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Public Services Board:
AI and Digital Transformation in the Public Sector

May 2024

Introduction

The rapid developments in artificial intelligence (AI) present numerous and unprecedented opportunities for the public sector. These include exciting prospects for improving the experience for citizens when accessing services, maximising efficiencies, and fostering innovation practices.

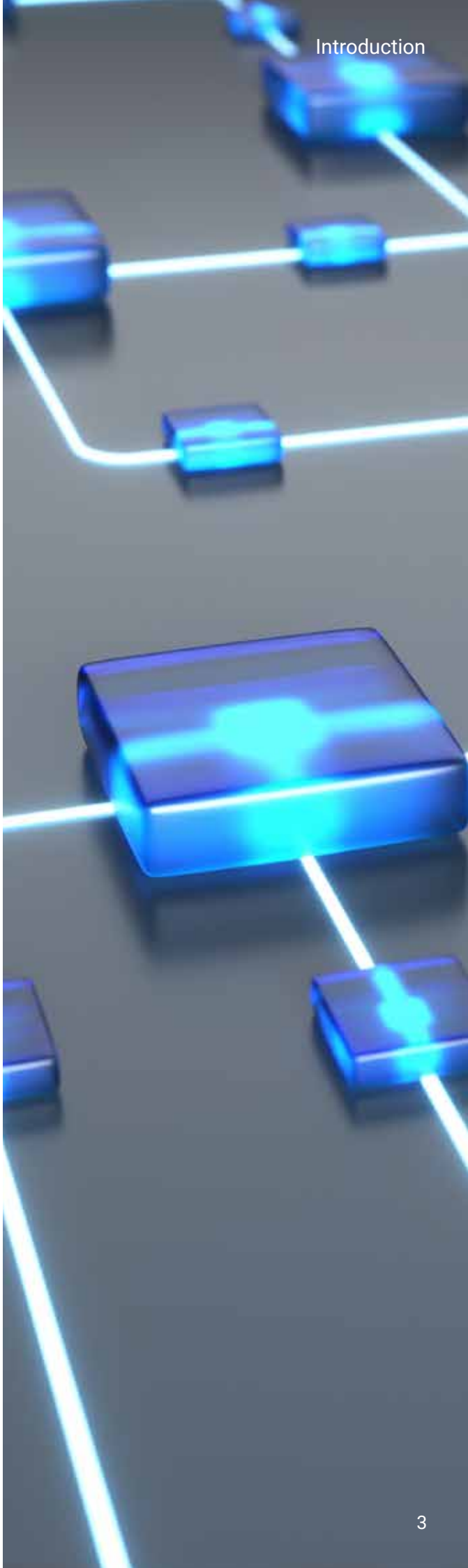
Early adopters of AI in the private sector have been able to capitalise on its benefits and are therefore uniquely placed to guide and support the government's agenda to successfully deploy AI across public sector organisations. It is also important to acknowledge the challenge of harnessing the potential of AI adoption and deployment at a time when public demand for convenient and efficient services is high, while trust in government IT systems is low.

techUK's Public Services Board (PSB) recognises the importance of the public sector capitalising on the opportunities presented by AI while also emphasising its responsible and lawful use. We support the capture of AI's unique potential to enhance existing workflows through effective adoption in the public sector, which could enable civil servants to increase productivity gains and free up vital time. We also acknowledge that individual needs and interests have to be fully considered and factored into how AI is deployed and that algorithms used in handling data are made transparent. The government's announcement that £110 million in funding would be ringfenced for the deployment of AI across the public sector has been a welcome development and shows the government's commitment to investing in innovative new technologies.

Despite the potential for AI's rapid growth across the public sector, there are both practical and cultural matters that public service leaders, at ministerial and official levels, will need to address if implementation pace and success is to be secured.

This paper, produced by the PSB, examines the opportunities and risks associated with the widespread adoption of AI in the public sector. It explores the practical solutions which can help overcome these adoption blockers and offers insights from industry on the early adoption of AI.

Through the development of this paper the PSB has produced strong recommendations that call on the government to streamline existing processes and establish efficient communication channels with departments and industry to further the effective implementation of AI in the public sector.



Opportunities

Personalisation and Engagement

AI has the potential to transform all facets of the public sector, from education, to healthcare, impacting the sector by unlocking more effective public services to citizens to meet their needs.

Example: By using chatbots and virtual assistants which can provide support for the public, more tailored services can be delivered which address citizen queries offering a more personalised and relevant response.

Automation for Efficiency

AI's integration in the public sector can significantly enhance efficiency and streamline processes, by relieving the considerable human resources currently devoted to administrative and repetitive tasks. Automation can free up this time to redirect efforts towards more strategically important tasks or those which deliver tangible improvements to support citizens.

Example: Automating data analysis will allow for larger quantities of data to be evaluated in a shorter timeframe, and without the need for human involvement. This can create more accurate results, deeper trend analysis, better decision-making and can be more cost-efficient.

AI to support decision-making

AI aided decision-making can increase accuracy, accelerate understanding, save valuable time and improve outcomes across critical public sector services, such as hospitals. Adoption of AI in decision-making processes could lead to improved efficiencies across services and ultimately improve the public's experience of using these services.

Example: By using AI to support the creation of datasets, accurate patterns and trends in data can be drawn. This will allow decision-makers in government to make more accurate and timely decisions which have a wider positive impact for the country.

Common blockers

There are some challenges to adoption which the government will face when implementing AI.

Siloed working across government departments and the slow removal of legacy debt

The prevalence of siloed working across government departments and the slow removal of legacy debt frustrates the pace at which AI is adopted. Currently, most if not all, central government authorities are looking to incorporate AI into their ways of working. However, in spite of these ambitions, the difference in the pace of this adoption can create disjointed working and hinder the overall success of entrenching AI into government processes. This challenge in conjunction with the need to address the removal of legacy debt from government departments creates a key blocker to the adoption of AI in government. Legacy systems across government create inefficiencies through increased security risks and reduced productivity. The government must address the issue to empower the public sector to harness digital transformation.

The CDDO's recently published 'Generative AI Framework for HMG' serves as a useful guide for civil servants on the use of generative AI. The guide showcases the department's ambition to be a hub of information which accelerates learnings and opportunities for government, in order to further its understanding of the ways AI can improve the delivery of essential services in the public sector. AI has the potential to support decision-making which could lead to the transformation of civil service operating models and governance.

Workforce anxiety due to concerns that AI will replace jobs

Another key barrier is the existing workforce anxiety around AI replacing jobs. It is paramount that ministers and senior officials follow through decisively on addressing the workforce planning implications that exist in the civil service. AI skills will be needed as much as front line public facing ones across the civil and wider public service organisations. However, demand for staff employed in more repetitive and administrative middle and back-office roles can and should fall if AI is implemented successfully.

The government must anticipate, prepare and promote the reskilling and upskilling of civil servants so they can effectively utilise AI, in turn changing this perceived threat into an opportunity to further enhance their skills and create economic opportunities for the UK. As AI becomes more entrenched in government activity, it is important the government reskills its workforce at pace and scale. The PSB supports the CDDO's Generative AI framework which recommends the use of meaningful human control and supervision of generative AI in government. These assurance controls, as outlined in the framework, include trained and qualified persons to review generative AI tools and outputs.

A shortage of digital skills across the civil service workforce

There already is a digital skills shortage across the civil service. This shortage is best quantified by the National Audit Office's report looking at the digital transformation in government. The report found a 7% increase in government digital, data, and technology vacancies from 3,900 in April 2022 to 4,100 in October 2022.

Bureaucratic procurement processes in government

As the use of AI increases across both government departments and technology suppliers, its use and impact within procurement processes will need to be better understood. The governments recently published PPN 02/24 is a first attempt at providing answers to the way in which AI can be used in procurements. However, it is important to consider how buyers may use AI to evaluate bids and guidance is needed to standardise the way individual departments incorporate AI into their procurement processes to ensure there is transparency and clarity for suppliers.

The digital transformation of government will need to keep up with developments in the AI arena. Unduly bureaucratic procurement processes in government risk impeding the uptake of AI across the public sector. Officials will need to identify suitable procurement arrangements to ensure industry and government can collaboratively harness the opportunities presented by AI.

A lack of clarity around the legal considerations of AI

The government also needs to provide more certainty around the legal considerations of AI, particularly generative AI. Currently, UK law already addresses a range of risks associated with AI, however it is important for the government to be aware of the threats which will arise outside the current scope of legislation and regulatory limits. The Government should ensure that adequate guardrails are in place to address potential risks from disinformation created by generative AI models, that could adversely affect the provision of vital public services.

A lack of access to high-quality sector-specific data

Access to high-quality sector-specific data is vital for the successful deployment of AI research. The lack of access to data has contributed to and perpetuates siloed working across government, the perceived threat to jobs and the challenges government have faced when developing guidance for AI. Many government departments are plagued with legacy tech challenges and siloed data that makes access to the necessary data more challenging. It is vital that this legacy tech is removed from use as it has been identified as a clear barrier to digital transformation and adoption of AI as outlined in the CDDO roadmap and National Audit Office's report.

Given the government's responsibility to support the public in an equitable manner, public services organisations face high standards when responding to and navigating fundamental AI issues such as **trust, safety, morality, and fairness**. In the face of these challenges, many government agencies are making a strong effort to harness the power of AI while cautiously navigating through this maze of legal and ethical considerations.

Key recommendations

The PSB acknowledges and welcomes the attention given, and work that government has already undertaken, to increase the ethical and responsible adoption of AI. This includes the publication of the Generative AI Framework for HMG, the establishment of the Cabinet Office's incubator for AI (i.ai) and the PPN 02/24 Improving Transparency of AI use in Procurement.

However, the PSB believes the government will need to go further and especially in consulting and collaborating with industry ahead of procurements, to ensure AI and digital transformation can be delivered successfully across the public sector. techUK's Public Services Board makes the following specific recommendations:

- Departments and major agencies should **identify and prioritise where AI has most ready potential to transform services and deliver savings**. This review should be transparent and serve as way of notifying the supplier market who can assist with the development of business cases, concept viability and assessment of risks ahead of any procurement
- HM Treasury and CDDO should **publish a new and ambitious timetable for the remediation of all legacy systems** across government.
- Make clear if government could **use AI in procurement and how buyers might use AI to evaluate bids**.
- As outlined in techUK's "AI Adoption in the UK" report, the government should **design an education pipeline that is flexible and agile, develop and change a National Reskilling Framework and create initiatives which actively encourage diversity**.
- The government should **review and update existing standards or guidance** in consultation with industry to account for AI's use in delivery of public services. E.g. the Digital, Data and Technology Playbook.
- Government and Industry should collaborate to accelerate and safeguard AI implementation success including **anticipating and mitigating foreseeable legal and reputation risks** and consequences which will likely arise due to the deployment of AI in the public sector.
- The government should **understand the barriers and opportunities to accelerate the safe and ethical use of AI in procurement frameworks**.
- The government should **develop models to assess the AI readiness of departments. This will help identify gaps in a department's infrastructure and governance to assess what steps need to be taken to ensure departments** understand where more needs to be done before they can widely adopt AI.
- The government should develop an **agreed set of principles and standards for AI implementation and use** to which all tech and professional service firms supplying HMG can be signatories.

Case Studies
Early public–private AI success stories

AI to improve efficiencies in the NHS

Diabetic foot problems are a global financial and health burden.

In Greater Manchester, where 7,000 wounds (ulcers) are dressed on average twice a week, foot ulcers resulting from diabetes are one of the major causes of limb amputation. In partnership with Manchester University NHS Foundation Trust and **Oracle Cloud Platform,** Oracle's research is focusing on a solution to reduce the number and severity of diabetic foot ulcerations. Using Oracle's high-performance computing, artificial intelligence (AI) algorithms have been developed that use computer vision technology to identify a foot ulcer at various stages of its development. The **FootSnap AI** application can automatically identify diabetic foot ulcers and associated pathologies using deep learning.

Great Manchester has an amputation rate 36% above the UK National Average. Using Oracle AI the app can determine whether there is an ulcer on the foot or not in less than 20 seconds and patients can get feedback on their condition and relevant self-care information. The app is aiming to reduce the number of lower limb amputations and the burden and cost of ulceration on the UK NHS.

Using Advanced Data Science to Learn and Act on Patient Safety Events

The NHS is using advanced data science and digital innovation for a national Learning from Patient Safety Events (LFPSE) system that supports the NHS England's efforts to analyse and learn from patient safety events recorded by healthcare staff and patients.

Recording patient safety events, whether they result in harm or not, provides vital insight into what can go wrong in healthcare settings and the reasons why. The NHS uses this data to support the continuous improvement of patient safety, and to identify new and under-recognised risks, so preventative action can be taken to keep patients safe.

The secure, operational, and nationally rolled out LFPSE service is harnessing machine learning (ML), and data-driven insights to support patient safety learning and improvement, and with a significant focus on user-centred design, to support a positive safety culture.

The LFPSE national NHS system receives over 2.5 million patient safety event records each year. Through advanced data science including ML and Natural Language Processing (NLP), LFPSE vastly improves the National Patient Safety Team's capabilities to analyse this significant dataset, supporting the identification of risks and creating outputs that offer greater insight for learning and improvement. Deployed nationally, the service uses the latest healthcare interoperability standards to gather better information, maximising the opportunities to identify new learnings.

The National Patient Safety Team uses a range of ML applications including novelty scoring and topic analysis to identify new insights on safety issues that can be explored by clinical teams. Initial results from the novelty scoring are producing significant improvements in the rate of detection of novel incidents compared with previous manual approaches – enabling the National Safety Team to detect, learn and mitigate, ultimately improving patient safety.

Leveraging AI to develop a search engine to enhance productivity in a European judicial system

This European Ministry of Justice manages more than 15 million multi-lingual, unstructured documents annually. The legal staff spend thousands of hours searching, extracting, and analysing critical information from legal documentation. Documents are often duplicated across a multitude of IT systems, creating bottlenecks in critical judicial and administrative processes, e.g. procedures could be severely delayed as it could take weeks to find the necessary files.

Accenture worked with the Ministry to develop an AI-powered search engine built on Microsoft cloud to drive productivity and reduce search time. We developed a secure, event-driven cloud architecture, enabling workload scalability and handling of sensitive information.

The solution dealt with complex queries spanning multiple languages, using natural speech requests such as: 'fetch data in ordinary criminal proceedings and tell me the dimensions of seized properties' with delays of no less than 5-6 seconds for a full answer with GPT3.5, and less than 1 second for open source.

Now, legal staff are able to search documents easily and efficiently. The search engine has a response time of less than 3 seconds, with 99.9% accuracy, eliminating thousands of hours of work. The solution's interface is easy to navigate and designed for users of any technical level, reducing training time, and accelerating adoption of the tool. To accelerate outcomes users were provided with further assistance to help build their queries or searches ensuring they received optimal results.

This is a clear example of bringing in AI and GenAI to drive productivity and enhance human impact. Although this solution solved issues in back-office operations, it has also yielded tangible results for

citizens. This is particularly evident in countries with multiple languages and dialects since the GenAI/AI tool is able to search through multi-lingual documents, reducing time spent on translation efforts, again speeding up the judicial process for all those involved.

Legal proceedings are able to take place without administrative delays, concentrating time and efforts on judicial outcomes, rather than spending weeks shifting through legal files. Citizens affected by legal trials are no longer stalled by procedural delays, as legal staff can solely concentrate on carrying out their ministry's aims. Overall, citizens' needs can be met more efficiently and effectively through back-office automation, which can also have positive effects on citizens' wellbeing as faster judicial processes result in a reduced period of emotional unease and preoccupation.

An AI clinician to take pressure off healthcare services

An interactive virtual clinician developed for a national healthcare agency uses generative AI to diagnose patients with non-urgent symptoms and advise a course of action.

The challenge was to develop a generative AI-based virtual clinician capable of accurately diagnosing non-emergency medical conditions. The 'virtual clinician' would be capable of listening to patients describe their symptoms and asking the same kinds of clarification questions that a human doctor would ask.

The virtual AI clinician has been proven as a single, scalable solution with built-in clinical governance, capable of diagnosing many common medical concerns across an entire population. The significant outcomes include:

- **5,000 patient conversations** handled during testing phases.
- **918 individual conditions** capable of being triaged.
- **Many clinical pathways covered**, including neurology and dermatology.
- **15,000 pages of peer-reviewed medical literature** ingested to inform diagnoses.
- **98% accuracy** in AI-powered diagnoses.

This successful deployment of a generative AI-powered virtual clinician offers a glimpse of the future of telemedicine and digital therapeutics. Designed, built, tested and launched in just a few weeks, the solution provides an efficient, accurate and cost-effective service for first-line medical care.

A national healthcare agency (HA) could use the virtual clinician to generate major efficiencies in healthcare processes. It could augment national non-emergency call centres, helping more patients to get the right help faster.

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info@techuk.org

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