditor General
National Audit Office

12 March 2024

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Key facts

2018

launch of the government's AI Sector Deal to promote the use of AI (artificial intelligence) in the UK, including within the public sector

74

number of AI use cases already deployed as reported by government bodies responding to our survey

£101mn

the Incubator for Artificial Intelligence's estimate of its five-year funding requirement to 2028-29 (before inflation)

37%	proportion of government bodies responding to our survey that had deployed AI
37%	proportion of government bodies responding to our survey that had not deployed AI but were actively piloting or planning AI
June 2024	target by which central government departments are expected to have costed and reviewed AI adoption plans in place
21%	proportion of government bodies responding to our survey that had a strategy for AI in their organisation, while a further 61% had plans to develop one
70%	proportion of government bodies responding to our survey who reported that skills were a barrier to AI adoption in their organisation

Summary

Introduction

1 The use of artificial intelligence (AI) has been expanding rapidly across society, particularly with the development of generative AI. AI has the potential to transform public services, but also presents risks and concerns. It can be used in the public sector for a range of purposes, including to improve internal processes; support operational decision-making; support research and monitoring; and to directly engage with or provide services to the public. The government announced in the Autumn Statement 2023 that AI use offered potential productivity benefits worth billions in the public sector. In the Spring Budget 2024, the government announced funding for a number of initiatives involving AI as part of its Public Sector Productivity Programme.

2 The government has encouraged use of AI for several years. In 2018, it launched the AI Sector Deal to stimulate the use of AI and, in 2019, it concluded a cross-government AI adoption review. In 2021, the government launched its *National AI Strategy,* which recognised that AI offers the potential for transformation across the economy, including in the public sector. The strategy included an aim that the public sector should set an example in the safe and ethical deployment of AI.

3 In 2023 the Cabinet Office's Central Digital and Data Office (CDDO) began work with the Department for Science, Innovation & Technology (DSIT) and HM Treasury to develop a strategy for AI adoption in the public sector. The draft strategy sets out four aims.

- The UK public sector will be world-leading in safe, responsible and transparent use of AI to improve public services and outcomes.
- The public will benefit from services that have been transformed by AI and will have confidence that the government's use of AI is responsible.
- Public and civil servants will have the tools, information and skills they need to use AI to deliver better outcomes.
- All public organisations will be more efficient and productive through AI adoption and have the foundations in place to innovate with the next wave of technologies.

Scope of the report

4 This report considers how effectively the government has set itself up to maximise the opportunities and mitigate the risks of AI in providing public services. Our primary focus for this report is the role of the Cabinet Office and DSIT in supporting the adoption of AI in the public sector. Specifically, the report looks at:

- the government's strategy and governance for AI use in public services (Part One);
- how government bodies are using AI and how government understands the opportunities (Part Two); and
- central government plans for supporting the testing, piloting and scaling of AI; and progress in addressing barriers to AI adoption (Part Three).

5 We focus on AI that uses machine learning for tasks including language processing, predictive analytics and image or voice recognition. In our survey we asked government bodies (departments and arm's-length bodies) about their deployed, piloted or planned use cases. We excluded simple rules-based automation and use of AI embedded in pre-existing tools provided by default (for example, automatic email spam filters or email smart replies), as well as individuals' ad-hoc use of publicly available AI. We do not cover regulation of AI in the wider economy or how deployment of AI may change the demands on public services.

6 We recognise that development and deployment of AI in government bodies is at an early stage and there is activity underway to develop strategies, plans and governance. To maximise the opportunities of AI, the government will need to implement and adopt AI at scale across the public sector. Our previous work has identified the challenges involved in digital transformation and cross-departmental initiatives of this kind. This report is therefore an opportunity to report on early progress and identify areas for improvement as the government develops its plans further.

7 Appendix One describes our audit approach and evidence base.

Key findings

Strategy and governance

8 The government lacked a coherent plan to support adoption of AI in the public sector as part of its 2021 *National AI Strategy*. One aim of the *National AI Strategy* is for the public sector to become an exemplar of safe and ethical deployment of AI. The activities to deliver this aim sit across many bodies and have not been underpinned by supporting governance arrangements, clear accountabilities, an implementation plan or performance metrics to track progress. The *National AI Strategy – AI Action Plan* published in July 2022 summarised activity, but did not set out outcome measures or detailed implementation plans to support the aim for the public sector to become an exemplar. Initially a cross-government AI Strategy Delivery Group was established by the Office for Artificial Intelligence to oversee delivery, but this was disbanded in March 2022. In 2023, DSIT restructured the governance of the *National AI Strategy*. It set up a new AI Directors' Policy Board in October 2023 to oversee delivery of the strategy, with representation from CDDO in the Cabinet Office (paragraph 1.6 and Figure 1).

9 DSIT and the Cabinet Office have responsibility for AI. The draft strategy for AI adoption in the public sector does not set out which of these departments has overall ownership and accountability for its delivery. CDDO and the Incubator for Artificial Intelligence (i.AI) (within the Cabinet Office), and DSIT all have roles in AI adoption in the public sector, and there is therefore potential for overlap. For example, CDDO is responsible for setting the strategic direction for government on digital, data and technology, while the i.AI has a role in delivering shared data and AI infrastructure. DSIT is responsible for developing governance frameworks, guidance, and standards for AI and data in the wider economy, and is leading on public sector innovation. The government's draft strategy aims for the UK to lead the world in responsible and safe use of AI that improves public services and has the confidence of the public. The draft strategy includes high-level activities and timelines including an ambition for all central government departments to have costed and reviewed AI adoption plans by June 2024. However, it is at an early stage and does not set out an implementation plan with performance metrics, funding, or overall ownership and accountability for delivery (paragraphs 1.4, 1.7, 3.7 and 3.8, and Figure 2).

10 There is limited integration of governance arrangements for AI adoption in the public sector and those for wider AI policy for the UK. CDDO plans to manage the programme of work to support AI adoption in the public sector via existing cross-government digital and data governance arrangements. Working through existing structures will help ensure there is join-up with other programmes such as the 2022–2025 roadmap for digital and data. While the strategy is intended to be public-sector wide, these governance structures do not include public sector representation beyond central government, such as schools, police and the wider health sector. The proposed governance of the strategy is also largely separate from the cross-government governance structure established to oversee wider AI policy delivery led by DSIT, potentially losing the benefits of a coordinated approach and increasing risks to delivery. CDDO recognises that there is value in greater integration and is exploring how to achieve this. As at March 2024, the government is reviewing AI governance arrangements and has established lead AI ministers across all departments to support coordination (paragraph 1.8 and Figure 3).

11 Departments are at an early stage in developing their own AI strategies and supporting governance arrangements. Only 21% of 87 government bodies responding to our survey said they had an AI strategy. However, a further 61% have plans to develop one. Oversight and governance arrangements are also at an early stage of development. While 24 of the 32 bodies with deployed AI that responded to the survey always or usually had a named accountable responsible owner for their AI use cases, fewer than half of bodies with deployed AI (15 out of 32) said that AI use cases were always or usually identified at an organisational level before deployment. We found examples of government bodies establishing governance arrangements such as an AI steering board, a design authority, a consultation panel and using a data ethicist to provide scrutiny and oversight of AI use cases (paragraphs 1.9 to 1.11, and Figure 4).

AI use in government

12 As at autumn 2023, AI was not widely used across government, but government bodies are exploring opportunities. Just over a third (37%) of the 87 government bodies that responded to our survey have deployed AI, with typically one or two use cases in each. Over two-thirds (70%) are piloting or planning AI, with a median of four use cases being explored per body. The most common purposes of deployed AI are to support operational decision-making or improve internal processes. Across government bodies we found common themes in the types of AI that are currently being piloted or planned. This suggests that there is scope for sharing knowledge and working together on common forms of functionality, for example, AI use cases that support common business processes. Examples from the survey include use of AI to analyse digital images to extract information from documents or to identify and classify objects, use of natural language processing to summarise or draft text, and use of AI to assess trends and patterns and monitor live data (paragraphs 2.2 to 2.6, and Figures 5, 6 and 7).

13 The centre of government has identified the potential for large-scale productivity gains from AI use in the public sector but has not yet assessed the feasibility or cost of delivering these improvements. In 2023, CDDO carried out indicative analysis to identify potential productivity gains across the civil service and wider public sector. It identified that almost a third of tasks in the civil service (those that it defined as routine) could be automated. It did not examine the feasibility of delivering these productivity gains, or make an assessment of cost. To take this forward, CDDO recognises that further scrutiny and evidence collection is required alongside substantial investment (paragraphs 2.7 and 2.8).

Support for AI adoption

14 CDDO needs to do more to systematically bring together and build on the insight and learning from existing AI activity across government. In addition to the piloting activity underway across a range of government bodies, there are programmes led or funded by government that support AI development and adoption. These include, for example, programmes funded by UK Research and Innovation (UKRI) and the NHS AI Lab. Almost three-quarters (74%) of bodies responding to our survey told us that support for knowledge sharing was very important, the highest response for any area of support. CDDO is responsible for systematically bringing together and building on this insight and learning. It recognises that it needs to do more, particularly in response to the growth in generative AI. In late 2023 it began setting up an AI team within CDDO to take this forward. Separately, the i.AI, as a centre of excellence, aims to offer technical expertise, including sharing of AI infrastructure and resources across government (paragraphs 3.2 to 3.6 and Figure 10).

15 Implementing the government's public sector AI adoption strategy successfully will depend on learning lessons from complex cross-government transformation programmes. Our previous work (both on digital transformation in government and good practice in cross-government working) has identified essential lessons for the government to get right at the outset if large-scale transformation programmes are to be successful. These lessons include the importance of understanding the business need, ensuring strong leadership and clear accountabilities, clarity on outcomes and performance measures, assessing workforce impacts, addressing legacy systems and data access and quality, and having the right skills in place (paragraphs 3.7 and 3.8).

16 Updating legacy systems and improving data quality and access is fundamental to exploiting AI opportunities but will take time to implement. Appropriate digital and data foundations need to be in place to support the transformational benefits of AI. Large quantities of good-quality data are important to train, test and deploy AI models. Our survey found that limited access to good-quality data was a barrier to implementing AI and central government support was important to address this. The government recognises more action is needed to address legacy issues and to improve data access and quality to avoid limiting the adoption of AI in the public sector. The government's 2022-2025 roadmap for digital and data sets out its plans to address these issues, over the next few years. For example, CDDO expects to have agreed remediation plans in place to tackle the legacy IT systems with the highest levels of risk by 2025, but fully addressing these legacy system issues will take longer. Identification of strategically important data in departments is not expected until spring 2024 and full department-wide data maturity assessments designed to build a picture of strengths and weaknesses of data across government are not expected to start until autumn 2024 (paragraphs 3.9 to 3.15 and Figures 9 and 10).

17 Government standards and guidance to support responsible and safe adoption of AI are still under development. The Algorithmic Transparency Recording Standard (ATRS), developed to improve transparency and provide information about the algorithmic tools used in government, is not widely used. In February 2024 DSIT announced it would make ATRS a mandatory requirement for all government departments. DSIT, which also leads the government's strategy and engagement in global digital technical standards (including on AI) told us that there are opportunities for it to work more collaboratively across government to ensure that government standards for AI take global standards into consideration as these develop. Some government bodies we interviewed described finding it difficult to navigate the range of guidance available and being unclear on where to go for a definitive view of what they need to consider. Around two-thirds of survey respondents felt support from the centre was very important to address legal risks (70%) and risks to privacy or data protection, or cyber security breaches (63%). CDDO published guidance on using generative AI in government in January 2024, and has plans to publish broader guidance on the use of AI in government by summer 2024. The Government Analysis Function is also reviewing its guidance to take account of AI, including updating the Aqua Book, its guidance on producing quality analysis (paragraphs 3.16 to 3.23 and Figures 10 and 11).

18 CDDO is developing its digital and technology spend controls to improve assurance of high-risk AI use cases. CDDO is responsible for oversight and assurance of digital and technology spend across government. As part of these controls, departments must comply with the Technology Code of Practice, which includes privacy, security and data protection requirements, as well as requirements to comply with ethics guidance in cases of automated decision-making. In 2024, CDDO expects to roll out a new process across government to improve how it identifies digital and technology spend that has a substantive or high-risk AI component, to ensure these cases are given appropriate scrutiny (paragraphs 3.24 and 3.25).

19 Assurance of AI within government bodies is variable and still developing. Reflecting the early stage that government bodies are at in adopting AI, only 30% of all survey respondents reported that they had risk and quality assurance processes that explicitly incorporated AI risks, although a further 46% had plans to put these in place. DSIT is developing tools to embed AI assurance into public procurement frameworks. CDDO is also considering how best to support public sector bodies to technically assure AI products they have procured (paragraphs 3.26 to 3.28 and Figure 12).

20 Departments identified a lack of AI skills as a key barrier to adoption of AI in government. Our survey found that difficulties recruiting or retaining staff with AI skills was one of the most common barriers to AI adoption, identified by 70% of respondents. Our previous work in 2023 found that pay levels in the public sector do not attract the talent required for the scale of digital transformation needed in the UK, and there were over 4,000 digital, data and technology vacancies in government by October 2022. CDDO recognises that lack of skills is a major challenge to the successful adoption of AI, noting that there is currently limited capacity within the system to fully exploit and scale the opportunities presented by AI. Government bodies can address skills shortages through the use of contractors, agency workers, and temporary staff, with an estimated one-third of digital and data professionals in the civil service made up of these groups. The government has committed to reducing the civil service's reliance on contingent labour of this kind to reduce costs and grow long-term capability. CDDO has set out plans to build AI skills and widen awareness in the public sector. The i.AI has been established to boost technical skills and expertise in AI and also has a role to play in upskilling the wider civil service (paragraphs 3.29 to 3.32 and Figure 9).

Conclusion

21 AI presents the government with opportunities to transform public services. The centre of government has identified the potential for large-scale productivity gains from the adoption of AI across the public sector. Responsibility for AI rests with DSIT and the Cabinet Office and, while the government is working on a draft strategy for AI adoption in the public sector, it has not yet finalised it or published an implementation plan. Our survey of government bodies found that AI was not yet widely used across government, but 70% of respondents were piloting and planning AI use cases. Government departments are required to create AI adoption plans by June 2024.

22 There are risks to value for money if the government does not establish which department has overall ownership and accountability for delivery of the strategy for AI adoption in the public sector and set out appropriate roles and responsibilities for those who need to contribute. Achieving large-scale benefits is likely to require not just adoption of new technology but significant changes in business processes and corresponding workforce changes. To deliver the transformational benefits of AI, the government needs to ensure its overall programme for AI adoption is ambitious and supported by a realistic plan for the skills, funding and wider enablers needed. The government must also maintain focus on addressing other fundamental barriers to AI adoption, such as legacy systems, and data access and sharing, which will otherwise limit the extent to which it can exploit the future potential of AI.

Recommendations

a To deliver on its strategy for public sector AI adoption, the Cabinet Office should:

- Develop an integrated and feasible implementation plan building on individual departmental AI adoption plans and identifying common and scalable applications. It should assess the ability of the integrated plan to deliver the large-scale productivity gains it has identified.
- Identify and publish performance metrics and supporting monitoring arrangements that reflect the strategy's desired outcomes to promote transparency and accountability for delivery.
- In collaboration with DSIT, assess the new strategy and governance arrangements to make sure they are fit for purpose and ensure effective coordination with DSIT-led AI policy for the wider economy, and review them within a year of implementation, making any changes needed.

b The Cabinet Office should establish how government can bring together and share accessible insights from cross-government activity to identify, prioritise and test scalable AI opportunities in the public sector, including working with DSIT to leverage the wider research landscape such as UKRI's programmes.

c CDDO should continue to prioritise the 2022-2025 roadmap for digital and data, to address the legacy IT infrastructure and data quality and access barriers to adoption of AI, and ensure future plans maintain continued focus on addressing the risks that these issues pose for sustainable AI deployment.

d CDDO should work with the government functions to review existing guidance, government standards and assurance processes to ensure they adequately address the opportunities and risks of AI use and provide sufficient levers to promote safe and responsible use of AI across government, including reviewing:

- the assurance controls for digital and technology spend;
- arrangements for providing independent technical assurance for procured AI;
- in collaboration with the Government Analysis Function, how proposed updates to guidance on quality assurance and use of AI in analysis can be aligned with CDDO's wider guidance on the use of AI;
- in collaboration with DSIT, alignment of government standards with global AI standards where appropriate; and
- in collaboration with DSIT, compliance with the Algorithmic Transparency Recording Standard. This should include assessing its impact, and considering whether further levers are needed to support its implementation.

Part One

Strategy and governance

1.1 This part covers:

- the government's objectives for artificial intelligence (AI) in the public sector;
- roles and responsibilities;
- progress in establishing a cross-government strategy and supporting governance; and
- the development of AI strategies in government bodies.

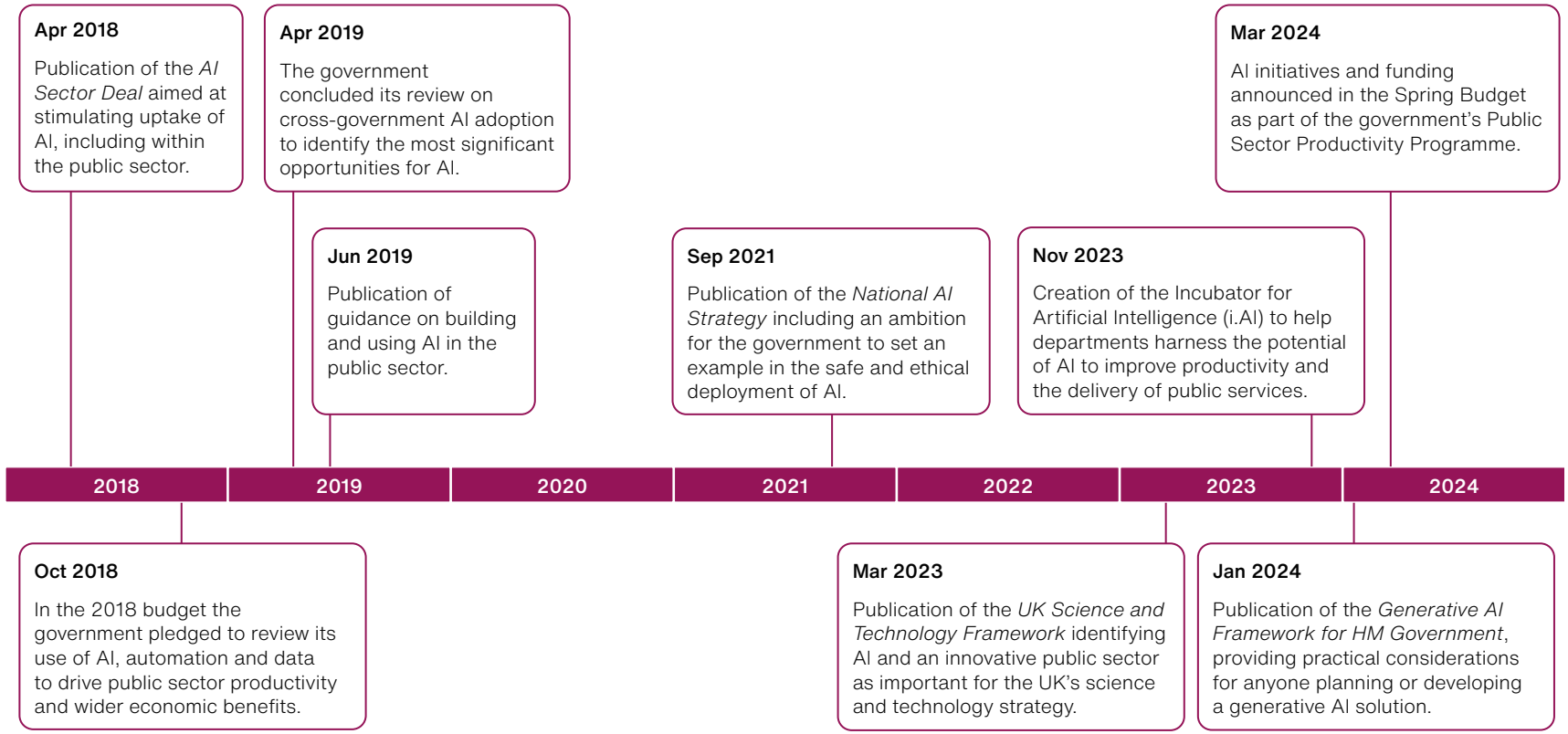
Government objectives for AI in the public sector

1.2 Encouraging AI in the public sector has been a government policy aim for several years. In 2018 the *AI Sector Deal* aimed to promote the use of AI, including within the public sector. In 2019 the government concluded a review of how it could use AI, automation and data to drive public sector productivity and wider economic benefits. This was followed in 2021 by the *National AI Strategy,* which recognised that AI offers the potential for transformation across the economy, including in the public sector, and set out an ambition for the public sector to set an example in the safe and ethical deployment of AI. In 2023, the *UK Science and Technology Framework* identified AI as one of five critical technologies for the UK, and an innovative public sector as one of ten strands of activity necessary for the UK to become a science and technology superpower by 2030. This strand of activity included coordinating initiatives to ensure public services benefit from generative AI capabilities. The Autumn Statement 2023 set out the potential for productivity benefits worth billions from applying AI to routine tasks in the public sector. In the Spring Budget 2024, the government announced funding for a number of initiatives involving AI as part of its Public Sector Productivity Programme (**Figure 1**).

Figure 1

Timeline of policy developments for public sector artificial intelligence (AI) adoption, April 2018 to March 2024

Encouraging AI in the public sector has been a government policy aim for several years



Source: National Audit Office review of publicly available sources

Roles and responsibilities

1.3 AI adoption in the public sector has the potential to significantly improve public services and bring efficiencies, but realising these benefits is challenging. Achieving large-scale benefits is likely to require not only adoption of new technology but also significant change in business practices. Successful implementation also depends on the government putting in place the right foundations, including access to skills, infrastructure and high-quality data.

1.4 Responsibility for AI sits across the Department for Science, Innovation & Technology (DSIT) and the Cabinet Office. There is therefore potential for confusion and overlap between departments in supporting AI adoption in the public sector. Our understanding of current roles and responsibilities is set out in **Figure 2** on pages 17 and 18.

Cross-government strategy for AI adoption in the public sector

1.5 In complex cross-government transformation programmes of the kind required for AI adoption at scale, a strategy with clear accountabilities and supporting governance arrangements is essential for success.

1.6 Government action to support adoption of AI in the public sector following the publication of the 2021 *National AI Strategy* lacked a coherent strategy or supporting governance arrangements. Activities referenced in the strategy to support its aim for the public sector to become an exemplar of safe and ethical deployment of AI sit across many bodies and have not been underpinned by robust oversight structures with clear accountabilities, an implementation plan, or performance measures to track progress. The July 2022 *National AI Strategy – AI Action Plan* summarised activity but did not set out outcome measures or detailed implementation plans. Initially an AI Strategy Delivery Group was established by the Office for Artificial Intelligence to oversee delivery, but this was disbanded in March 2022. In 2023, DSIT restructured the governance of the *National AI Strategy*. It set up a new AI Directors' Policy Board in October 2023 to oversee delivery of the strategy, with representation from the Cabinet Office's Central Digital and Data Office (CDDO).

Figure 2

Roles and responsibilities in government for artificial intelligence (AI)

Responsibility for AI sits across the Cabinet Office and the Department for Science, Innovation & Technology

Department	Roles and responsibilities
Cabinet Office	The **Central Digital and Data Office** leads the Government Digital and Data function for government. Its responsibilities include: ● Setting the strategic direction for government on digital, data and technology. ● Setting government digital, data and technology standards, including for AI, like the *Technology Code of Practice*, the *Service Standard* and *Open Standards*. ● Enabling public sector adoption of AI. ● Improving capability to use AI at scale across government.
	The **Incubator for Artificial Intelligence (i.AI)** was announced in November 2023. It sits within the Cabinet Office and reports to the director of the Number 10 Data Science team. It was set up to help departments harness the potential of AI to improve productivity and the delivery of public services. The incubator will have approximately 70 staff. It will require an estimated £101 million in funding over five years between 2024-25 and 2028-29 (before inflation). Its responsibilities include: ● Working across the public sector to identify opportunities for transforming services and providing technical experts to support AI design, piloting and scaling. ● Delivering shared data and AI infrastructure. ● Supporting upskilling of civil servants in programming, engineering, data science and machine learning.
	● The **Government Digital Service** is responsible for building common digital products, platforms and services. Its role in supporting AI adoption is in scaling shared digital capability across government and supporting deployment to the public via digital platforms like GOV.UK.
Department for Science, Innovation & Technology	The **Artificial Intelligence Policy Directorate** (formerly the Office for Artificial Intelligence) is responsible for overseeing implementation of the *National AI Strategy*.[1] Its responsibilities include: ● Investing in and planning for the long-term needs of the AI ecosystem. ● Supporting the transition to an AI-enabled economy, capturing the benefits of innovation in the UK, and ensuring AI benefits all sectors and regions. ● Ensuring the UK gets the national and international governance of AI technologies right to encourage innovation and investment, and protect the public and the UK's values.
	The **Digital Standards and Internet Governance team** leads the government's policy, strategy and engagement in global digital technical standards, including those for AI. Its role includes: ● Leading government strategy on global digital standards, setting policy and leading engagement. ● Supporting the adoption of global digital standards to support public policy where appropriate. ● Supporting UK industry, government, and other experts to engage in the development of global digital standards.
	The **Responsible Technology Adoption Unit** (previously known as the Centre for Data Ethics and Innovation) leads on enabling trustworthy innovation using data and AI. Its programme includes projects that: ● Develop tools to give organisations confidence that AI and data-driven tech work the way they expect. ● Develop governance frameworks, guidance, and standards that enable organisations to use AI and data in a way that builds public trust. ● Demonstrate positive uses of data and AI to tackle global problems. ● Conduct public attitudes research to shape and inform AI policy interventions.

Figure 2 *continued*
Roles and responsibilities in government for artificial intelligence (AI)

Department	Roles and responsibilities
Department for Science, Innovation & Technology *continued*	The **National Technology Adviser**: ● Leads the Department's work on the *UK Science and Technology Framework's* vision for an innovative public sector.
	The **Artificial Intelligence Safety Institute** was established in 2023 with a mission to minimise surprise to the UK and humanity from rapid and unexpected advances in AI. Its role includes: ● Developing and conducting safety evaluations on advanced AI systems. ● Driving foundational AI safety research. ● Facilitating information exchange between the Institute and other national and international stakeholders to effectively respond to rapid progress in AI.

● Strategy
● Standards and assurance
● Testing and deployment
● Skills and capability

Note
1 The *National AI Strategy* sets out how the government plans to use AI to increase resilience, productivity, growth and innovation across the private and public sectors.

Source: National Audit Office review of publicly available sources and Cabinet Office documentation

1.7 In 2023, CDDO, DSIT and HM Treasury began working together on a strategy for AI adoption in the public sector, but this is at an early stage. The draft strategy sets out four aims.

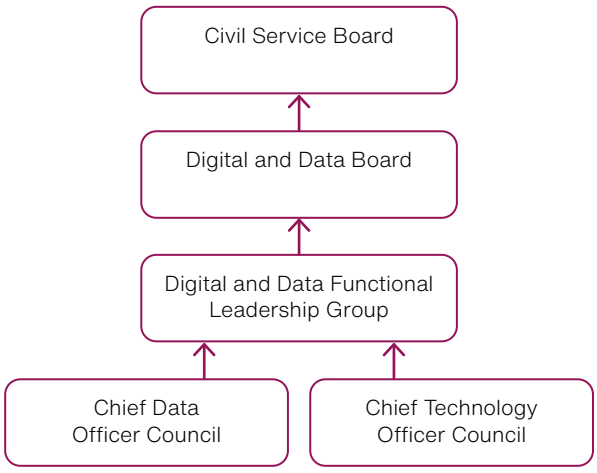
- The UK public sector will be world-leading in safe, responsible and transparent use of AI to improve public services and outcomes.
- The public will benefit from services that have been transformed by AI and will have confidence that the government's use of AI is responsible.
- Public and civil servants will have the tools, information and skills they need to use AI to deliver better outcomes.
- All public organisations will be more efficient and productive through AI adoption and have the foundations in place to innovate with the next wave of technologies.

The draft strategy sets out high-level activities and timescales, with implementation to be jointly led by CDDO, DSIT and the Incubator for Artificial Intelligence (i.AI). However, it does not set out which department has overall ownership of the strategy and accountability for its delivery or how it will be funded and resourced. Performance measures are also still to be determined.

1.8 CDDO plans to manage the programme of work to support AI adoption in the public sector via existing cross-government digital and data governance arrangements (**Figure 3**). Our 2023 report, *Lessons learned: Cross-government working*, emphasised the importance of robust governance arrangements in cross-government programmes to reduce the risk of duplication, avoid fragmentation and achieve efficiencies.[1] Working through existing structures will help ensure there is join-up with other programmes of work, including the *Transforming for a digital future: 2022 to 2025 roadmap for digital and data* (2022–2025 roadmap for digital and data). While the strategy is intended to be public-sector wide, these governance structures do not include representation from the public sector beyond central government, such as schools, police and the wider health sector. The proposed governance of the strategy is also largely separate from the cross-government governance structure established to oversee wider AI policy delivery. Led by DSIT, this governance structure is responsible for overseeing the delivery of the *National AI Strategy* and includes working groups on AI capability, risks and strategy for the wider economy. Although both governance structures include representation from CDDO and DSIT, these largely separate arrangements may increase the risk of fragmentation and increase risks to delivery. CDDO recognises that there is value in greater integration and is exploring how to achieve this. As at March 2024, the government is reviewing AI governance arrangements and has established lead AI ministers across all departments to support coordination.

Figure 3
Cross-government digital and data governance structure

The Central Digital and Data Office plans to manage the programme of work to support artificial intelligence (AI) adoption in the public sector via existing cross-government digital and data governance arrangements



Source: National Audit Office review of Central Digital and Data Office documentation

1 Comptroller and Auditor General, *Lessons learned: Cross-government working*, Session 2022-23, HC 1659, July 2023.

AI strategy and oversight in government bodies

1.9 Government bodies are at an early stage in developing their own AI strategies. Only 21% of the 87 bodies responding to our survey said they had an AI strategy. However, a further 61% had plans to develop one (**Figure 4**).

1.10 Oversight arrangements in government bodies are also in development. While 24 of the 32 bodies with deployed AI told us that their AI use cases always or usually had a named accountable responsible owner, only 15 bodies with deployed AI reported that AI use cases were always or usually identified at an organisational level before deployment. As AI activity increases, a lack of central visibility of AI use may increase the risk of incomplete assurance.

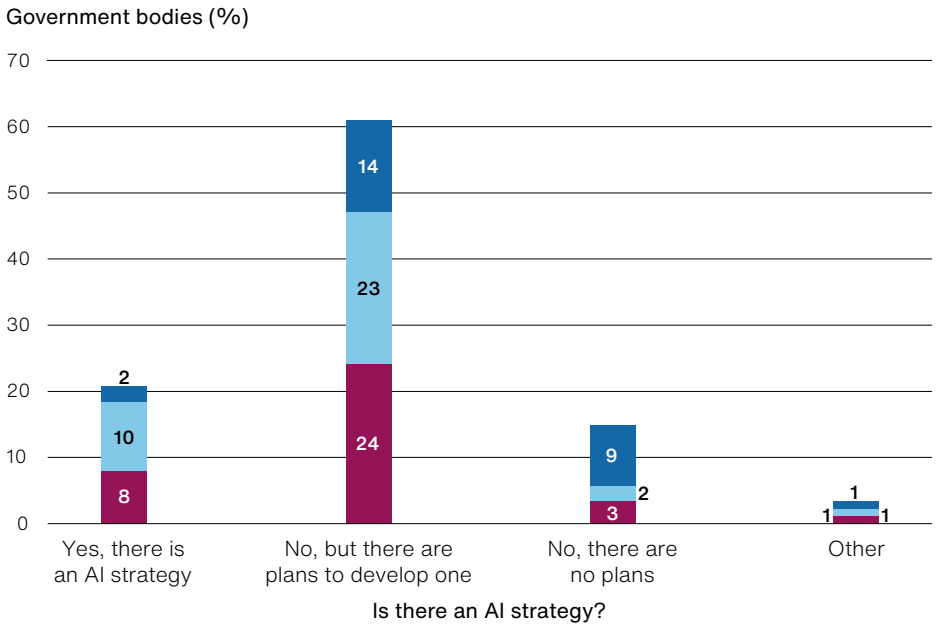
1.11 Evidence from our case studies and interviews with government departments supports the survey finding that strategies for AI use and the related governance arrangements are at an early stage of development. For example:

- The Department for Work and Pensions is in the process of developing an AI strategy as part of its wider digital and data strategy. In summer 2023, it established an AI steering board to set the strategic direction for AI and oversee the use of AI in the department. To provide further scrutiny of AI deployment, it established a separate advice and assurance group (including internal legal, risk management and policy representatives) to examine proposed AI use cases. The assurance and advisory group provides independent advice to the Steering Board, which reports into its Digital Board. It is also establishing an AI project inventory to ensure AI projects are visible and can be tracked.
- The Ministry of Justice (MoJ) has set up an AI steering group. It has plans to develop this further to include a technical design authority to review individual AI use cases and a solutions surgery to identify end-to-end solutions for business needs. MoJ expects that AI projects will engage with these governance groups at various stages of project development. On a case-by-case basis, MoJ also uses algorithm consultation panels, including end users and a data ethicist, to provide additional scrutiny of AI use cases before they are signed off for deployment.

Figure 4

Strategies for artificial intelligence (AI) in government bodies, autumn 2023

Just over a fifth (21%) of government bodies in our survey had an AI strategy



					Total
With deployed AI	7 (8%)	21 (24%)	3 (3%)	1 (1%)	**32 (37%)**
With piloted or planned AI but none deployed	9 (10%)	20 (23%)	2 (2%)	1 (1%)	**32 (37%)**
With no AI	2 (2%)	12 (14%)	8 (9%)	1 (1%)	**23 (26%)**
Total	**18 (21%)**	**53 (61%)**	**13 (15%)**	**3 (3%)**	**87 (100%)**

Notes

1 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

2 The relevant survey question was, "Does your organisation have an AI strategy or plan? By an AI strategy or plan, we mean a published or internal document that sets out your organisation's priorities for AI going forward" (87 responding bodies), with the following response options.

- **Yes, there is an AI strategy:** "Yes, there is a stand-alone AI strategy", or "Yes, AI is substantively considered within our wider data strategy." We also included instances where bodies said that AI is substantively considered within a wider digital strategy.
- **No, but there are plans to develop one:** "No there is no AI strategy, but there are plans to develop one."
- **No, there are no plans:** "No there are no current plans to develop one."
- **Other:** "Other (please specify)."

3 Respondents were grouped by their response to the survey question "How would you describe your organisation's deployment of AI?" as follows:

- **With deployed AI:** those that responded, "At least one AI use case is fully deployed."
- **With piloted or planned AI but none deployed:** those that responded, "No AI use cases fully deployed but at least one pilot is in progress or complete," or "No AI use cases fully deployed or in pilot, but planning started for at least one AI use case."
- **With no AI:** those that responded, "No plans yet for any AI use cases, but opportunities are being explored," or "No plans yet for any AI use cases."

4 Figures may not sum due to rounding.

Source: National Audit Office survey of artificial intelligence use in government

Part Two

Use of artificial intelligence in government and future opportunities

2.1 This part considers how government bodies are using artificial intelligence (AI) and how government understands the opportunities presented by AI. It sets out:

- how government bodies are currently using AI in providing public services; and
- the opportunities that the government has identified for future use of AI.

Levels of AI use

2.2 As at autumn 2023, AI was not widely used across government. Overall, 37% of the 87 government bodies responding to our survey had deployed AI use cases, reporting 74 AI use cases deployed across government (**Figure 5**). Of the bodies that reported deployed AI, each typically had one or two use cases.

2.3 Among those piloting or planning the use of AI in their organisation, there was a median of four use cases being explored, and 82% of these 61 bodies expected to deploy the first of these use cases within the next 12 months.

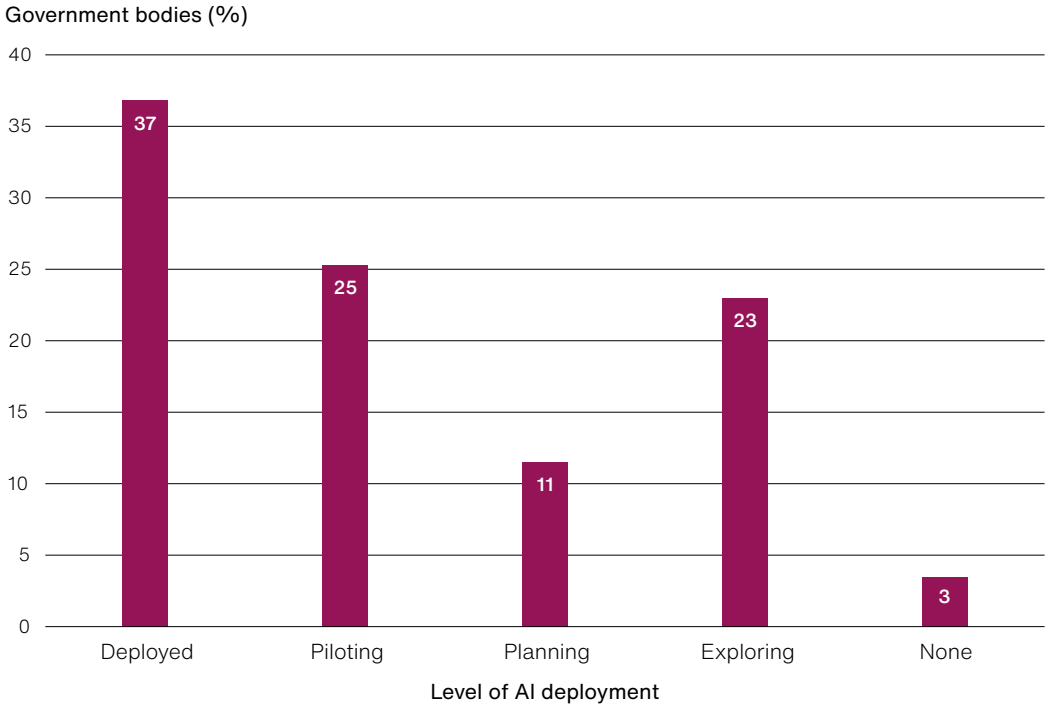
Purpose of artificial intelligence use

2.4 Responses to our survey showed that improving internal processes and supporting operational decision-making (for example, to inform prioritisation, eligibility, and enforcement decisions) were the most common purposes of deployed, piloted or planned AI use cases. AI use cases that directly provide a public service or engage with the public were less common, with only six of the 32 responding bodies with deployed AI (and 30% of the 61 bodies with piloted or planned AI) reporting this purpose (**Figure 6** on pages 24 and 25).

Figure 5

Levels of artificial intelligence (AI) use in government, autumn 2023

Just over a third (37%) of responding bodies were actively using AI, and a further 37% were actively piloting (25%) or planning (11%) use of AI[3]



Notes

1 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

2 The relevant survey question was, "How would you describe your organisation's deployment of AI?" (87 respondents) with the following response options.

- **Deployed:** "At least one AI use case is fully deployed."
- **Piloting:** "No AI use cases fully deployed but at least one pilot is in progress or complete."
- **Planning:** "No AI use cases fully deployed or in pilot, but planning started for at least one AI use case."
- **Exploring:** "No plans yet for any AI use cases, but opportunities are being explored."
- **None:** "No plans yet for any AI use cases."

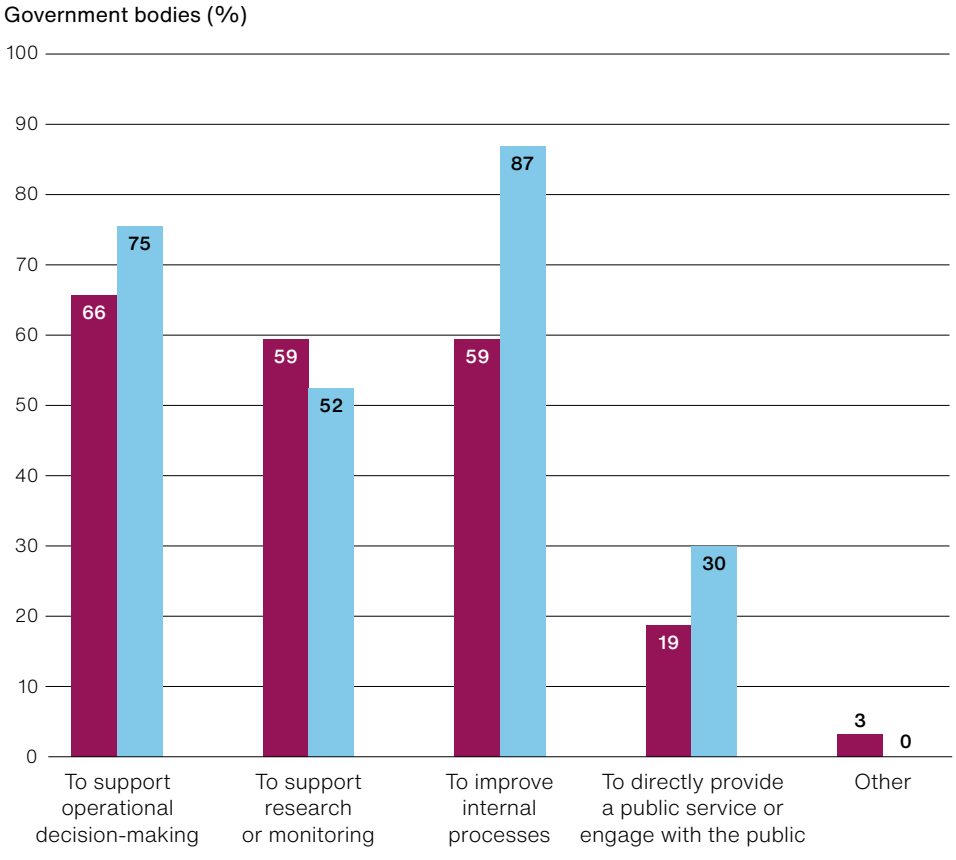
3 Figures may not sum due to rounding.

Source: National Audit Office survey of artificial intelligence use in government

Figure 6

Purposes of artificial intelligence (AI) in government, autumn 2023

The most common purpose of deployed AI across government bodies responding to our survey was to support operational decision-making, and for piloted or planned AI the most common purpose was to improve internal processes



	To support operational decision-making	To support research or monitoring	To improve internal processes	To directly provide a public service or engage with the public	Other
Number of bodies with deployed AI (out of 32)	21 (66%)	19 (59%)	19 (59%)	6 (19%)	1 (3%)
Number of bodies with piloted or planned AI (out of 61)	46 (75%)	32 (52%)	53 (87%)	18 (30%)	0 (0%)

Figure 6 *continued*
Purposes of artificial intelligence (AI) in government, autumn 2023

Notes

1 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

2 This data combines two survey questions:

- "What are the purposes of this [deployed] AI use case? Please select all that apply." (32 respondents)
- "Thinking about the AI use cases currently being planned or piloted, what are their purposes? Please select all that apply." (61 respondents, of which 32 were piloting or planning only and 29 also had deployed AI)

Where organisations had multiple deployed AI use cases, they needed to report a purpose only once for it to be included in this category. Response options were the same across both questions:

- "To support operational decision-making such as prioritisation, eligibility, and enforcement (for example, an AI use case that predicts service-users at risk of poor outcomes to help target support more effectively"
- "To support research or monitoring (for example, AI use cases that estimate road traffic volumes from satellite imagery, or AI use cases that use machine-learning to predict the energy efficiency of properties)"
- "To improve internal processes (for example, AI use cases that facilitate information retrieval or synthesis)"
- "To directly provide a public service or engage with the public (for example, an AI chatbot that generates personalised responses to queries from service-users)"
- "Other (please specify)"

3 The two categories of "with deployed AI" and "with piloted or planned AI" are not mutually exclusive. Respondents were grouped by their response to the survey question, "How would you describe your organisation's deployment of AI?" as follows:

- **With deployed AI:** those that responded, "At least one AI use case is fully deployed."
- **With piloted or planned AI:** those that responded, "No AI use cases fully deployed but at least one pilot is in progress or complete," or "No AI use cases fully deployed or in pilot, but planning started for at least one AI use case." We also included those who responded, "At least one AI use case is fully deployed," and also reported at least one piloted or planned use case.

Source: National Audit Office survey of artificial intelligence use in government

2.5 Our survey illustrated the range of AI that is currently deployed. Examples of AI in use across government include the following.

- Digital assistant to directly provide a public service: HM Revenue & Customs is using AI to automatically help customers complete tasks or find the information they are looking for. If it is unable to help, it links customers to an adviser through webchat. This use case does not use generative AI.
- Document comparison: HM Land Registry developed an AI tool to support case workers by automatically identifying differences between application forms and other registration documents. Its aim is to save valuable case worker time by reducing manual checks. The tool integrates a commercially available AI service to extract text from documents.
- Image recognition and spatial analysis: Natural England uses AI to create a habitat map of England called 'Living England', to help inform environmental policy making. It uses machine learning and satellite images, field data records and other geospatial data to predict habitats aligned to a UK habitat classification system, without the need to survey the whole country.

2.6 Across government bodies, we found common themes in the types of AI being piloted or planned. Examples from the survey include use of AI to analyse digital images to extract information from documents or to identify and classify objects, and use of AI to assess trends and patterns and monitor live data. Our analysis indicates that between 35 and 45 of the 87 survey respondents were piloting or planning generative AI use cases.[2] This suggests that there is scope for government bodies to share knowledge and work together on common forms of functionality, for example, AI use cases that support common business processes. **Figure 7** on pages 27 and 28 illustrates some common types of AI use case that are being piloted or planned across government, as reported in our survey.

Identifying opportunities for AI use

2.7 In 2019, the government concluded a review that explored the potential for AI adoption across government. Led by the Government Digital Service (GDS) and the Office for Artificial Intelligence (OAI), it carried out a review to map the landscape of AI use and identify the most significant opportunities and scope for cross-fertilisation and learning across government. The Central Digital and Data Office (CDDO) told us that no specific actions were taken or additional funding provided to the seven AI projects identified by the review as opportunities to improve the effectiveness, efficiency and productivity of key public services. However, these projects may have been taken forward by departments. The review led to publication in 2019 of guidance for using AI in the public sector with the aim of providing public sector leaders with a better understanding of the technology and guidance on the different considerations for projects with AI components.

2.8 In autumn 2023, CDDO carried out indicative analysis to identify the potential productivity gains from large-scale adoption of AI across the civil service and wider public sector. It estimated the opportunity for productivity gains by analysing the types of tasks civil servants spend their time on and quantifying the efficiencies if routine tasks were to be automated by AI. The analysis identified large-scale potential productivity gains worth billions, estimating that almost a third of tasks in the civil service could be automated. However, this analysis did not examine the feasibility of delivering these productivity gains or make an assessment of cost. To take this forward, CDDO is aware that further scrutiny and evidence collection is required and substantial investment needed.

2 'Generative AI' was defined in our survey as types of AI that can create new text, images, video, audio, or code.

Figure 7

Examples of artificial intelligence (AI) use cases being piloted or planned, autumn 2023

Government bodies are piloting or planning AI to support a range of uses

Type of AI	Summary of technique	Examples of use cases being piloted or planned
Computer vision – information retrieval	Computer vision can be used to extract information from documents that have a specific format, such as an invoice. Information is typically text or numbers.	• Extracting text from forms and documents and copying the information into more accessible case management systems. • Comparing documents to identify discrepancies.
Computer vision – image identification and classification	Computer vision can be used to identify and classify specific types of physical objects. The type of object that can be detected will depend on the data that the model has been trained on.	• Analysing CCTV images to monitor traffic flow and road traffic accidents. • Use of facial recognition technology to detect impersonation fraud in tests. • Using remote-sensing tools (eg satellite imagery) to monitor farming operations.
Coding assistance	AI can be used to write code for programming purposes. This software can assess code being written and act as an 'auto-complete' tool, suggesting possible lines of code in real time. Other systems convert programmes from one computer language to another.	• Translating code from one computer language into another. • AI coding tools to support developers, with the intention of improving their efficiency. • Using AI tools to improve coding documentation.
Fraud and error detection	Machine learning models can be trained to identify anomalies in datasets, which may indicate potential error or fraud.	• Machine learning to help identify organisations which may be fraudulent, to inform risk assessments. • Analysing invoices over time to spot trends and patterns.
Virtual assistants	A virtual assistant is a computer programme designed to perform tasks and provide information based on user commands. It uses natural language processing to understand and respond to user input.	• Supporting the generation of emails, presentations, documents and spreadsheets based on user prompts.
Text generation	Using natural language processing to produce written statements and documents, either after a prompt from the user, or by modifying an existing text.	• Analysing customer reviews to summarise consumer sentiment on a particular issue. • Creating versions of court reports to make them understandable to children involved in cases.

Figure 7 *continued*
Examples of artificial intelligence (AI) use cases being piloted or planned, autumn 2023

Type of AI	Summary of technique	Examples of use cases being piloted or planned
Research and monitoring	Using machine learning to assess trends and patterns within datasets. Over time, the model can predict likely outcomes, making it useful for monitoring live data.	• Analysis of carbon capture data to monitor and assess trends. • Monitoring markets to identify trends and issues that could lead to consumer harm.
Managing operations	Using machine learning to monitor internal business metrics, or to automate certain processes.	• Supporting case management allocation by considering the optimal employee for the role based on several factors. • Assessing relevant factors for a given case and providing a recommendation as to whether third party checks are required. • Automating routine checks as part of an application process. • Triaging correspondence to ensure it is allocated to the correct team.

Notes
1 Computer vision is a field of artificial intelligence that focuses on interpreting and understanding images and video.
2 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.
3 Examples are drawn from open text responses to the survey question, "Please give a short summary of three examples of AI use cases currently being planned or piloted (or fewer if only one or two use cases are being planned or piloted)."

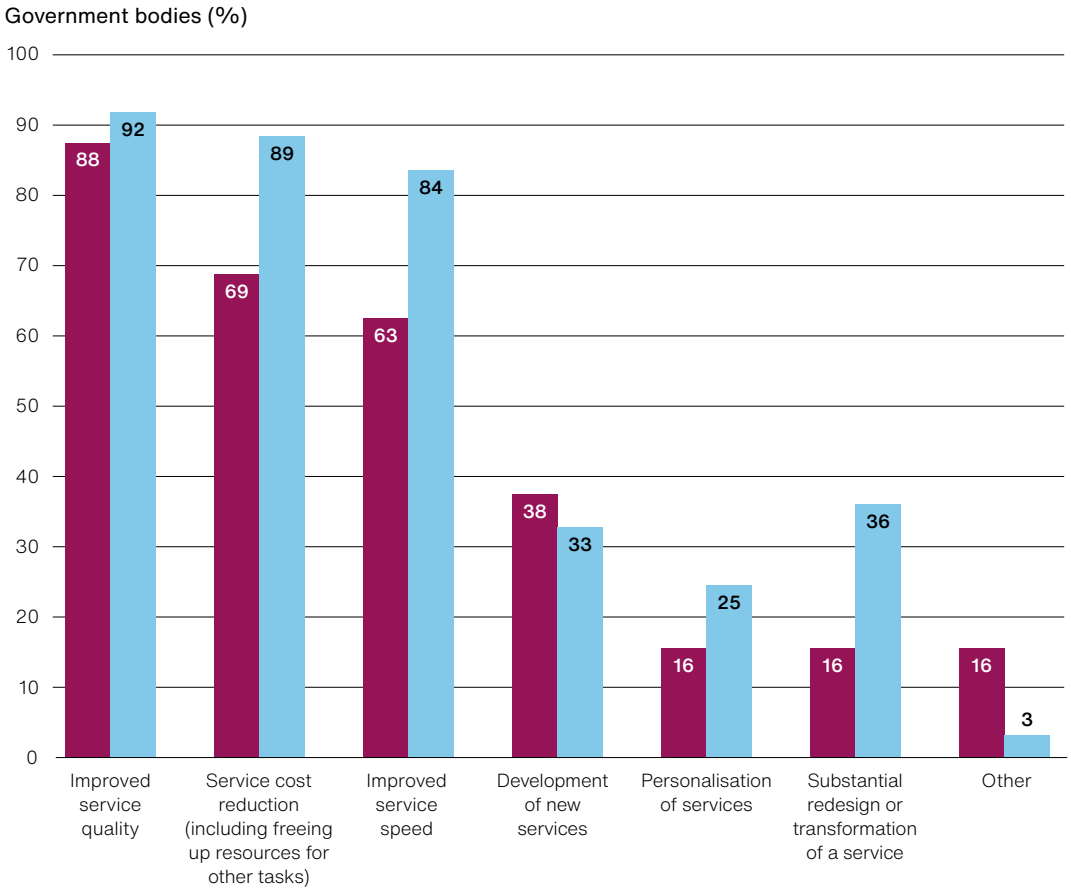
Source: National Audit Office survey of artificial intelligence use in government

2.9 Government bodies are more commonly using AI with the aim of improving existing services, rather than completely redesigning or creating new services. Responses to our survey suggest that bodies with deployed AI have, to date, most commonly implemented AI that they anticipate will improve the quality of existing services (28 of 32 bodies), make services more efficient (22 bodies) and quicker (20 bodies). Fewer bodies have deployed AI with the aim of developing new services (12 bodies), personalisation of services (five bodies) or substantial service redesign (five bodies). Of those piloting or planning AI, a higher proportion are aiming to achieve a substantial service redesign (36% of 61 bodies), suggesting that government bodies may see more opportunity ahead for transformational AI use (**Figure 8** on pages 29 and 30).

Figure 8

Expected impacts of artificial intelligence (AI), autumn 2023

Government bodies responding to our survey were more commonly focusing on how AI can improve existing services rather than developing new services



	Improved service quality	Service cost reduction (including freeing up resources for other tasks)	Improved service speed	Development of new services	Personalisation of services	Substantial redesign or transformation of a service	Other
Number of bodies with deployed AI (out of 32)	28 (88%)	22 (69%)	20 (63%)	12 (38%)	5 (16%)	5 (16%)	5 (16%)
Number of bodies with piloted or planned AI (out of 61)	56 (92%)	54 (89%)	51 (84%)	20 (33%)	15 (25%)	22 (36%)	2 (3%)

Figure 8 *continued*
Expected impacts of artificial intelligence (AI), autumn 2023

Notes

1 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

2 This data combines two survey questions:

- "Which of the following impacts do you expect to achieve with this [deployed] AI use case? Please select all that apply." (32 respondents)
- "Thinking about the AI use cases currently being piloted or planned, which of the following impacts are you aiming to achieve? Please select all that apply." (61 respondents, of which 32 were piloting or planning only and 29 also had deployed AI)

Where organisations had multiple deployed AI use cases, they needed to report an impact only once for it to be included in this category.

3 The two categories of "with deployed AI" and "with piloted or planned AI" are not mutually exclusive. Respondents were grouped by their response to the survey question, "How would you describe your organisation's deployment of AI?" as follows:

- **With deployed AI:** those that responded, "At least one AI use case is fully deployed."
- **With piloted or planned AI:** those that responded, "No AI use cases fully deployed but at least one pilot is in progress or complete," or "No AI use cases fully deployed or in pilot, but planning started for at least one AI use case." We also included those who responded, "At least one AI use case is fully deployed," and also reported at least one piloted or planned use case.

Source: National Audit Office survey of artificial intelligence use in government

Part Three

Support for adopting and scaling artificial intelligence

3.1 This part looks at the government's plans for supporting artificial intelligence (AI) adoption so that it will deliver improvements to public services. We consider:

- central government plans for supporting the testing, piloting and scaling of AI; and
- progress in addressing barriers to AI adoption.

Testing and piloting AI

3.2 The government needs to encourage piloting and experimentation, to identify the most promising technologies and use cases, and to learn how they can be implemented effectively. Our survey findings indicate that a large number of government bodies (70% of 87 bodies) are piloting and planning AI.

3.3 There are also programmes led or funded by government that support AI development and adoption. Examples include the following.

- **UK Research and Innovation (UKRI) programmes:** UKRI is the largest public funder of research and innovation in the UK. It supports a number of programmes that foster AI research and innovation, including the following.
    - **The Alan Turing Institute:** The Alan Turing Institute is the national institute for data science and artificial intelligence. Part funded by UKRI's Engineering and Physical Sciences Research Council, the Turing's goals are to advance research and apply it to national and global challenges, build skills in data science and AI through training, and drive an informed public conversation. Its Public Policy Programme aims to work with policy makers to develop innovative, data-driven solutions to public policy problems, and develop ethical frameworks for the use of AI. In partnership with the British Standards Institution and National Physical Laboratory, and supported by the Department for Science, Innovation & Technology (DSIT), it also co-leads work on the AI Standards Hub, which has been set up to support stakeholders to understand and engage with AI standardisation and strengthen AI governance practices domestically and internationally.

  - **Innovate UK, BridgeAI:** A £100 million investment programme aimed at supporting the adoption of AI and machine learning in priority sectors such as agriculture, construction, transportation, and creative industries.
  - **UKRI Challenge Fund, Artificial intelligence and data economy:** UKRI Challenge Funds are designed to address big societal challenges. The programme includes funding for research and innovation in AI and data analytics in a range of sectors, including the creative sector, the service sector and security.
  - **Fairness innovation challenge:** Delivered in partnership by Innovate UK and DSIT, organisations can apply for a share of up to £400,000 of DSIT funding for projects aimed at finding new solutions to address bias and discrimination in AI systems.
  - **Catapult network:** The catapult network is made up of nine technology and innovation centres. Established by and working in partnership with Innovate UK, the network aims to support innovation and bridge the gap between research and business through providing research and development infrastructure, specialist expertise and partnership building. The network includes Digital Catapult that has supported AI projects with infrastructure and expertise.
  - **Digital research infrastructure programme:** This programme aims to establish a national digital research infrastructure, including the development of large-scale compute facilities that support AI adoption. The programme will receive £129 million in government funding between 2022 and 2025.
- **The Manchester Prize:** A DSIT initiative that will award £1 million every year for 10 years to innovators with the most cutting-edge AI solution for public good. The first prize (running from December 2023 to March 2025) will award funding to AI projects aimed at overcoming challenges in the fields of energy, environment and infrastructure.
- **The Office for National Statistics (ONS) Data Science Campus:** The Data Science Campus was set up in 2017 and aims to build data science capability and investigate the use of new data sources for public good. It has worked with a range of public sector bodies to develop and pilot AI use cases.

- **The NHS AI Lab:** The NHS AI Lab was set up in 2019 to accelerate the safe, ethical and effective adoption of AI in health and social care. Its programmes include: AI in Health Care Award, which aims to accelerate the testing and evaluation of AI technologies in the health and care sector; the establishment of a one-stop-shop service to provide advice on regulatory requirements to organisations developing or adopting AI and digital technologies; and an initiative to support research that strengthens the ethical adoption of AI-driven technologies in health and care.

- **Compute infrastructure:** Since the 2023 Spring Budget, the government has announced over £1.5 billion of investment into compute infrastructure to support AI research and innovation.[3]

3.4 The Central Digital and Data Office (CDDO) is responsible for systematically bringing together and building on the insight and learning from existing activity across government to foster experimentation and innovation. It recognises that it needs to do more, particularly in response to the growth in generative AI. In late 2023 it began setting up an AI team within CDDO to take this forward. Separately, the Incubator for Artificial Intelligence (i.AI), as a centre of excellence, aims to identify opportunities for transforming services and offer technical expertise to support AI design, piloting and scaling. This includes sharing of AI infrastructure and resources across government.

3.5 Knowledge sharing is key to encouraging innovation, promoting consistent standards, and avoiding duplication of effort in AI adoption across government. In our survey, we asked about the importance of support from the centre of government. Almost three-quarters (74%) of responding bodies told us that support for knowledge sharing was very important (Figure 10), the highest response for any area of support. A number of cross-government groups have been set up to share learning and coordinate in specific areas. For example, these include a cross-government group set up to share learning on a pilot of a generative AI tool, an AI board set up by the Government Analysis Function to scrutinise how AI is being used in analysis, and a cross-government AI working group led by DSIT. There is also an informal cross-government digital forum on AI for digital and data professionals. However, there is currently no systematic dissemination of knowledge on AI opportunities and adoption across government.

3.6 Government guidance encourages departments to build in evaluation to their activities so they can learn from failure and drive continuous improvement. In piloting AI solutions for the public sector, government should expect failures and mechanisms are needed to ensure the insights from pilots are disseminated and used to improve future pilots.

3 'Compute infrastructure' refers to computer systems with the power to tackle computational tasks beyond the capabilities of everyday computers.

Implementing and scaling AI

3.7 To achieve the potential productivity gains identified in the CDDO's indicative analysis (set out in paragraph 2.8), the government must adopt AI at scale across the public sector. The draft strategy for AI adoption in the public sector commits all central government departments (and other in-scope public sector organisations) to create costed and reviewed AI adoption plans by June 2024. It also sets out a plan to identify common capabilities that can be used by multiple organisations and built at scale once tested. Adoption plans that are sufficiently ambitious to deliver the scale of transformational benefits envisaged will require both changes in technology as well as significant business process and corresponding workforce changes.

3.8 Our previous work has identified lessons for government to get right at the outset if large scale transformation programmes are to be successful.[4] These include the following.

- **Understanding the business need:** The government must identify and understand the business need, before it determines the best solution for the problem. Without careful consideration at the outset of the complexities and interdependencies involved, the risk of programme failure increases. Our case studies reiterated the importance of assessing the business need before determining what solution (including what AI technology) might be needed.
- **Clear accountabilities and senior leadership:** Clear accountability structures are needed to ensure senior leaders can be held to account for delivery. In cross-government programmes, like AI adoption in the public sector, appointing a lead department to oversee delivery is important and senior sponsorship and strong leadership is also necessary. The draft strategy for AI adoption in the public sector does not set out a lead department with overall accountability.
- **Identifying desired outcomes and performance measures:** It is important to have clarity on the outcomes the programme is aiming to achieve, including the benefits it expects to realise. Key performance indicators should be tracked, including establishing baseline measures at the outset against which to assess progress. These have not yet been put in place for the strategy for AI adoption in the public sector.
- **Assessing workforce impacts:** Realising the benefits of large-scale adoption of AI will require changes in the roles of civil servants. The implications for the overall composition of the workforce and the skills required are not yet considered in detail in the strategy for AI adoption in the public sector.

4 Comptroller and Auditor General, *Digital Transformation in the NHS*, Session 2019–2021, HC 317, National Audit Office, May 2020; Comptroller and Auditor General, *The challenges in implementing digital change*, Session 2021-22, HC 575, National Audit Office, July 2021; Comptroller and Auditor General, *Cross-government working: good practice*, National Audit Office, July 2023.

- **Addressing legacy systems and data:** The government relies on legacy systems (with associated data quality and consistency issues) for many important services. We heard from case studies the importance of considering the dependencies between AI adoption plans and wider digital transformation programmes to ensure plans are feasible and build on existing modernisation programmes.
- **Ensuring the right mix of capability:** Successful implementation of AI programmes is dependent on having the right skills in place. Case studies noted that access to analytical skills was important to understand opportunities and to design and engineer AI use cases. Digital and technology capacity was also needed to implement AI solutions. A case study with experience of trialling AI also noted the importance of capacity within operational teams to trial AI use cases and support adoption.

Tackling the infrastructure and digital enablers

3.9 Delivering the transformational benefits of AI depends on establishing the foundational infrastructure and digital enablers. The government's 2022-2025 roadmap for digital and data sets out six cross-government missions to address issues including legacy infrastructure as well as data quality and data-sharing challenges. AI adoption plans will need to consider this wider context and ensure that dependencies with cross-government strategies such as the 2022-2025 digital and data roadmap are understood.

Tackling legacy IT infrastructure

3.10 The government faces challenges with non-standard architecture, back-office inefficiencies and manual workarounds. Decisions on how to change or build new systems need a good understanding of these IT systems and their dependencies. Building AI tools on top of existing systems without addressing these fundamental issues will limit the extent that the government can exploit the potential of AI.

3.11 The government recognises that legacy IT infrastructure debt has built up over time. These legacy systems are risky, inefficient and costly to run and are a barrier to delivering better services. As part of the government's 2022-2025 *roadmap for digital and data*, organisations are using the legacy IT risk assessment framework to assess the risks associated with outdated IT systems. We reported in 2023 that CDDO expects to have agreed remediation plans in place by 2025 for the riskiest systems, but fully addressing these legacy issues will take some time.[5]

5 Comptroller and Auditor General, *Digital transformation in government: addressing the barriers to efficiency*, Session 2022-23, HC 1171, National Audit Office, March 2023.

Tackling data access and quality

3.12 Our previous work on *Digital transformation in government* found that significant quality issues in operational data hinder transformation within departments and data sharing between them.[6] Our report on cross-government working identified common challenges such as poor-quality data, lack of consistent data, and impractical data-sharing agreements.[7]

3.13 Tackling data quality and access issues across government remains slow and difficult. Access to good-quality data was identified as a barrier to implementing AI by 62% of the 87 government bodies responding to our survey. Support on improving data access and quality was very important for half of survey respondents (51%).

3.14 The government recognises that data access and quality is important for the successful adoption of AI in the public sector. Large volumes of good quality data are important to train, test and deploy AI models. The government's 2022-2025 *roadmap for digital and data* sets an ambition to improve data governance as well as data quality and access. It includes the following initiatives.

- **Developing data maturity assessments:** CDDO is working with departments to carry out data maturity assessments. These assessments are designed to build a picture of the strengths and weaknesses of data across government and help guide future interventions. Initial assessments have focused on specific business areas, and full department-wide data maturity assessments are not expected to start until autumn 2024.
- **Creating a centralised online hub for data discovery and sharing:** CDDO is creating a centralised online hub to make it easier to discover and share data across government. This 'marketplace' is being piloted in spring 2024.
- **Establishing essential shared data assets:** CDDO is leading cross-government work to identify strategically important data that are important for cross-government operations. By the end of April 2024, it expects all government departments to identify their essential shared data assets, with the aim of making these more accessible through a data catalogue as part of the centralised online hub.

3.15 DSIT is responsible for setting the conditions to make data appropriately usable, accessible and available across the economy. CDDO is working with DSIT to investigate how the data marketplace it is developing could be expanded. This is to make more public sector data available beyond government to support research and innovation and improve public services, while protecting people's data rights and private enterprises' intellectual property.

6 Comptroller and Auditor General, *Digital transformation in government: addressing the barriers to efficiency*, Session 2022-23, HC 1171, National Audit Office, March 2023.
7 Comptroller and Auditor General, *Lessons learned: Cross-government working*, Session 2022-23, HC 1659, July 2023.

Standards and assurance

3.16 Alongside potential for public benefit, AI also brings with it a range of risks that must be addressed. These risks are set out in the government's white paper *A pro-innovation approach to AI regulation,* and include risks to fairness, security, human rights, safety, privacy and societal wellbeing. These risks must be managed effectively to support AI adoption and maintain public trust (identified as a barrier to AI adoption by 43% of the 87 bodies responding to our survey).

3.17 We found from our survey that government bodies identified a range of AI risks as barriers to implementing AI in their organisations. These included legal risks, such as lack of understanding or clarity on legal liability (67% of the 87 responding bodies); risks of inaccurate outputs (for example, due to bias, discrimination or disinformation (57%); and security risks, including risks to privacy, data protection and cyber security breaches (56%) (**Figure 9** overleaf). It also showed there was clear appetite for help from the centre of government on these issues. Around two-thirds of respondents felt support from the centre was very important to address legal risks (70%) and risks to privacy or data protection, or cyber security breaches (63%). Over half felt support to address risks to the accuracy of outputs (for example, from bias, discrimination and disinformation) was very important (56%) (**Figure 10** on page 39).

Standards

3.18 The government sets standards to promote consistency and to provide a basis for risk management, assurance and continuous improvement. CDDO is responsible for cross-government standards for digital, data and technology including:

- the *Service Standard,* which sets standards for how government bodies create and run digital services for the public; and
- the *Technology Code of Practice*, which sets standards for how government bodies design, build and buy technology.

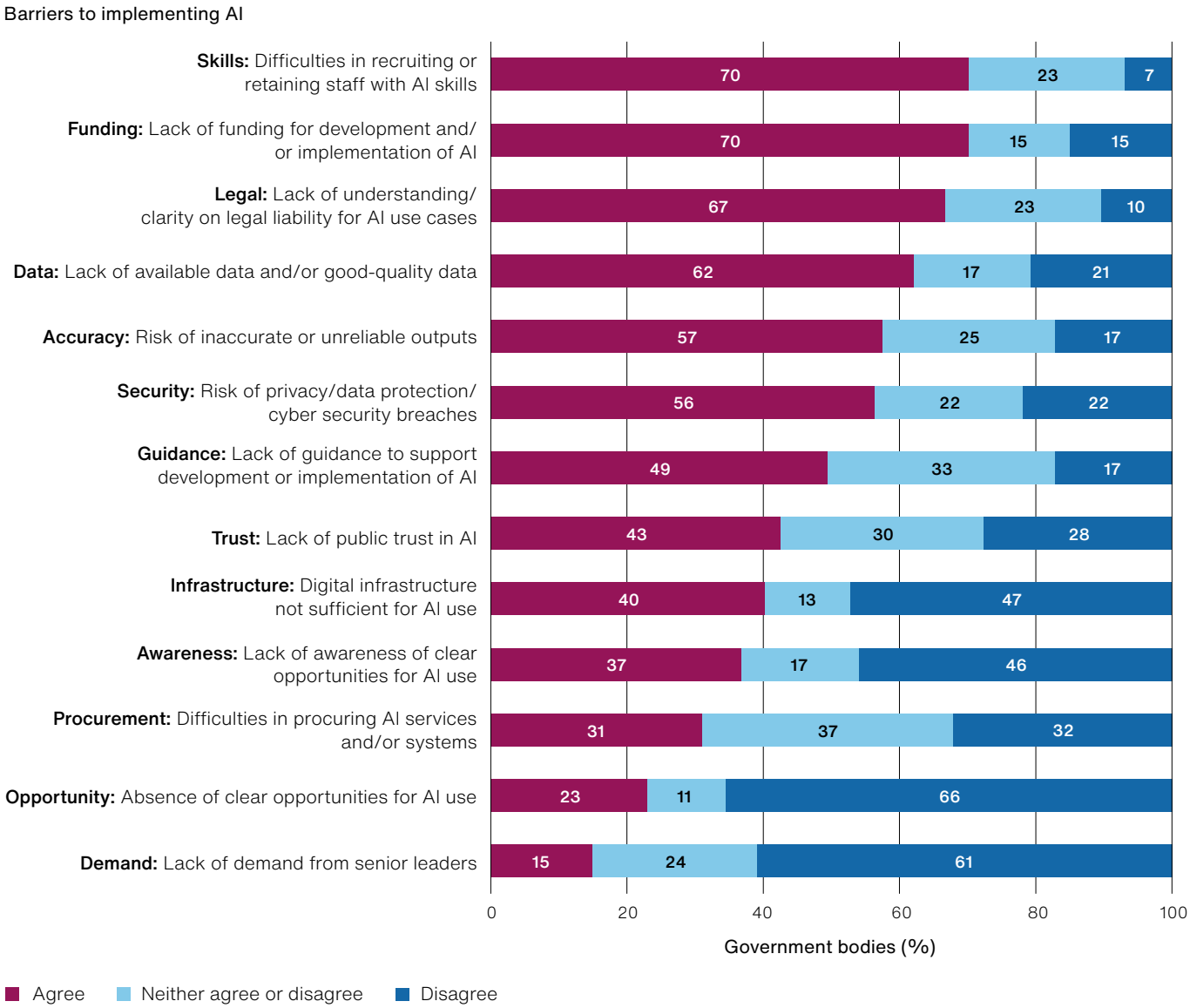
These standards include requirements to address security, privacy and data protection risks. The *Technology Code of Practice* also requires that new technology involving automated decision-making must comply with ethics guidance on fairness, transparency and accountability.[8]

8 Cabinet Office and Department for Science, Innovation & Technology, *Ethics, Transparency and Accountability Framework for Automated Decision-Making,* accessed February 2024.

Figure 9

Barriers to implementing artificial intelligence (AI), autumn 2023

Skills, funding and legal concerns were the most commonly identified barriers to AI implementation by government bodies responding to our survey



Notes

1 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

2 The relevant survey question was, "To what extent do you agree or disagree that the following are barriers to implementing AI use cases in your organisation?" (87 respondents).

3 Government bodies responding "strongly agree" or "agree" are combined and reported as "agree". Government bodies responding "strongly disagree" or "disagree" are combined and reported as "disagree".

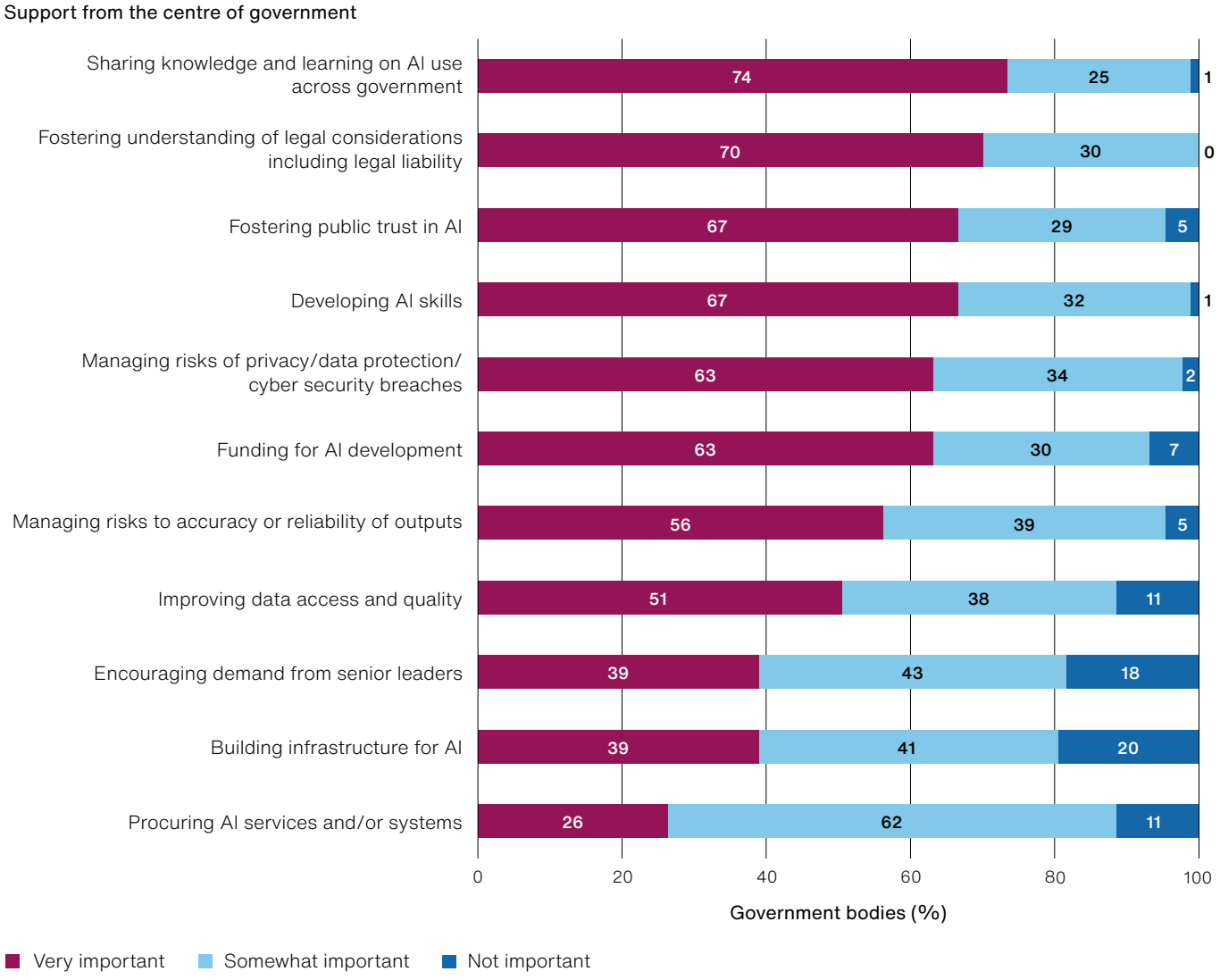
4 Figures may not sum due to rounding.

Source: National Audit Office survey of artificial intelligence use in government

Figure 10

Importance of support from the centre of government for artificial intelligence (AI) adoption, autumn 2023

Support from the centre of government on sharing knowledge was identified as very important by 74% of government bodies responding to our survey



Notes

1 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

2 The relevant survey question was, "Thinking about the opportunities for future use of AI in your organisation, how important is support from the centre of government on the following?" (87 respondents).

3 Figures may not sum due to rounding.

Source: National Audit Office survey of artificial intelligence use in government

3.19 DSIT leads the government's strategy and engagement on global digital technical standards. These are voluntary agreements on technical standards that are used to promote consistent methods, processes and practices. DSIT told us that there are opportunities for it to work more collaboratively across government to ensure that government standards for AI take global standards into consideration as these develop. For example, DSIT is developing a self-assessment toolkit to support private sector organisations to embed ethical and responsible AI practice, which will be based on an international standard for AI management systems (paragraph 3.27).

3.20 The *Algorithmic Transparency Recording Standard* (ATRS), developed to support public sector bodies to improve transparency and provide information about the algorithmic tools they are using, is not widely used.[9] The approach, developed in 2021 by DSIT in collaboration with CDDO, was validated as a government standard in September 2022 and government encourages its use. The standard is intended to be used when an algorithm has a significant influence on a decision-making process with direct or indirect public effect or when it directly interacts with the public. Eight of 32 organisations responding to our survey that had deployed AI said they were always or usually compliant with the standard (**Figure 11**). In February 2024, DSIT announced that it intends to make the ATRS a mandatory requirement for all government departments during 2024 and expand its use to the broader public sector over time.

Guidance

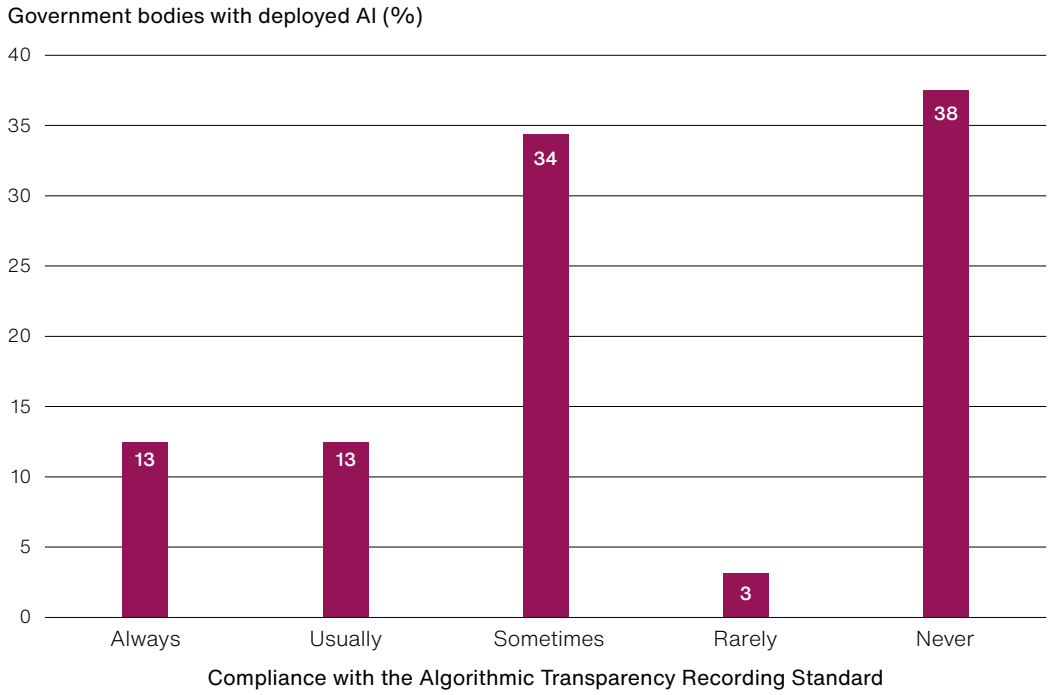
3.21 We found from our survey responses that half of government bodies (49%) identified a lack of guidance to support development or implementation of AI as a barrier. Some government bodies we interviewed described finding it difficult to navigate the range of guidance available and being unclear on where to go for a definitive view of what they need to consider. Government bodies need timely and clear guidance to minimise duplication of effort and to ensure they have the support they need to take advantage of the opportunities of AI, while mitigating the risks.

9 Central Digital and Data Office and Centre for Data Ethics and Innovation, *Algorithmic Transparency Recording Standard,* accessed February 2024.

Figure 11

Compliance with the Algorithmic Transparency Recording Standard, autumn 2023

Eight out of 32 government bodies with deployed artificial intelligence (AI) said they were always or usually compliant with the Algorithmic Transparency Recording Standard



	Always	Usually	Sometimes	Rarely	Never	**Total**
Number of bodies with deployed AI	4 (13%)	4 (13%)	11 (34%)	1 (3%)	12 (38%)	**32 (100%)**

Notes

1 The Algorithmic Transparency Recording Standard was developed to support public sector bodies to improve transparency and provide information about the algorithmic tools they are using.

2 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

3 The relevant survey question was, "To what extent are the AI use cases deployed in your organisation compliant with the Algorithmic Transparency Recording Standard?" (32 respondents).

4 Figures may not sum due to rounding.

Source: National Audit Office survey on artificial intelligence use in government

3.22 CDDO is responsible for providing guidance to government bodies on digital, data and technology. It published guidance in January 2024 on the use of generative AI in government (which had not been published at the time of our survey). The guidance sets out 10 principles for safe, responsible and effective use of generative AI and makes practical recommendations for organisations.[10] CDDO has plans to build on this and publish broader guidance on the use of AI in government by summer 2024 to support the public sector to use AI safely and responsibly. It is also carrying out a review of the data ethics guidance available to identify gaps, improve access and better support users. In November 2023, the National Cyber Security Centre, with international partners, published guidelines for secure AI system development.[11]

3.23 The Government Analysis Function is reviewing its guidance to take account of AI. By autumn 2024, it aims to publish a revised Aqua Book (its guidance on producing quality analysis), which will include updates to make sure it is relevant to AI. It also plans to develop separate guidance on the use of AI in analysis.

Assurance

3.24 Once standards have been set, assurance processes help ensure that requirements are met. Our past reports on evaluation and quality assurance of models have highlighted how weaknesses in the oversight and assurance of requirements had contributed to variation in performance across departments.[12]

3.25 CDDO is responsible for oversight and assurance of digital and technology spend across government. As part of these controls, departments must comply with the *Technology Code of Practice*, as set out in paragraph 3.18. CDDO is developing its digital and technology spend controls to improve how it identifies high-risk AI use cases to ensure these cases are given appropriate scrutiny. It is trialling a new process, which it expects to roll out across government during 2024. This aims to improve how CDDO identifies digital and technology spend that has a substantive or high-risk AI component (for example, technology that uses AI as a significant part of decision-making, or requires training with government data) to inform its risk assessment.

10 HM Government, *Generative AI Framework for HM Government*, accessed February 2024.
11 National Cyber Security Centre, *Guidelines for secure AI system development*, November 2023, accessed February 2024.
12 Comptroller and Auditor General, *Evaluating Government Spending*, Session 2021-22, HC 860, National Audit Office, December 2021; Comptroller and Auditor General, *Financial Modelling in Government*, Session 2021-22, HC 1015, National Audit Office, January 2022.

3.26 Building assurance into public procurement of AI is another way of ensuring AI risks are mitigated. Of the AI use cases currently deployed by government bodies responding to our survey, 39% (29 use cases) had been developed in collaboration with commercial suppliers or other non-public sector partners, while a further 7% (five use cases) had been procured commercially 'off the shelf'. In 2020, the Crown Commercial Service launched an Artificial Intelligence Dynamic Purchasing System (AI DPS) to support AI procurement. The AI DPS includes some basic assurance measures such as standard contractual arrangements around data protection and intellectual property rights, and supplier commitments to ethical standards and guidelines where required by the buyer. Guidance is provided to buyers using the DPS on including ethical screening questions in tender documents such as questions related to fairness, bias, and explainability.

3.27 CDDO and DSIT are exploring ways to further embed AI assurance into public procurement frameworks. DSIT is developing a self-assessment toolkit to support private sector organisations to embed ethical and responsible AI practice. DSIT's aim is to include this toolkit in public procurement frameworks to create a baseline requirement for government suppliers of AI products and services. CDDO is also considering how best to support public sector bodies to technically assure AI products they have procured.

3.28 Government bodies are at an early stage in adopting AI and they are still developing their assurance processes. Almost half of the 32 organisations with deployed AI responding to our survey did not maintain a register of live AI use cases (15 bodies), perhaps reflecting the low levels of AI currently deployed in each body (typically one or two use cases). Only 30% of all 87 survey respondents reported that they had risk and quality assurance processes that explicitly incorporated AI risks, although a further 46% had plans to put these in place (**Figure 12** on pages 44 and 45).

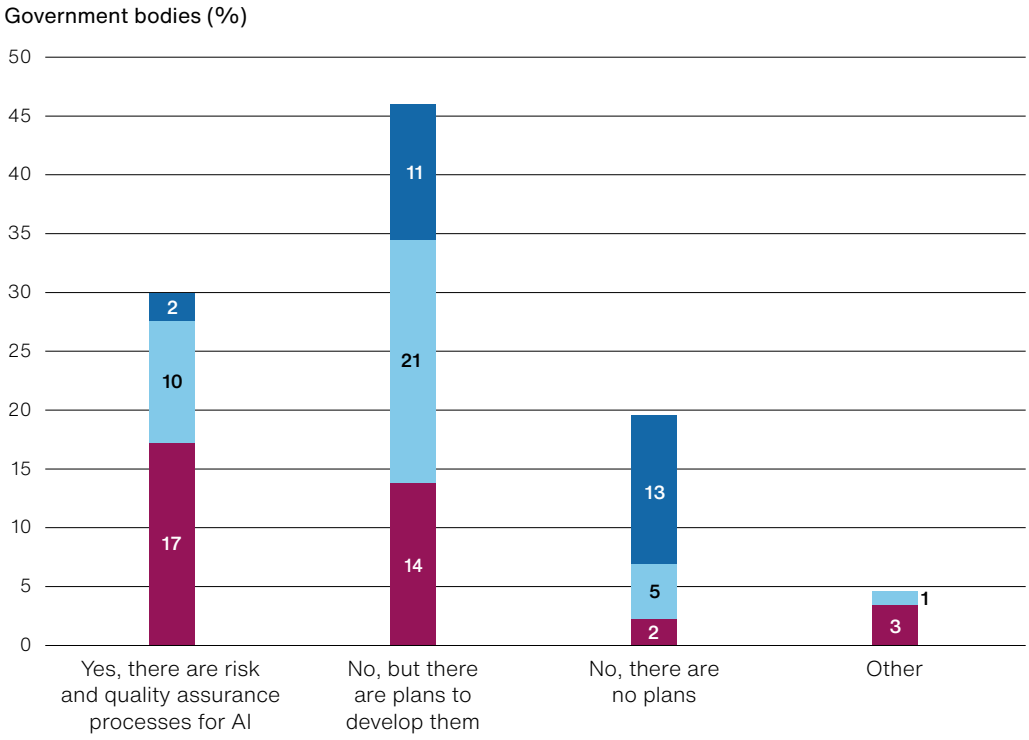
Skills

3.29 The government recognises the need to attract and retain digital capability to support the adoption of AI. A range of initiatives have been announced with the aim of upskilling the existing workforce and building knowledge and capacity. For example, One Big Thing (an annual learning and development initiative for civil servants to take shared action around a priority) selected improving data skills and confidence across the civil service as its focus in 2023.

Figure 12

Artificial intelligence (AI) risk and quality assurance processes, autumn 2023

Government bodies are at an early stage of developing assurance processes for AI



					Total
With deployed AI	15 (17%)	12 (14%)	2 (2%)	3 (3%)	**32 (37%)**
With piloted or planned AI but none deployed	9 (10%)	18 (21%)	4 (5%)	1 (1%)	**32 (37%)**
With no AI	2 (2%)	10 (11%)	11 (13%)	0 (0%)	**23 (26%)**
Total	**26 (30%)**	**40 (46%)**	**17 (20%)**	**4 (5%)**	**87 (100%)**

Figure 12 *continued*
Artificial intelligence (AI) risk and quality assurance processes, autumn 2023

Notes

1 In autumn 2023, we surveyed 89 government bodies, including the main government departments and the majority of arm's-length bodies with annual operational expenditure over approximately £83 million. The response rate was 98% (or 87 bodies). Please see Appendix One for more details.

2 The relevant survey question was, "Does your organisation have risk and quality assurance processes in place to mitigate risks associated with AI use cases?" (87 respondents), with the following response options.

- **Yes, there are risk and quality assurance processes for AI:** "Yes, there is an AI-specific risk and quality assurance process," or "Yes, AI risks are explicitly identified and managed within existing risk and quality assurance processes (for example, Data Protection Impact Assessments, Equality Impact Assessments, digital risk registers)."
- **No, but there are plans to develop them:** "No, but there are plans to incorporate AI risks into our risk and quality assurance processes."
- **No, there are no plans:** "No, and there are no plans to incorporate AI risks into our risk and quality assurance processes."
- **Other:** "Other (please specify)."

3 Respondents were grouped by their response to the survey question, "How would you describe your organisation's deployment of AI?" as follows:

- **With deployed AI:** those that responded, "At least one AI use case is fully deployed."
- **With piloted or planned AI with none deployed:** those that responded, "No AI use cases fully deployed but at least one pilot is in progress or complete," or "No AI use cases fully deployed or in pilot, but planning started for at least one AI use case."
- **With no AI:** those that responded, "No plans yet for any AI use cases, but opportunities are being explored" or "No plans yet for any AI use cases."

4 Figures may not sum due to rounding.

Source: National Audit Office survey of artificial intelligence use in government

3.30 Our survey respondents reported difficulties recruiting or retaining staff with AI skills as one of the most common barriers (identified by 70% of 87 respondents) to AI adoption. People with digital skills command a premium in the market. Our 2023 report on *Digital transformation in government* found that pay levels in the public sector do not attract the talent required for the scale of transformation needed in the UK.[13] In April 2022, there were 3,900 digital, data and technology vacancies, rising by 7% to 4,100 by October 2022. The report concluded that government may need to review what activities it could realistically achieve if skills shortages persist. CDDO has set out its progress against commitments to boost digital and data skills in the September 2023 update to its 2022-2025 roadmap for digital and data.[14]

13 Comptroller and Auditor General, *Digital transformation in government: addressing the barriers to efficiency*, Session 2022-23, HC 1171, National Audit Office, March 2023.
14 Central Digital and Data Office, *Transforming for a digital future: 2022 to 2025 roadmap for digital and data* – updated September 2023, accessed February 2024.

3.31 CDDO recognises that lack of skills is a major challenge to the successful adoption of AI, noting that there is limited capacity within the system to fully exploit and scale the opportunities presented by AI. The i.AI has been established to boost technical skills and expertise in AI and it also has a role to play in upskilling the wider civil service. The i.AI is recruiting a central team with technical expertise in AI, using pay exceptions on a case-by-case basis to offer pay above levels typically paid to digital and data professionals in the civil service. However, the wider skills shortages set out in our 2023 report indicate that addressing the issue of skills remains challenging.[15] One way in which government bodies address this skills shortage is by using contractors, agency workers, and temporary staff, with estimates from autumn 2023 indicating that approximately one-third of digital and data professionals in the civil service is made up of these groups. The government has committed to reducing the civil service's reliance on contingent labour of this kind to reduce costs and grow long-term capability.

3.32 CDDO has identified AI-related skills with limited coverage in the Government Digital and Data Profession Capability Framework, which sets out the skills required for digital, data and technology roles across government. It is working to update the capability framework, including working with the Government Analysis Function to update the data science role. In the draft AI adoption strategy for the public sector, CDDO has set out plans to build AI skills including establishing a public sector AI development programme for AI specialists by April 2024; rolling out AI awareness training for all civil servants by the end of 2024; and the upskilling of 90 percent of senior civil servants in the use of AI by April 2025.

15 Comptroller and Auditor General, *Digital transformation in government: addressing the barriers to efficiency*, Session 2022-23, HC 1171, National Audit Office, March 2023.

Appendix One

Our audit approach

Our scope

1 This report considers how effectively the government is setting itself up to maximise the opportunities and mitigate the risks of artificial intelligence (AI) in the provision of public services. Our primary focus for this report is government bodies, and in particular the role of the Cabinet Office and the Department for Science, Innovation & Technology (DSIT) in supporting the adoption of AI in the public sector. Specifically, the report looks at:

- the government's strategy and governance for AI use in public services;
- how government bodies are using AI and how government understands the opportunities; and
- central government plans for supporting the testing, piloting and scaling of AI; and progress in addressing barriers to AI adoption.

2 For the purposes of this report, we define AI as computer systems that use some form of machine learning for tasks. By this, we mean AI that learns from data how to do tasks rather than being explicitly programmed. Examples include AI that uses machine learning for language processing, predictive analytics, and image or voice recognition. We exclude simple rules-based automation and use of AI embedded in pre-existing tools provided by default (for example, automatic email spam filters or email smart replies). We also did not capture ad-hoc use of publicly available AI by employees of government bodies.

3 In this report we do not examine the regulation of AI in the wider economy or how deployment of AI may change the demands on public services.

4 In forming our conclusions, we drew on a range of study methods and a variety of evidence sources, as described in the paragraphs below. We collated and analysed the evidence we obtained and assessed this against our audit questions and evaluative criteria.

Our evidence base

Scoping discussions with stakeholders

5 While designing the study we held scoping meetings with a range of stakeholders to help refine our scope and inform our methodology. Discussions took place between February and June 2023 and included meetings with other audit institutions, technology consultants and government bodies, such as the Office for National Statistics (ONS) Data Science Campus and the National Cyber Security Centre. We also spoke to Dr Jonathan Bright, Head of AI for Public Services and Head of Online Safety at the Alan Turing Institute, to draw on expert perspectives on the development and use of AI in government.

Fieldwork

6 Fieldwork took place between September 2023 and February 2024, and involved interviews with government departments and wider stakeholders, document review, case studies, and a survey of government bodies.

Interviews

7 We carried out semi-structured interviews with a range of stakeholders. Interviews typically lasted an hour, and detailed notes were taken. Further detail on the range of interviews carried out is set out below.

Government departments

8 We conducted 14 interviews with representatives from the Central Digital and Data Office (CDDO), DSIT and the Incubator for Artificial Intelligence (i.AI) to inform our audit. Interviews included discussions of:

- roles and responsibilities;
- AI strategy and governance;
- risk management and ethics;
- data access and quality;
- AI standards, guidance and assurance;
- analysis of AI opportunities; and
- AI skills and capability.

9 We conducted eight interviews with representatives from other government bodies to discuss aspects of AI adoption in the public sector. These included the following:

- the Crown Commercial Service to discuss AI procurement;
- the Department for Levelling up, Housing & Communities; the Department for Transport, and Ofgem to discuss their experiences of AI adoption;
- the Government Analysis Function to discuss its role in supporting AI adoption;
- the Government Legal Department on its role in providing legal advice on matters relating to AI;
- the Information Commissioner's Office on its work on AI and data protection; and
- UK Research and Innovation to discuss its AI programme of work.

Interviews with wider stakeholders

10 We conducted five interviews with wider technology stakeholders to explore their perspectives on AI use in government. These interviews focused on their perspectives on the barriers to AI adoption in government and how these could be addressed.

Analysis approach

11 We analysed interview data thematically and used the data to inform our audit findings and triangulate evidence from other sources, including our survey of AI use in government, case studies and document review.

Departmental case studies

12 We carried out four case studies with government bodies that have deployed AI use cases, to understand their approach and to explore their perspectives on the opportunities of AI and the barriers to adoption.

Sampling approach

13 The four case studies were selected because these bodies had experience of deploying or piloting AI use cases and would be able to offer insights into how they had experienced barriers to AI use. In the case of the NHS AI Lab, it was selected because of its role in supporting AI adoption across the NHS and the perspectives it could offer about this role. We drew on insights from publicly available data and Government Internal Audit Agency reports to help make our case study selection. The four case studies were:

- Department for Work and Pensions;
- Ministry of Justice;
- Natural England; and
- NHS AI Lab.

Fieldwork

14 We conducted 15 interviews across the four case studies. These included interviews with staff on the following topics:

- AI strategy, governance and risk management;
- planned and deployed AI use cases;
- perspectives on barriers to AI use in the public sector; and
- perspectives on cross-government support for AI use.

We also reviewed documents from the case study bodies relating to governance arrangements and work programmes.

Analysis

15 We analysed case study data thematically and used it to inform our audit findings and triangulate evidence from other sources, including interviews and our survey.

Limitations of our case studies

16 The case studies are intended for illustrative purposes only and were not selected to be representative of all government bodies. They were designed to be relatively light-touch in nature to capture views and experiences of piloting and deploying AI and did not involve audits of individual AI use cases.

Document review

17 We reviewed a range of published and unpublished documents from the Cabinet Office and DSIT, including documents related to:

- strategy and governance;
- AI procurement;
- AI opportunities analysis;
- AI guidance;
- AI adoption plans; and
- standards and assurance.

Survey of AI use in government

18 We carried out a survey of government departments and arm's-length bodies to capture a snapshot of AI use in government, and to identify the barriers to AI use and what support government bodies wanted from the centre of government. The survey asked about:

- AI use cases currently deployed;
- AI use cases being piloted or planned;
- governance and risk management of AI use; and
- barriers to AI use and future support needs.

Sampling approach

19 We surveyed 89 government bodies, including the main ministerial and non-ministerial departments and 52 arm's-length bodies (**Figure 13**). We drew on the Cabinet Office's *Public Bodies 2020* dataset to identify our sample of arm's-length bodies, and updated this list based on a revised list provided by Cabinet Office to take account of arm's-length bodies that had closed or opened since the list was published.[16]

20 Our sample covered a broad group of government bodies with some exclusions to make the survey practical to administer. The sample included 17 of the 24 ministerial departments and all 20 non-ministerial departments.[17]

21 Our sample of 52 arm's-length bodies represented approximately 98% of arm's-length body operational expenditure as set out in the *Public Bodies 2020* dataset. We included arm's-length bodies with:

- annual operational expenditure of approximately £83 million or more;
- annual operational expenditure below £83 million but with levels of annually managed expenditure above that threshold; or
- high levels of funds or grants under management.

22 We excluded arm's-length bodies that:

- had closed since publication of the *Public Bodies 2020* dataset;
- would not be able to answer our survey for national security reasons; or
- had not been in operation for a full year as of autumn 2023.

Figure 13

Sampled government bodies for National Audit Office survey on artificial intelligence in government, autumn 2023

We surveyed 89 government bodies

Type of government body	Number in survey sample
Ministerial departments	17
Non-ministerial departments	20
Arm's-length bodies (executive agencies, non-departmental public bodies)	52
Total	**89**

Source: National Audit Office documentation

16 Cabinet Office, *Public Bodies 2020,* July 2021, accessed February 2024.
17 The sample did not include the Northern Ireland Office, the Office of the Secretary of State for Scotland, the Office of the Secretary of State for Wales, the Office of the Advocate General for Scotland, the Office of the Leader of the House of Commons, the Office of the Leader of the House of Lords, and the Attorney General's Office.

23 In each surveyed body, we asked for the survey to be completed by someone with the authority to respond to the survey on behalf of the organisation. We suggested this could be the Chief Digital and Information Officer (CDIO) or someone in an equivalent role, but organisations were free to determine who was best placed to complete the survey on their behalf.

Survey approach

24 The survey was carried out online and administered by the National Audit Office (NAO) using third-party survey software. The survey was piloted with two government bodies in September 2023 to test the survey questions and software. The survey was also shared with the Alan Turing Institute, the Office for National Statistics (ONS) Data Science Campus and the Government Internal Audit Agency for comment on definitions and the clarity and coverage of questions.

25 Responses were received between 3 October and 19 December 2023, with most responses received between 2 October and 31 October 2023. The survey was completed by 87 out of 89 government bodies surveyed, a response rate of 98%.

Reporting survey findings

26 To simplify some charts, some groups were combined and reported in aggregate. For example, government bodies reporting that they had either piloted or planned AI use cases are reported together in some instances. Where this is the case, we have included a note to the figure.

27 We reviewed open text responses where "other, please specify" was selected by the government body in response to survey questions. Where appropriate, we recoded responses that fitted with existing categories. This recoding was quality assured by an NAO reviewer independent of the study team.

Limitations of the survey

28 The survey findings were self-reported, and no independent verification of responses was carried out. The findings are a snapshot of AI use in the autumn of 2023 and do not capture activity in government departments since then.

29 We asked for individual detail on deployed AI use cases, but more aggregated information on use cases being piloted and planned. For example, to understand how many AI use cases were being piloted and planned, we asked respondents to provide an approximate number. This means that volumes of planned and piloted use cases reported in the survey are approximate and not exact.

30 The survey is not a census of all government bodies and should not be interpreted as such. In particular, smaller arm's-length bodies were not included in the sample, and so caution should be taken when generalising the survey findings, particularly in relation to smaller government bodies.

31 The survey does not cover AI use in the wider public sector, including use within the National Health Service, local authorities or schools.

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