AN ACTION PAPER FOR GOVERNMENT

ARTIFICIAL INTELLIGENCE: HOW TO TRANSFORM GOVERNMENT'S POTENTIAL INTO A SMART REALITY

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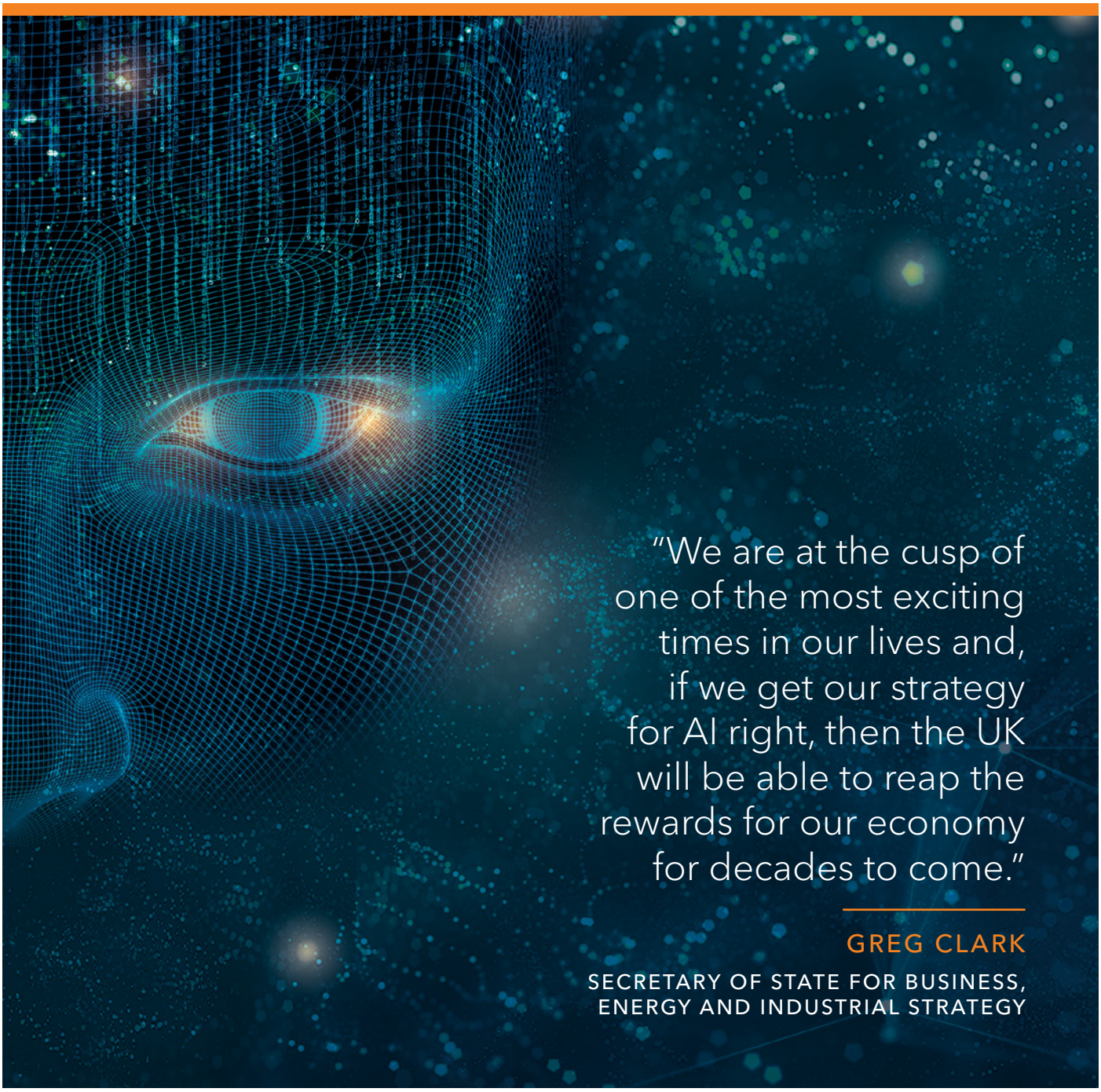


INTRODUCTION

The Government's stated ambition is "not just to lead the world in the 4th industrial revolution – but to ensure that every part of our country powers that success". As well as promoting and investing in the benefits of Artificial Intelligence (AI) for commerce, industry and education, the UK Government must rapidly embrace AI in order to evolve rapidly into an intelligent digital government. This means using data, analytics and AI in clever ways that significantly improve life outcomes and opportunities for every citizen who requires support, as well as transforming operational efficiencies. Without significant levels of AI adoption, our government risks lagging behind other sectors, and other governments around the world. And with that lack of investment, credibility and reputational damage could certainly follow and therefore undermine the stated ambition to generate £630 billion for the UK economy.[1]

With that in mind, now is the time for government departments to exploit the use cases of AI. Deloitte recently surveyed private and public sector organisations to discover their top AI applications.

The results demonstrate an interesting pattern that tells us a lot about where AI can deliver most value and efficiency, while helping to cut the cost of service delivery while accelerating key decisioning processes.

TOP AI USE CASES

- Automate judgement-based processes: **62%**
- Predictive and prescriptive analytics: **54%**
- Automate manual processes: **54%**
- Interact with clients or customers: **46%**
- Analysis of large and unstructured data sets: **38%**

However, use cases are intrinsically linked to the data that can be collected and analysed. In part this comes down to the sensitive nature of the relationship between citizen and government. Let's take a look at this critical issue in a little more detail.

THE SAS PERSPECTIVE ON AI

At SAS, we think of Artificial Intelligence as a means to enhance human endeavour, rather than replace it. AI makes it possible for machines to learn from experience, simulating human learning processes, so that machines can:

- Learn by consuming data along with rules about how to use that data
- Reason, using a system of rules in order to find answers to questions very quickly or come to conclusions
- Correct themselves on a constant basis

AI can learn to perform human-like tasks, automating much of the manual effort that goes into analytics-driven decision-making.

Importantly, if you are to take your people with you, it's vital they understand that because computers don't understand strategy, we'll always need human ingenuity and a skilled and engaged workforce. One reason alone why the machines will not take over the process of governing.

1. Growing the artificial intelligence industry in the UK, The Department for Digital, Culture, Media and Sport & The Department for Business, Energy & Industrial Strategy, October 2017. https://www.gov.uk/government/publications/growing-the-artificial-intelligence-industry-in-the-uk

PART I

CITIZENS, TRUST AND DATA: THE CRITICAL INGREDIENTS OF AI SUCCESS

Some citizens have reacted with fear at the prospect of AI, largely because their trust in the technology is constantly being undermined by skeptical, often doom filled headlines. However, the truth is that in their lives as consumers, citizens increasingly expect and demand that services are delivered digitally and with a seamless, fast and highly personalised experience. When this happens, they are typically very happy to share the quantities and types of data that make AI worthwhile deploying.

The difference is that the consumer-business interaction puts the consumer in full control. They choose which brands to interact with because they want something from them. In the citizen-government relationship, for example with HMRC, where the perception is largely that money will be taken from citizens, it is more difficult for citizens to understand the value they will receive from sharing more data with the organisation.

TRUST: THE LYNCHPIN ISSUE

By trust, we mean how data will be used, which other departments it will be shared with and what hidden insights it could reveal about a citizen. However, it's clear that where citizens understand the purposes for which their data will be used, and as long as they receive value in the form of easier, faster services that improve the quality of their lives, they are willing to interact and share in this form of value exchange. To drive adoption with the buy-in of citizens, it's vital that transparency takes centre stage, and that citizens are communicated with fully and frankly to bring them on the journey.

However you choose to build and promote trust, it's important to look first at the data you have and keep the following nugget of insight in mind: AI learns best from big data. It will help you assess when the time is right to begin AI adoption.

PART II

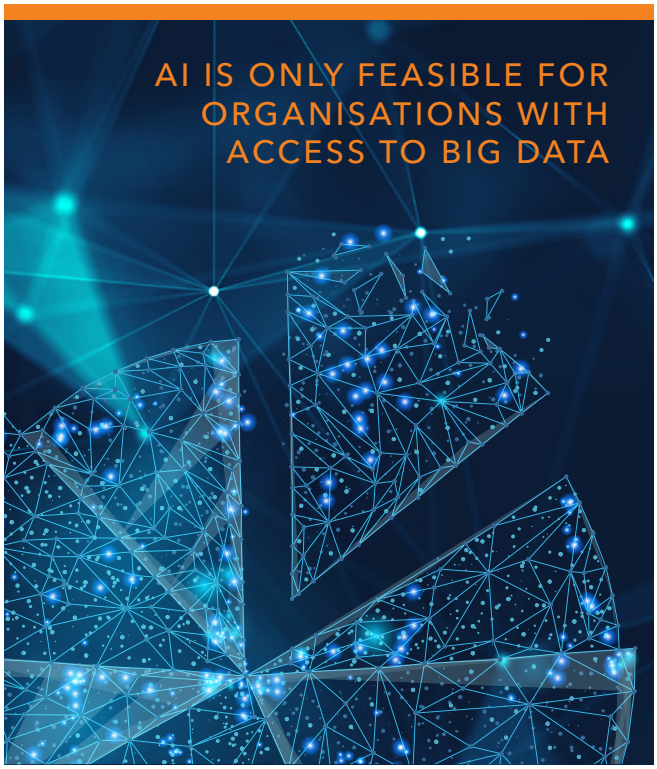
CONSIDERATIONS FOR MAKING AI A REALITY TODAY

Our experience with clients across the commercial and public sectors tells us that planning is absolutely critical. Unless your AI objectives have a clear strategic objective, it will be almost impossible to deliver the required outcomes and measure their impact. AI implementations are not as simple as seeking out processes that can be automated. There are many more considerations to make, not least about how to drive value rapidly from your investments, how to bring employees actively along with you, and how to ensure the algorithms driving AI are ethical, unbiased and auditable.

Our top five considerations are listed below:

1 BE LASER CLEAR ON THE OBJECTIVES OF AI

It sounds simple, but with all the discussion and headlines about AI it would be easy to scramble for the bandwagon in knee-jerk fashion without truly uncovering the whys and wherefores of implementation. Developing AI applications, depending on how you choose to go about it, can be costly, and even those businesses who have been born into the analytics economy struggle at times to refine their objectives before jumping in. Initially, we recommend that government departments think at a macro level about whether AI will deliver most value in policy development or service delivery. It might be that you decide both areas are priorities. If so, think about the repeatability of your AI applications; can you derive multiple sources of value from deploying one application in multiple ways. For example, can your fraud detection capability be used to detect both payment fraud and procurement fraud – i.e. can it be used both for service delivery and an internal process. These use cases are your 'best bets' and will deliver impressive outcomes.



2 MAKE DATA DISCOVERY A PRIORITY

AI is only feasible for organisations with access to big data – it's what AI was designed to learn from. However, there is still an issue with citizen trust and data use. What can be done to address this? One way is through the design of Data Trusts. As secure frameworks for sharing information between those organisations who collect it and those who use it for AI development, Data Trusts help to deliver transparency and peace of mind through good governance. However, there are many other issues concerning the use of personal data – such as regulations, including GDPR and its forthcoming post-Brexit UK equivalent – that departments must consider. It's essential that solutions to these issues are built into the analytics engines that transform AI from a meaningless function into a smart decisioning capability. And this is where government departments should very carefully consider their position on adopting open source capabilities wholesale, with all their auditability, security, scalability and compliance issues.

3 ENSURE THE ETHICAL USE OF DATA

As algorithms become more complex, how can you be certain that they operate with as little decisioning bias as possible. Part of the way in which you can solve this challenge is to abide rigorously by data use regulations and deploying policies that only allow preselected users to access certain types of data. In addition, you can avoid black box analytics solutions that do not allow your data scientists to open the lid and review the algorithms with, where necessary, auditors and senior civil servants who might need to report on your department's bias mitigation processes.

For example, throughout government there are many opportunities to review decisions made by humans in positions of authority. A similar process must also be put in place for AI-based or supported decisions. For instance, there was a recidivism algorithm that assessed the likelihood of criminal re-offending. It was designed based on a selection of normative views, but those using it – notably judges – did not know these views were built in. Similarly, social workers, probation services, civil servants who also have a role to play in identifying risk of re-offending were not privy to the algorithm or its decision-making framework. In future, it will be essential to share the principles upon which these algorithms are built and to have processes in place to reappraise decisions.

4 TAKE A FAIL FAST, WIN FAST DEVELOPMENT APPROACH

We have found that adopting a start-up, entrepreneurial mindset is invaluable in the early stages of AI development. By this we mean, government departments should not be afraid to experiment with AI once they have settled on use cases. This really means adopting an agile, fail-fast-to-learn-fast mentality. Many government departments are beginning this process with open source software capabilities – feeling that this route helps them to attract and retain precious data science skills. However, once running AI in real world 'production' environments, or as the need to collaborate with associated departments comes into play, a different set of 'business priorities' might be required that are difficult to run in open source.

Most notably these include, scaling your AI applications, ensuring rigorous governance of algorithm development and data use, and having at your fingertips the best and broadest possible suite of analytics techniques with a proven track record of delivering outcomes required.

What we also need to understand is that in order for AI uptake to be consistent across government departments, it must be taken seriously at leadership level. Indeed, The Bennet Institute for Public Policy, Cambridge, believes that AI researchers should be seconded across departments and that senior policymakers should receive AI training in order to better identify use cases. This upskilling is vital to ensure that government organisations can operate independently of private sector consultants, partnering them when it is expeditious to do so.[2]

5 HOW CAN YOU GET STARTED QUICKLY WITH MINIMAL RISK?

Embarking on AI is an exciting opportunity across government. It is a core component of digital transformation and can clearly support many aspects of departmental plans. Partnership is key here. Why? To leverage the practical, regulatory, data preparation and management, and people and process insights that an experienced organisation can offer. They can help you design and build a coherent AI development platform and process. A proprietary system that delivers all these requirements, while giving data scientists the freedom to code in the language of their choice is the absolute ideal, especially when it is available to all seamlessly via the cloud. Such a hybrid approach will bring government departments the best of both proven proprietary and open source worlds, ensuring speed and quality in AI development.

2. Developing AI for Government: What role and limits for the private sector, The Bennet Institute for Public Policy, Cambridge, https://www.bennettinstitute.cam.ac.uk/blog/developing-ai-government-what-role-and-limits-priv/

PART III

AI POSSIBILITIES EXPLORED

There are many examples from the UK and around the world that demonstrate how AI driven applications can speed up repetitive administrative tasks, including answering simple questions via chatbots, in order to accelerate time-to-decision for citizens and cut costs. However, AI can also deliver more accurate evidence and intelligence into policy development, financial planning, safety (food and medicines), outcome measurement and risk mitigation by consuming far more data, of many kinds in real time, than an individual human. Yet how are those capabilities currently being deployed?

MAKING AI SMART IN THE REAL WORLD

In the US, the state of Maryland has implemented an AI-based traffic system that is projected to reduce commute times for 700,000 drivers by 15 per cent. Atlanta is developing an AI chatbot to expand capabilities for non-emergency citizen service requests. Detroit's Police Department is integrating AI facial recognition into its video monitoring program to help investigate and reduce violent crimes.

At the federal level, many agencies are beginning to deploy AI-powered interfaces for customer service. For example, AI saves time and resources in the federal regulatory process by helping speed the public comment process. And there is growing recognition that AI can help improve the taxpayer experience, strengthening compliance, reducing fraud and delivering personalised services.

WHERE WILL AI GO IN FUTURE?

With the issue of avoiding bias firmly in mind, it's our belief that no critical decisions that materially impact the lives of citizens should be arrived at solely using AI – even as techniques evolve in future.

However, what AI is likely to be employed for with even more effect is helping departments to find creative solutions to resource limitations – including triaging work – while freeing civil servants from mundane, routine and repetitive work. In so doing, experienced civil servants can be deployed to spend more time in roles that require human traits with which AI is ill-equipped to compete. Those requiring creativity, lateral thinking, empathy and trust.

AI is not new to SAS. We've been working on 'the future' for 40 years, developing Machine Learning, refining its capabilities, working with clients from across sectors to ensure it is robust and adaptable to a wide range of use cases. From that process, we have developed a lifecycle of development that is proven to deliver results rapidly by including everything from data management to testing, reporting and continuous development. If you'd like to learn more about how our approach and our analytics engine works to power AI capabilities, please get in touch or browse our dedicated AI hub at www.sas.com/uk/gov »

SUMMARY

At the heart of any successful Central Government AI strategy are citizens. Ensuring that your AI applications are citizen-centric will help you to focus your projects on outcomes and on delivering value to the population. The happy secondary result will be a more intelligent, efficient way to run your organisation – all the way from policy-making to analysing the data that is at your fingertips. In achieving both these priorities, the cost of service delivery will reduce and citizens satisfaction and likely, engagement, will increase as personalised digital services make departments and resources more accessible to everyone.