BSA Briefing Paper – Artificial Intelligence and Digital Public Services

Introduction

Often debated in terms of the 'rise of the robots' or 'march of the machines', the public discussion around artificial intelligence (AI)[1] has largely focused on the impact it might have on the workforce.[2] Less attention has been paid to the possibilities for transforming public services. Appropriately delivered, AI has the potential to revolutionise how services are delivered and, in turn, how citizens interact with government.

The UK has a reputation as a global leader in the development of digital technologies and the Government has recognised the need to build on this foundation.[3] By putting AI at the heart of its Industrial Strategy and outlining plans for an AI Sector Deal, a clear and positive message has been sent about the importance that policymakers are placing on this emergent area. The recent announcement to create the world's first National Centre for Data Ethics and Innovation also demonstrates an understanding of the need for safe and ethical oversight to go hand in hand with AI-led innovation.

What can AI do for the public sector?

Yet while the emphasis on supporting AI throughout British industry is encouraging, the UK will only thrive in this area if government itself is part of the process of change. There is significant room for more innovate thinking and, in particular, partnership working between government and the private sector. A recent study found the UK trailing European competitors such as Germany, Spain, Italy and France when it comes to making its services available digitally.[4]

As the volume and flow of personal data increases, and in a context of increasing user demand and continued financial restraints, integrating AI with public services will become not only desirable but necessary. At present the capabilities of AI largely range from the automation of previously time-consuming administrative tasks, such as data input and processing, to the ability to respond to real-time user requests (i.e. chatbots). As a result the most obvious advantages of AI adoption have tended to group around the idea of operational efficiency. Increased use of AI could help to:

- Reduce public spending
- Improve productivity and performance, by increasing the speed of completing tasks
- Free up labour to enable more focus on frontline services

There are a number of early examples of AI programmes taking root in central and local government level delivering these type of benefits. The Serious Fraud Office (SFO) has begun to successfully implement AI technology to filter and process millions of legal documents. In an investigation into Rolls-Royce last year, the SFO's AI robot (developed by a UK start-up) helped analyse 30 million documents, saving around 80% of the cost of doing it manually, with a processing rate of up to 600,000 documents a day – compared to an average of 300 by barristers.[5]

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[1] "Artificial intelligence is a broad term. More generally it refers to the analysis of data to model some aspect of the world. Inferences from these models are then used to predict and anticipate possible future events." https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/566075/gs-16-19-artificial-intelligence-ai-report.pdf

[2] https://www2.deloitte.com/uk/en/pages/finance/articles/robots-coming-global-business-services.html

[3] https://www.oxfordinsights.com/government-ai-readiness-index/

[4] http://www.computerweekly.com/news/450430648/UK-only-average-in-terms-of-digital-public-services

[5] https://www.cio.co.uk/cio-interviews/serious-fraud-office-cto-ben-denison-reveals-how-ai-is-transforming-legal-work-3669633/

At local government level, Enfield Borough Council have pioneered an interactive robot, named Amelia, as part of its customer service delivery functions. Amelia is being introduced with the aim of reducing the 'low complexity, high volume' transactions from local residents, such as planning permission queries. According to a recent article Amelia has "handled over 2,300 queries over the span of 3 months and has been able to recognize the intent of user requests 98% of the time."[6]

But while there are undoubted benefits of doing things faster and cheaper, the true value of AI will be whether it can change how services are run altogether. AI is varied and has multiple uses which can be fitted to different sectors. Its greatest potential lies in its ability to complement – rather than simply replace – the vital human activity undertaken by public sector staff. In this way, new technologies can go beyond mere processing and the scope of transformation can be widened from 'low complexity, high volume' transactions to areas where complex services are delivered.

Health is one sector where AI could dramatically change and improve service delivery. Few areas of public service delivery are under as much pressure. A combination of an ageing population, the rise of complex health needs, increasing patient demands and ongoing funding challenges has posed several long-term questions about the provision of services.

AI, however, has multiple potential applications throughout the 'patient cycle' that could alleviate these problems:

- Robot-Assisted Surgery
- Virtual Nursing Assistants
- Dosage Error Reduction
- Connected Machines
- Automated Image Diagnosis
- Preliminary Diagnosis

At the earliest stage, the automated image diagnosis abilities of AI and deep learning can be used to reduce human errors and assist radiologists to make better judgements of x-rays and other scans. Greater use of wearable technology can assist individuals make better health decisions, in dialogue with their GPs, by tracking their fitness levels. Robot-assisted surgery is also increasingly common in UK hospitals. 45 Da Vinci robots - machines that allow surgeons to operate remotely using very small, precise instruments attached to robotic arms – are now in operation in England and Wales.[7] Improved use of patient data might allow for more accurate assessments of people's care needs, and lead to more tailored treatment services. Applying this principle – tailored services delivered at scale to individuals – to other areas, such as welfare or education services, could dramatically improve policy outcomes and boost productivity.

Challenges to implementation

Government is "a special body, with unique obligations that do not fall on private organisations" and therefore "must be transparent about the way it acts, follow due process, and be accountable to its citizens."[8] The key to successful implementation of AI technologies within service delivery will ultimately depend on ensuring public trust. There are several elements to this.

Firstly, data quality and security are paramount. To be effective in the eyes of user, AI systems will require large volumes of high quality data, managed appropriately and often be delivered or updated in real-time. Services are complex and users' needs are liable to change significantly over time, therefore the AI solutions may need to be responsive to change as well in order to avoiding a drop-

[6] https://www.ipsoft.com/wp-content/uploads/2017/11/Case-Study-Enfield-Council_PDF.pdf
[7] http://www.reform.uk/wp-content/uploads/2018/01/AI-in-Healthcare-report_.pdf
[8] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/566075/gs-16-19-artificial-intelligence-ai-report.pdf

off in delivery quality. There is also a risk that algorithms might end up reflecting institutional or personal biases of those who are compiling or inputting the data.

More importantly, citizens, as users of services and as taxpayers, will need to be assured that their personal data is secure. Moorfields Eye Hospital, which partnered with Google's DeepMind to use AI in the diagnosis of eye disease, came under scrutiny after privacy campaigners criticised the fact that patients were not being asked if they wanted their data handed over to the tech company. This is part of a wider challenge to the adoption of AI – ensuring there is an appropriate ethical and legal-regulatory framework to its use. The use of people's data must be based on consent and transparency in order to avoid the misuse or abuse of personal information.

An additional challenge is how to imbue AI with a 'public sector ethos' which places emphasis on attributes such as accountability, community responsibility, customer service and integrity. This is a particular challenge if, for example, personal assistants are to be integrated into customer services roles such as handling complaints or emergency calls.

Lastly, any process of digital transformation is ultimately dependent on people rather than technology. To maximise the benefits of AI, employees will need to be properly upskilled and trained to manage the change process effectively, work with AI systems, and handle data appropriately. With total UK public sector employment standing at over 5 million people, and considering the immense range of government services, integrating AI into the day-to-day activity of civil servants will be no easy task.

While widespread application of AI in the public sector can seem distant, it is important to recognise just how central the technology already is to millions of lives. Voice-activated computers such as Siri and Alexa are changing the way people perform everyday tasks from shopping to finding directions. Consumer websites such as Amazon and Netflix use automated suggestions and recommendations based on 'learning' from past behaviour. Beyond these high profile examples, non-tech businesses are using AI to transform how they work – from robotics in the logistics industry to recruitment companies' use of predictive analytics.[9]

That so few of the world-leading examples of AI technology are to be found in the public sector indicates the limited scale of government's AI usage to date and just how far there is for it to go. To make the most of new technologies government cannot operate alone and it will be necessary to collaborate with industry to share best practice and expertise.

[9] https://www.ft.com/content/3045bbaa-6260-11e7-8814-0ac7eb84e5f1