

# PUBLIC SECTOR TECHNOLOGY

03 LEARNING FROM NHS TEST AND TRACE

08 IMPLICATIONS OF THE FIRST DIGITAL CENSUS

20 THERE'S NO VACCINE FOR RANSOMWARE



**GIVE PUBLIC SERVANTS A 360-DEGREE VIEW OF CITIZENS, STAKEHOLDERS AND PARTNERS**  
LEARN MORE ON PAGES 6-7 OR VISIT [SALESFORCE.COM/UK/PUBLICSECTOR](https://salesforce.com/uk/publicsector)



# We BRING GOVERNMENT and CITIZENS TOGETHER



Salesforce gives public servants a 360-degree view of citizens, stakeholders and partners. We streamline services, increase efficiencies and drive innovation. Learn more on pages 6-7 or visit [salesforce.com/uk/publicsector](https://salesforce.com/uk/publicsector)



## PUBLIC SECTOR TECHNOLOGY

Distributed in THE TIMES

Published in association with digitech21 and techUK

### Contributors

- Helen Beckett**  
IT, education and business writer, she is the former digital editor at *The Times Educational Supplement* and *The Guardian*.
- Hazel Davis**  
Freelance business writer, she contributes to *The Times*, *Financial Times*, *The Daily Telegraph* and *The Guardian*.
- Andy Jones**  
Published in every national newspaper, he has led investigations for *Dispatches*, *Inside Out* and *The Victoria Derbyshire Show*. He specialises in tech-led crime stories.
- Chris Stokel-Walker**  
Technology and culture journalist and author, with bylines in *The New York Times*, *The Guardian* and *Wired*.
- Daniel Thomas**  
Writer and editor, with work published in *The Telegraph*, *Newsweek*, *Fund Strategy* and *EducationInvestor*, among other publications.
- MaryLou Costa**  
Business writer and editor specialising in marketing, tech and startups, with work published in *The Guardian*, *The Observer* and *Marketing Week*.
- Nick Easen**  
Award-winning writer and broadcaster, covering science, tech, economics and business, and producing content for *BBC World News*, *CNN* and *Time*.
- Oliver Pickup**  
Award-winning journalist, specialising in technology, business and sport, and contributing to a wide range of publications.
- Rose Stokes**  
Freelance journalist specialising in women's rights, health and human interest features. Her work has appeared in *The Guardian*, *The Economist*, *The Independent*, *The Telegraph* and *Vice*.

- raconteur reports**
- Publishing manager **Oliver Collins**
- Associate editor **Peter Archer**
- Acting managing editor **Francesca Cassidy**
- Digital content executive **Taryn Brickner**
- Production manager **Hannah Smallman**
- Design **Sara Gelfgren**, **Kellie Jerrard**, **Colm McDermott**, **Samuele Motta**, **Nita Saroglou**, **Jack Woolrich**, **Sean Wyatt-Livesley**
- Art director **Joanna Bird**
- Design director **Tim Whitlock**

Although this publication is funded through advertising and sponsorship, all editorial is without bias and sponsored features are clearly labelled. For an upcoming schedule, partnership inquiries or feedback, please call +44 (0)20 3877 5800 or email [info@raconteur.net](mailto:info@raconteur.net). Raconteur is a leading publisher of special-interest content and research. Its publications and articles cover a wide range of topics, including business, finance, sustainability, healthcare, lifestyle and technology. Raconteur special reports are published exclusively in *The Times* and *The Sunday Times* as well as online at [raconteur.net](https://raconteur.net). The information contained in this publication has been obtained from sources the Proprietors believe to be correct. However, no legal liability can be accepted for any errors. No part of this publication may be reproduced without the prior consent of the Publisher. © Raconteur Media

## EGOVERNANCE

# Implications of the first digital census

Before you could find information with the click of a button, censuses were an invaluable tool for governments looking to understand the populace, but are they still fit for purpose?

Rose Stokes

The first census of the population in England and Wales in 1801 marked a new era of data collection. It enabled those in power to understand better the distribution of people around the country, as well as track how major events affected the population's structure. In the 219 years since the first census, data has been collected for every decade except in 1941. Before the internet, it was a vital tool in informing governments about the socio-economic and demographic status of citizens, enabling them to make better-informed decisions about resource allocation and policy strategy.

But it is not without risks. "The concept of censuses is a major catalyst for why data protection exists in the first place," says Emily Overton, principal consultant at record manager RMGirl, citing examples of when data drawn from them has been utilised to dangerous ends, such as in Nazi Germany. "We have special categories of personal data because someone has died as a result of being on a list."

In the past, data was collected by distributing a paper form, returned to the Office for National Statistics (ONS) by post. This continued until the 2011 census, when people were given the option to complete the form online. Some 16.4 per cent, almost four million, did. The 2021 census will be the first to be conducted primarily online, with the ONS setting a target of 75 per cent for digital submissions. In practice, this will mean most households will receive a code in the post, giving them access to an online portal.

This shift may not seem noteworthy, given the increasingly online world we live in. Nonetheless, as with the implementation of any new government process, there will be implications beyond those intended, and new considerations and concerns for those on both sides of the process.

The global level of concern around data privacy has increased in recent years, in response to very public data breach scandals. At home, a 2019 survey by the Information Commissioner's Office demonstrates that public trust in organisations and governments is slowly decreasing when it comes to data protection, with those declaring "low confidence" rising from 36 to 38 per cent since 2018. "There's definitely a growing



nervousness on the subject of data breaches," says Tostig Pearson, head of innovation, training, education and security at data consultancy DTSQUARED. "The biggest challenge to the implementation of the digital census is likely to be an erosion of public trust. The average person on the street is aware of GDPR [General Data Protection Regulation] and we're all painfully aware of the government's questionable technological competence after the Test and Trace debacle."

This is relevant for a few reasons. Firstly, the census is compulsory for every household in England and Wales, carrying a penalty of £1,000 for those who do not comply. This is highly problematic if people don't trust its intentions, especially given that new sensitive questions around

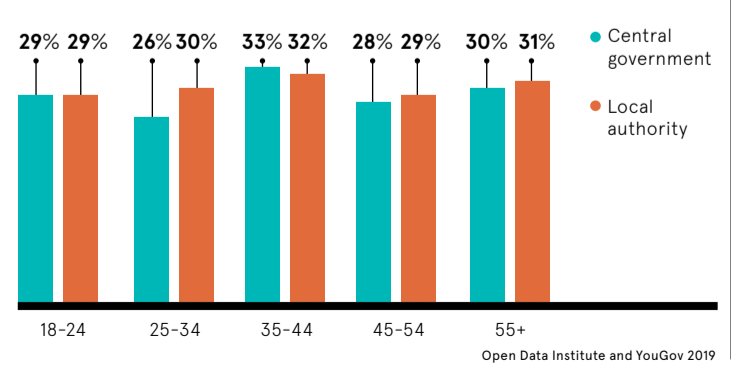
sexuality and gender identity are expected to be included.

Secondly, the concept of anonymity was easier to accept when the census was carried out by paper forms and returned in the post. "I can see a lot of people struggling to trust their data will be anonymised when it is, essentially, traceable," says Pearson, although he is quick to add this will be much more of a perceived risk than an actual one. "The ONS are the last people in the world who want to get caught out by a data breach, so we have to assume we'll be submitting to a belt-and-braces system."

This sentiment is echoed by ONS census director Nicola Tyson-Payne, who is explicit about how important data security is to the organisation. "The safety of people's

### DO BRITS TRUST THE GOVERNMENT WITH THEIR DATA?

UK adults of different ages on whether they would trust government organisations to use their personal data ethically



information is our top priority," she says. "We are constantly reviewing and renewing our procedures, and a rigorous assessment by an independent agency concluded our extensive plans to protect people's information are robust."

Thirdly, many people are likely to question the need for a census in 2021, when so much personal information is already held by government agencies. "The problem is that much of what is being asked of people in the census is information they already have access to, whether it's via local authorities, HM Revenue & Customs, the Foreign Office or the DVLA [vehicle licensing]," says Pearson. "I think people will question why they are being legally forced to resubmit this information."

And for those who don't have internet access or would simply prefer to fill their forms out on paper? "We are aware not everyone will be able to, or will want to, do their census online and paper questionnaires will be available for those who need them. We will also have a range of support services from online help to phone support, as well as community hubs providing assistance," says Tyson-Payne.

It is easy to focus on the potential negative implications of the digital census, but there are, of course, many benefits that can come from streamlining and digitalising the way a government interacts with its citizens.

"An online-first census will help improve data quality and enable census data to be processed faster and more efficiently," says Tyson-Payne. It also indicates a further step towards a system of e-governance in the UK. For evidence of the potential benefits, you need look no further than Estonia, which has made 99 per cent of public services available online. According to Estonian government estimates, this has brought about 844 years in efficiency gains. In addition to improving access for citizens to public services, the shift to e-governance has also improved transparency.

Regardless of potential benefits, the introduction of the digital census is likely to face resistance, which will naturally lead some to question whether or not we need one at all. "Either way, there will certainly be a lot of noise," says Pearson. "But the digital version is also the first step towards creating a more dynamic census in 2021 that is more responsive to the demands of the nation, which can only be a good thing."





FRAUD

## Fighting fraud in times of crisis

Cybercrime is always distressing for those affected, but when the resultant losses come from the public purse, it must be taken even more seriously

Oliver Pickup

Coronavirus has coursed through every facet of our lives, and society and business have already paid a colossal price to restrict its flow. We will be counting the cost for years, if not decades. And while people have become almost anaesthetised to the enormous, unprecedented sums of support money administered by the government, it was still painful to learn, in October, that taxpayers could face losing up to £26 billion on COVID-19 loans, according to an alarming National Audit Office report.

Given the likely scale of abuse, it raises the question of how authorities should go about eliminating public sector fraud? Could artificial intelligence (AI) fraud detection be the answer?

Admittedly, the rapid deployment of financial-aid schemes, when the public sector was also dealing with a fundamental shift in service delivery, created opportunities for both abuse and risk of systematic error. Fraudsters have taken advantage

of the coronavirus chaos. But their nefariousness is not limited to the public sector.

Ryan Olson, vice president of threat intelligence at American multinational cybersecurity organisation Palo Alto Networks, says COVID-19 triggered “the cybercrime gold rush of 2020”.

Indeed, the latest crime figures published at the end of October by the Office for National Statistics show that, in the 12 months to June, there were approximately 11.5 million offences in England and Wales. Some 51 per cent of them were made up of 4.3 million incidents of fraud and 1.6 million cybercrime events, a year-on-year jump of 65 per cent and 12 per cent respectively.

Jim Gee, national head of forensic services at Crowe UK, a leading audit, tax, advisory and risk firm, says: “Even more worryingly, while the figures are for a 12-month period, a comparison with the previous quarterly figures shows this increase has occurred in the April-to-June period of 2020, the three months after the

COVID-19 health and economic crisis hit. The size of the increase needed in a single quarter to result in a 65 per cent increase over the whole 12 months could mean actual increases of up to four times this percentage.”

In terms of eliminating public sector fraud, Mike Hampson, managing director at consultancy Bishopsgate Financial, fears an expensive game of catch-up. “Examples of misuse have increased over the last few months,” he says. “These include fraudulent support-loan claims and creative scams such as criminals taking out

“We need to watch how the technology fits into the whole process. AI doesn’t get things right 100 per cent of the time

bounce-back loans in the name of car dealerships, in an attempt to buy high-end sports cars.”

AI fraud detection and machine-learning algorithms should be put in the driving seat to pump the brakes on iniquitous activity, he argues. “AI can certainly assist in carrying out basic checks and flagging the most likely fraud cases for a human to review,” Hampson adds.

John Whittingdale, media and data minister, concedes that the government “needs to adapt and respond better”, but says AI and machine-learning are now deemed critical to eliminating public sector fraud. “As technology advances, it can be used for ill, but at the same time we can adapt new technology to meet that threat,” he says. “AI has a very important part to play.”

Technology is already vital in eliminating public sector fraud at the highest level. In March, the Cabinet Office rolled out Spotlight, the government grants automated due-diligence tool built on a Salesforce platform. Ivana Gordon, head of the government grants management function COVID-19 response at the Cabinet Office, says Spotlight “speeds up initial checks by processing thousands of applications in minutes, replacing manual analysis that, typically, can take at least two hours per application”. The tool draws on open datasets from Companies House, the Charity Commission and 360Giving, plus government databases that are not available to the public.

“Spotlight has proven robust and reliable,” says Gordon, “supporting hundreds of local authorities and departments to administer COVID-19 funds quickly and efficiently. To date Spotlight has identified around 2 per cent of payment irregularities, enabling grant awards to be investigated and payments halted to those who are not eligible.”

She adds that Spotlight is one of a suite of countermeasure tools, including AI fraud detection,

developed with technology companies, and trialled and implemented across the public sector to help detect and prevent abuse and error.

Besides, critics shouldn’t be too hard on the public sector, argues David Shrier, adviser to the European Parliament in the Centre for AI, because it was “understandably dealing with higher priorities, like human life, which may have distracted somewhat from cybercrime prevention”. He believes that were it not for the continued investment in the National Cyber Security Centre (NCSC), the cost of fraudulent activity would have been significantly higher.

Greg Day, vice president and chief security officer, Europe, Middle East and Africa, at Palo Alto Networks, who sits on Europol’s cybersecurity advisory board, agrees. Day points to the success of the government’s Cyber Essentials digital toolkit. He thinks, however, that the NCSC must “further specialise, tailor its support and advice, and strengthen its role as a bridge into information both from the government, but also trusted third parties, because cyber is such an evolving space”.

The public sector has much more to do in combating cybercrime and fraud prevention on three fronts, says Peter Yapp, who was deputy director of incident management at the NCSC up to last November. It must encourage more reporting, make life difficult for criminals by upping investment in AI fraud detection and reallocate investigative resources from physical to online crime, he says.

Yapp, who now leads law firm Schillings’ cyber and information security team, says a good example of an initiative that has reduced opportunity for UK public sector fraud is the NCSC’s Mail Check, which monitors 11,417 domains classed as public sector. “This is used to set up and maintain good domain-based message authentication, reporting and conformance (DMARC), making email spoofing much harder,” he says.

“As technology advances, it can be used for ill, but at the same time we can adapt new technology to meet that threat

Organisations that deploy DMARC can ensure criminals do not successfully use their email addresses as part of their campaigns.”

While such guidance is welcome, there are potential problems with embracing tech to solve the challenge of eliminating public sector fraud, warns Dr Jeni Tennison, vice president and chief strategy adviser at the Open Data Institute. If unchecked, AI fraud detection could be blocking people and businesses that are applying for loans in good faith, or worse, she says.

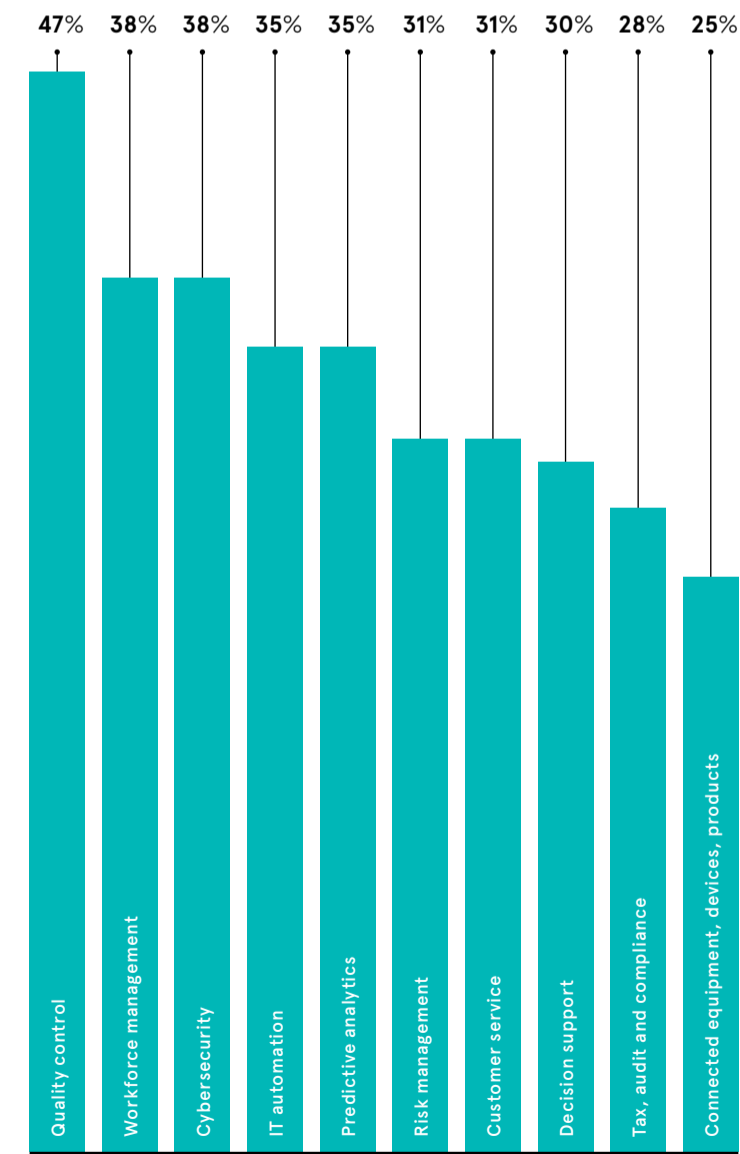
“We need to watch out how the technology and AI fit into the whole process,” says Tennison. “As we have seen this year, with the Ofqual exam farrago, AI doesn’t get things right 100 per cent of the time. If you assume it is perfect, then when it doesn’t work, it will have a very

negative impact on the people who are wrongly accused or badly affected to the extent they, and others, are fearful of using public sector services.”

There are certainly risks with blindly following any technology, concurs Nick McQuire, senior vice president and head of enterprise research at CCS Insight. But the public sector simply must arm itself with AI or the cost to the taxpayer will be, ultimately, even more significant. “Given the scale of the security challenge, particularly for cash-strapped public sector organisations that lack the resources and skills to keep up with the current threat environment, AI, warts and all, is going to become a crucial tool in driving automation into this environment to help their security teams cope.”

### CYBERCRIME AND RISK MANAGEMENT CITED AS TOP AI USE CASES BY EARLY ADOPTERS

Early adopters of AI in the US public sector state the top areas in which their organisations are using AI



Deloitte 2019

## Employee experience powers public sector productivity

The drastic events of 2020 have put the spotlight on digital employee experience in the public sector, with workers and leaders clashing on what their productivity levels are

The coronavirus pandemic has meant public sector organisations have digitally transformed at a pace few thought possible. The abrupt shift to home working was challenging for many central government departments, particularly those that didn’t have any flexible work options already in place. However, by forcing them to confront the issues, including lack of agility, which have long prevented them from challenging the status quo, it has brought the digital employee experience front of mind.

Earlier this year, research by Citrix exposed significant disparities between public sector leaders and other employees when it comes to their views on productivity. While 62 per cent of human resources and IT leaders in large public sector organisations claimed their organisation is already working at optimum productivity, 73 per cent of staff members said “serious change” needs to happen before they are really at their most productive.

Contrasting views were also evident in light of the impact that working from home has on productivity. The number of staff members believing serious change was needed to maximise their output levels increased by 10 per cent after COVID-19 forced people to work from home, despite a 14 per cent uplift in public sector leaders taking the view employees were working at optimum productivity compared to before lockdown.

It’s clear the serious changes called for by staff members relate principally to technology tools, which have grown in importance considerably since governments began imposing national lockdowns. Three in ten public sector staff said current workplace technology is holding them back from being as productive as they possibly can be and 34



per cent called for more flexible technology that empowers them to work in the way that suits them, an increase on pre-lockdown figures of 25 per cent.

“Even when staff can work flexibly with IT, legacy technologies aren’t as user friendly as needed or don’t feel simple to use outside of the office,” says Matt Smith, director of UK and Ireland public sector sales at Citrix, which builds secure, unified digital workspace technology.

“This is where many staff members did align with their senior HR and IT colleagues in our study, with one in four public sector leaders agreeing their workplace technology was outdated, complicated and failing to offer a consumer-level user experience.”

Vaccines may now be presenting a more viable route out of the pandemic, but workplace models will not return to what they were and remote working will continue to play a prominent role even when COVID-19 is long gone. A positive employee experience is therefore vital to productivity and talent retention in the public sector, and those with user-friendly digital workspaces will deliver better taxpayer value.

From making sure the right devices are provided to investing in the best software platforms offering secure and seamless experiences, chief information officers are central to this journey. Users of the Citrix Workspace software application get access to a unified platform through which to manage, monitor and secure diverse technologies in complex cloud environments.

Powered by this capability, public sector organisations are able to unlock human potential and deliver a consistent workspace experience wherever people are.

There is much to do to prepare for the future of work, but HR and IT leaders in Citrix’s study confirmed they plan to increase spending on technology to boost productivity. Public sector organisations will allocate an average of £6.9 million on this over the next five years, respondents said, up from £3.5 million which was earmarked pre-lockdown.

“This spend pledge works out at around £1.4 million per year, an increase that will be welcome news to staff,” says Smith. “But to put that into context, there are 343 public sector IT deployments worth more than £1 million each expiring by the end of 2020 alone, including 42 contracts worth more than £10 million”. It is crucial to put in the right investment to create a positive employee experience, but while also taking time to consider whether the current way of doing things is right for the future of work.”

Source:  
1 Tussell (2019): Expiring IT contract opportunities 2019/2020

To find out more, visit [citrix.com](https://www.citrix.com)

**citrix**

“A positive employee experience is vital to productivity and talent retention in the public sector



# Searching for a single view of citizens

The disruptive events of 2020 present new pathways for public sector organisations to accelerate the progress they've already made in advancing their digital ambitions. But first they need to overcome legacy challenges to achieve a single view of their citizens and start small to harness innovation

Over the last decade, the public sector has made significant progress in digitalising public services and interactions with citizens and businesses. Despite its hugely disruptive implications, the coronavirus pandemic has served as an added accelerant to digital transformation and the public sector has responded admirably to remote working. Many public servants rely on face-to-face interactions to deliver vital services; this has by no means been easy, but it has provided an impetus for tech-driven change supporting changing working practices.

Despite much progress being made, legacy remains a significant inhibitor. Legacy IT is difficult to change and expensive to manage, maintain and support. Much budget is spent simply "keeping the lights on". These challenges have fuelled a common misperception that public sector organisations lag behind commercial businesses when it comes to digital transformation. While true in some areas, the public sector is more digitally advanced than people often realise.

"I don't think it would be fair to say the public sector has been either left behind or lags," says Craig Mill, head of public sector, Europe, at Salesforce. "Many public sector organisations are doing a fantastic job, but there's always more that needs to be done and legacy is a significant barrier. COVID-19 has accelerated the pace of change in enabling new ways of working, most of which are digitally enabled. But change will continue to

be a constant, particularly when it comes to the expectations of citizens.

"The average citizen has a smartphone, they download new apps, see new websites and that impacts expectations. Then, because it can take quite a long time for the public sector to deploy new solutions, especially due to those legacy challenges, by the time they go live they're no longer cutting edge and everything has moved on. To continually keep up with expectations, it's really important to be able to speed up deployment. Start small and build from there."

As an enabler of economic well-being and equality, grants are a vital government tool, already making up 15 per cent of all government spending and set to increase further due to the COVID response, Brexit and other manifesto commitments. In 2018, the Cabinet Office embarked on an ambitious programme to increase efficiencies and effectiveness in the way grants are administered across government. Through a series of pilots, it found technology was not being harnessed as well as it could be.

"The opportunity presented itself to consider what we could do once, within the Cabinet Office, to benefit all our grant-makers," Ivana Gordon, head of government grants management function COVID-19 response at the Cabinet Office, told this year's Salesforce Live UK and Ireland conference. "We looked at the grant life cycle and the processes involved. We wanted to improve the customer journey for

## SALESFORCE IS THE NUMBER ONE CRM PARTNER TO ORGANISATIONS

Ranked #1 for CRM applications based on IDC2020H1 revenue market share worldwide

Company	Market Share (%)
Salesforce	19.8%
Oracle	5.3%
SAP	4.8%
Adobe	3.9%
Microsoft	3.8%

IDC, Worldwide Semiannual Software Tracker, October 2020

---

## CITIZEN INTERACTIONS WITH PUBLIC SECTOR DIGITAL SERVICES CONTINUE TO SOAR

360%

increase in unique interactions with gov.uk since 2014, driven by citizen demand  
*Institute for Government 2020*

59%

of citizens are not satisfied with the level of interaction received from government departments  
*Accenture 2020*

---

## PEOPLE ARE HAPPY TO EXCHANGE THEIR DATA FOR A BETTER CUSTOMER SERVICE

84%

are open to sharing personal data with the government in exchange for a more personalised customer service experience  
*Accenture 2020*

41%

would be comfortable with their personal information being shared between agencies if it would enhance customer service  
*Accenture 2020*

---

## CITIZENS HAVE COME TO EXPECT A LOT FROM THEIR INTERACTIONS

What citizens expect from their citizen interactions with public sector digital services

74%

Ease of access to their personal information

73%

Quick response to their queries

66%

Knowledgeable customer service agents

64%

Increased visibility into the progression of their application through its administrative stages  
*Accenture 2020*

**“Salesforce’s position as the world’s number-one customer relationship management system, which runs through all its products, enables citizens to self-serve in new ways**

citizens, businesses and the third sector, and have the right tools in place to be digital by default at the backend.” The ambition is an applicant portal, with one highly functional channel for all grants, and a due diligence tool to check recipients and ensure money goes to the right places. The Cabinet Office required a platform that would

give them agility and a single view over all grant administration. After considering options on the market, the Salesforce platform was selected and work began to beta-test an automated due-diligence tool, Spotlight. When COVID-19 struck earlier this year, and grants were placed at the heart of the economic response, the roll out of Spotlight was accelerated to support the administration of emergency funds.

“We wanted to build something at the centre with no barriers to accessing it across government or the public sector, which meant a cloud-based platform with the right security accreditations,” says Gordon. “COVID-19 has been the ultimate stress test on our new Spotlight tool but it has responded to the challenge. It’s checked billions of pounds of grants and thousands of applications, highlighting the risks and enabling grant managers to make informed data-driven decisions. We

can’t wait to get started on the rest of our digital ambitions.”

The Salesforce platform delivers a single view of citizens, integrating across a range of technologies, including Salesforce Marketing Cloud for digital marketing automation and analytics and MuleSoft to connect everything up. Tableau’s data visualisations provide insights helping make data-driven decisions. Numerous accelerators are pre-built. Everything is highly configurable, which means customers don’t need armies of developers, thereby freeing up budgets and resources to focus on digital transformation, including legacy retirement; the more you transform the more costs decrease.

Salesforce supports digital transformation roadmaps in such a way that they avoid stereotypical issues, such as vendor lock-in, inflexibility, stagnation and eye-watering change costs. Its platform ensures the public sector can

rapidly deploy solutions with minimum viable products, build on them through configuration, plug-in integrations, and augment and enhance through an internally owned roadmap. Crucially, Salesforce’s position as the world’s number-one customer relationship management (CRM) system, which runs through all its products, enables citizens to self-serve in new ways.

“To self-serve, we need public services to know everything there is to know about a citizen, relevant to each use-case,” says Mill. “When you have a good CRM and case management, information collected can be used, with the appropriate permissions and governance, across all services. Through systems such as the Government Gateway, for example, the public sector has the ability to provide a more personalised service to every citizen, where the relevant information is shared with them to create a more positive and engaging experience.

“All these things come together when you have an extensible platform approach and this way we can truly transform the citizen experience. It then gives public sector employees the time to focus on and resolve difficult cases, and not deal with run-of-the-mill tasks, which can be undertaken by combinations of technology, artificial intelligence and analytics. A lot of public sector business is about sheer volume, and volume breeds complexity and cost. If we can simplify that, it costs less to serve and everybody benefits.”

For more information please visit [salesforce.com/uk/publicsector](https://salesforce.com/uk/publicsector)



# Q&A

## The art of the possible

To succeed in digital transformation, public sector organisations must reimagine their operations and processes, says **Craig Mill**, Salesforce head of public sector in Europe



**Q Legacy systems are clearly a barrier to digital transformation, but what else is holding the public sector back from maximising value?**

**A** It’s very difficult to reimagine how all of your current processes work if you don’t know what the art of the possible is. How do you go about reimaging how something works, or innovating a new process, if you don’t actually know what’s possible? I learn by looking at how other websites work and how the Salesforce platform is constantly innovating and evolving, creating new components, enablers and features. We can help our customers do that, showing demos from across the world from both public and private sectors. Security and compliance is built into the heart of our product set, making sure citizen information is held securely.

**Q Why do public sector organisations find it more difficult to transform than some parts of the private sector?**

**A** The legacy anchor always comes to mind. Governance also plays a part. IT-led business change is notably different from the private sector where change belongs to the business. This changes the dynamic and the priorities. IT organisations do great work, but the first priority isn’t always the business impact. Protecting previous investments and purity of architecture can take centre stage. Procurement can be tricky; it tends to be pretty prescriptive and can predetermine what an outcome or solution should look like, which can stifle innovation.

**Q How does Salesforce help the public sector overcome these challenges and realise the art of the possible?**

**A** We help the customer understand what they could have. That’s why we love to interact and engage with our customers, showing them and helping them understand what’s possible. We show how our platform is the right technology. The zeitgeist at the moment is around open source development, but my personal view is that it is simply building tomorrow’s legacy today. All that work is going to need a huge amount of support and maintenance, and it is going to require armies to do it. Components become obsolete, need to be upgraded and the costs continue to rise. It’s the elephant in the room. Going down a platform approach, fully in the cloud, is a much better way of transforming. It’s fast to deploy, configurable, flexible, agile and easy to connect to. We provide the platform to help get minimum-viable products deployed at pace, ultimately allowing public services to digitalise and transform more quickly and reduce costs.

57%

of British citizens want government to collaborate with global enterprises to drive innovation

*Accenture 2020*

**“There will be an ever-greater move towards cloud-based platforms that will help meet the pressures to speed up the retirement of legacy systems**

**Q How do you think public sector digital transformations will evolve in the coming years?**

**A** The one thing I am sure about is that there’s a lot of change coming. A successful digital transformation requires a great amount of ambition and that is a personal challenge for our customers. It’s a constantly moving target because government priorities change. If you think of some of the big public sector challenges right now – Brexit, the COVID-19 crisis, levelling up – they are all ambitious. When you have that amount of change, scarce resources have to be deployed effectively and building everything yourself is not the answer. There will be an ever-greater move towards cloud-based platforms that will help meet the pressures to speed up the retirement of legacy systems, to create new services and improve digital engagement.





O.U. SCARFF/AFP via Getty Images

# Learning from Test and Trace

Widely criticised, the NHS Test and Trace system can teach us valuable lessons about the challenges inherent in running grand-scale public sector technology projects

Chris Stokel-Walker

It has been one of the most visible examples of public sector technology and has come in for its fair share of criticism. The NHS Test and Trace programme seeks to identify people who have come into contact with those who tested positive for coronavirus and encourage them to isolate for 14 days. But as well as attempting to trace and contact, it also tries to match requests for tests with available testing capacity.

Test and Trace is meant to be a pillar of the country's response to the

novel coronavirus COVID-19. Yet it hasn't worked as well as people and politicians had hoped. The project has been criticised for poor efficacy and sluggish responses, though those behind it say it is improving all the time.

Nevertheless, the hiccups and headaches tracing teams have faced in trying to get people contacted by the NHS are an instructive, real-life case study of some of the pitfalls of public sector tech and provide contemporary lessons for future projects.

One of the key problems that has blighted Test and Trace has been its ability to scale. "We make things too complicated all the time," says Tom Forth of ODI Leeds, a node of the Open Data Institute, which looks at how data can be used to improve public services.

"Specifically on Test and Trace, why have such a big organisation? Why do it for the whole of England? Why not use local authority capacity? I know that doesn't feel like a tech question, but it really is. Generally tech doesn't scale very well."

The UK public sector is fixated on equality in systems, which can result in grand, sweeping projects being developed where piecemeal ones may be better able to serve the population. "This was a problem of scale and complexity," says Forth. "It is technically a very hard problem to do for the whole of the UK. But we did it because that's who we are; we are obsessed with equality and a national solution to everything."

Splitting the system up regionally may have resulted in unequal development at times, but it would have made more logical sense. "This stuff is all pretty widely known by people who write software," explains Forth. "As simple as possible, as small as possible, as early as possible, then fix, fix, fix." The alternative, if you want a truly national system built from scratch, is unenviable and

expensive. Facebook spent \$13 billion on research and development last year to run a social networking site, never mind a massive, vitally important system to track a pandemic. Tackling the problem small pieces at a time could have helped speed up rollout and perhaps avoided some of the stumbling blocks.

"Government is very reticent to deal with small and medium-sized enterprisers (SMEs)," says Rod Plummer of Shoothill, a Shewsbury-based software company that has previously bid for government contracts and won just one. "The civil service are risk averse to dealing with SMEs because they're frightened we're going to go bust or mad." But SMEs have the nimbleness to tackle small-scale projects at speed without layers of bureaucracy and have expertise large organisations often don't.

It's also important to try and build a firewall between public sector technology projects and those asking for them to be delivered. "Government makes business decisions out of politics, not out of business," adds Plummer. "Trying to anticipate what they might do, say or think in my world is almost impossible."

Political necessity can also muddy the waters, says Forth. Politicians can sometimes stretch the truth or make eye-catching promises to please the electorate that can be difficult to deliver through public sector tech projects. "Sleights of hand or convenient redefinitions that are second nature to humans are incredibly hard to put into databases and to write in code," he says.

The redefinition of "tests per day" as "tests posted out" to meet landmark targets probably didn't help those trying to code the NHS Test and Trace system. "We've never managed to release the number of

**“We are obsessed with equality and a national solution to everything”**

tests performed regularly for small areas in England," says Forth. "I suspect because it would betray some of the lying in the software."

Allowing blue-sky thinking is also vital. While budgets need to be carefully accounted for, and therefore there's an inherent conservatism in the procurement and rollout of projects, technology often works through unique ideas. "I was once asked, 'Did Mrs Miggins ask for this?'" says Plummer. "Did Steve Jobs ask if people wanted the iPhone? No. He just built it and sold millions. If you ask people if they want it before building it, that's suicide in business."

No one doubts the herculean task required in building a world-leading Test and Trace system. "It's very easy to criticise the government over COVID-19, but nobody's had to face this before," says Plummer. The scale of some of the missteps along the way, and the reasons those errors were made, are endemic within the world of public sector tech. But there's hope that the high stakes involved in the Test and Trace programme will cause a rethink, which welcomes in smaller, nimbler, SME-friendly thinking, and that the future may be brighter. ●

# 11,580,277



people have been tested at least once since the start of the NHS Test and Trace programme (as of 11th November)

Gov.uk 2020

# £10BN

spent on the programme so far

National Audit Office 2020

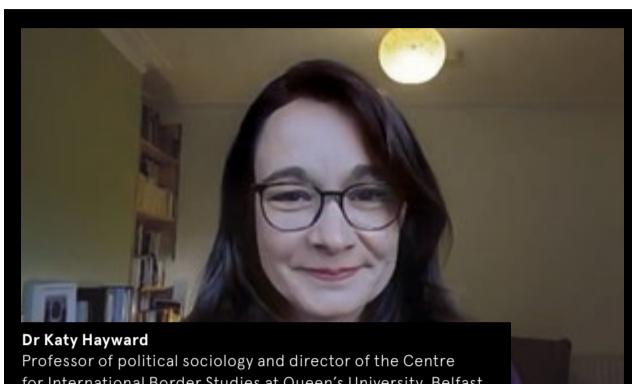
ROUNDTABLE

# Digital borders: time to seize the opportunity

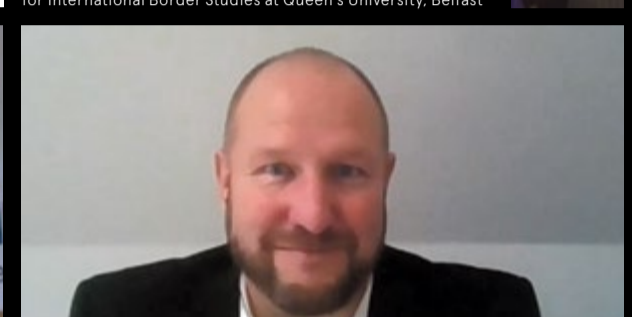
The UK government wants the world's most effective border by 2025, friction free yet with strong protection against threats such as crime and biosecurity. A virtual roundtable of experts discuss how to make it happen



**Tony Smith**  
Managing director of border management consultancy Fortinus, former director-general of UK Border Force



**Dr Katy Hayward**  
Professor of political sociology and director of the Centre for International Border Studies at Queen's University, Belfast



**Lars Karlsson**  
Managing director KGH Global Consulting, previously a director at the World Customs Organisation and Swedish Customs



**Barry Hill**  
Director of business development, national security and defence, Leidos UK



**Ian Neill**  
Managing director of Agile Security Partners, former head of strategy and future development, UK Border Force

**What are the issues facing the government as it creates the post-Brexit border?**

**TS** The first is around security: the growth in terrorism has shifted the border from its traditional focus, which was immigration based. The second is Brexit and customs: there are huge challenges in controlling the movement of goods around the UK and the European Union. And the future one is coronavirus and health, with a lot of debate about the health credentials that people may need when they're moving around the world, such as vaccination certificates. Of these three, the only one we've cracked, and we haven't got it absolutely right, is security.

**BH** Putting politics to one side, I agree this is an opportunity to think about the border differently. The technology enablers are very much in operation around different parts of the world today.

**KH** The use of advanced technology cannot in and of itself constitute a border strategy. Before we get to the process of designing the border, we need to ask what are our values, what are our priorities? What and who will be prioritised in terms of trade and travellers? And borders cannot be managed unilaterally. Effectiveness depends on communication and co-operation with those on the other side. Policy matters here too.

**Do we need a new vision?**

**LK** The borders we know were developed in Europe around 50 years ago when we didn't have the technology or information we have now. We shouldn't see the border as a location you pass; crossing the border is a process that begins when you buy a ticket or the consumer buys something from overseas on the internet. We need to create smarter borders, with the work done at an early stage and then at the border itself we already know what is coming; we just verify who and what is passing the border, making sure it's what we expect, and intervening in high-risk cases.

**IN** If you're doing extensive checks at a port, that's the worst-case scenario. Of course, there is an inevitability about criminality so you will have to do it, but you still want to push as many checks away from the border as possible.

**This move away from the physical crossing point was a key part of the government's 2025 Border Strategy consultation over the summer. But haven't previous digital border projects run into problems?**

**TS** One problem is we have at least 26 different government departments or agencies with an interest in what's crossing the border. What we need is integrated border management, creating a composite structure that manages all the agencies around the border. The United States, Canada, Australia have all done this.

**BH** I think the new organisation set up in the Cabinet Office trying to drive strategy should improve the chances of success; it's a good sign. And they've consulted widely. It's the continuation that's the real test. When we're six months down the line, and it gets a little harder, can we keep those communication channels open?

**What are the challenges around moving border processes away from the physical crossing point?**

**BH** You can come up with a model of a virtual border rather than a physical border, but then you have to determine the business processes

# 486.1m

tonnes of freight handled by UK ports in 2019

Department for Transport

within this that are efficient, the rules which underpin what you're looking for. I think many people should play a part in that, the government, industry and some specialists like the people we have on this virtual roundtable. Only then can you decide on the smart technology to make it work.

**LK** If you put in new information management without co-ordination, it can even cement old, bad processes. But success is possible. When I was head of Swedish customs we introduced the "single window" system on the Swedish-Norwegian border. Each traveller or trader sees just one official who works not only for Norway and Sweden, but in effect for some 900 government agencies across 28 EU countries.

**What are the significant improvements waiting to be made?**

**IN** There is the possibility of a step-change in the greater use of cloud and mobile. We've seen some of this in the registration of EU citizens for residence: pretty much every man, woman and child was done using

self-validation via a mobile app. There's a lot of flexibility now with technology; you can keep your data securely on your phone and share it with who you wish. The cost-savings are attractive and it ends the days of big, monolithic systems which have caused problems in the past.

**TS** When you arrive in the UK, there should be a line for people who have pre-registered and been checked. You look at a camera and we let you straight through. For goods, you should have something similar in concept, a trusted-trader scheme.

**LK** The UK should have a modern trusted-trader scheme handling 90 per cent of movements; that's what leading countries like the Netherlands are aiming for.

**IN** For a trusted-trader programme, we just need to know that you're coming and what's on your truck. When you arrive at the border, we just verify it's you who is driving it.

**Will people be wary about giving up extra data like this?**

**KH** If we give data voluntarily for a faster border crossing, we need to be clear about whether it is to be used solely for that purpose. Take the example of the test-and-trace system for COVID-19 in England. People were encouraged to use the system and within weeks it emerged it was potentially being used to identify those who were breaking self-isolation. It's easy to see how trust and consent can be lost when lines of privacy are blurred. We

**“There is the possibility of a step-change in the greater use of cloud and mobile”**

also need to be ahead of the game in regulating the use of different types of data under the auspices of border security, such as social-media profiling.

**BH** But if you get the ethics right and people trust it, this kind of scheme can be really successful. Technology is advancing rapidly and there have been pilot schemes with very high rates of recognition. The costs at the moment can still be high, but as non-intrusive inspection technologies advance rapidly and we move to increasingly digitalised border processes, the advantages and opportunities they deliver will be invaluable to achieving UK border ambitions.

For more information please go to [leidos.com/uk](https://leidos.com/uk)

Sponsored by





EDUCATION

# The future of digital learning

As schools attempted to provide lessons during lockdown, little thought was given to how inclusive online schooling really is

MaryLou Costa

As the education sector scrambled to deliver an online curriculum in the face of the first lockdown, the coronavirus pandemic has brought to the fore both the benefits of digital learning and shortcomings of the UK schooling system.

As COVID-related restrictions look likely to continue into the new year, and students need to move beyond catch-up mode, what steps are being taken to realise the potential of digital learning?

In its *EdTech Vision 2025* report, released in November, the EdTech Advisory Forum not only reviewed how COVID-19 has “magnified the uneven and patchy approach to digital learning in England”, but released seven recommendations to address issues such as accessibility, inclusivity and quality. The recommendations all converge on targeted, blended learning as the way forward, rather than digital being an outright classroom substitute.

Recommendations included a national edtech strategy, driven forward by a new Office for EdTech and Digital Skills, with a central digital learning platform. They also call for increasing support for digital infrastructure and devices, as well as a boost for those with special educational needs and disabilities (SEND) via digital assistive technology.

“The global pandemic has highlighted the urgent need to ensure equitable digital provision,” the

report argues. Ultimately, it says, new ways of organising delivery are essential to ensure lessons learnt during the pandemic are embedded.

One of these lessons has been around inclusivity, which has been a two-sided coin: enforced online learning has increased accessibility for some, but widened the disadvantage gap for those on the wrong side of the digital divide.

Digital innovations in learning have, in a number of ways, been proven to improve inclusivity, as Cat Scutt, director of education and research at the Chartered College of Teaching, points out. For example, assistive technology built in to digital devices and platforms, with text to speech, speech to text, and translation tools has helped learners with a variety of different needs, including students with SEND and those for whom English is an additional language.

“Too often there has been overly simplistic debate about whether face-to-face or remote learning is ‘better’, but this misses a key point,” Scutt argues. “Of course we need to consider these outcomes, but we also need to look at whether an online version of a course leads to some people being able to access it who might not have been able to do so if it were not available online. But we need to be careful that increased technology use does not exacerbate existing inequalities in access to learning.”

Such inequalities are of particular concern to Professor Cathy Lewin of Manchester Metropolitan University’s Education and Social Research Institute, who says remote learning is, in fact, likely to be impacting negatively on inclusivity in school contexts.

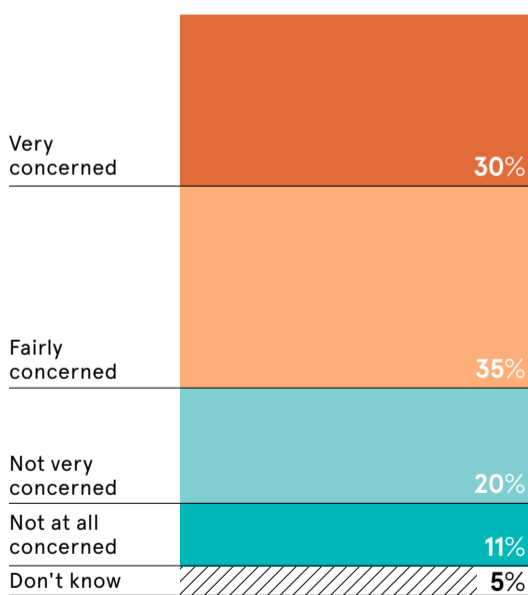
She lists a number of issues identified by research conducted during the first lockdown: less exposure to live lessons, fewer opportunities for teacher interaction, difficulties accessing technology and connectivity, more reliance on paper-based resources, being less engaged, spending less time learning at home while not necessarily having a quiet space to work.

“We need to be careful that increased technology use does not exacerbate existing inequalities in access to learning



## COVID CONCERNS AROUND EDUCATION

Parents in G7 countries share how concerned they were about their children’s education at the start of the pandemic



Kantar Media 2020

“Those from disadvantaged backgrounds are less likely to be exposed to the rich range of pedagogical practices that digital technology can support. There is a lot of evidence of various uses of digital technologies in school contexts, but often the results of studies are contradictory,” Lewin notes.

But echoing one of the *EdTech Vision 2025* report recommendations, she believes gaps will only close if sufficient funds are available to ensure all students have access to technology and connectivity, with new digital teaching approaches requiring investment in resources and training.

Yet equally important is a mindset for innovation, says Olivier Wolff, chief executive of SimpleCloud, a cloud-based content platform that enables students with even basic devices to access the sophisticated programmes of an institution via a virtual workstation.

Wolff believes the long-term vision of the education sector should be “to solve the access problem to education,” enabling more people to join courses regardless of where they live or the tools they have. Yet he acknowledges that infrastructure needs to be updated to make this shift more seamless.

“The tools to make education more accessible and inclusive exist, it’s just about changing the mindset,” he adds. “There is an appetite for evolution, but a bit of resistance to change.”

Once this can be overcome, Wolff envisions a new “à la carte” higher education model, where learners could cherry pick individual credits within a framework, as opposed to being confined to long and expensive diplomas and degrees.

“The value of education is to give students the practicality to make them valuable assets for companies

that will employ them in the future. A more personalised education model offers more value to students, and institutions can generate new sources of income,” he says.

A similarly flexible model as part of a secondary system shake-up could also bridge inclusivity barriers, according to edtech platform Gluu founder Sean Gardner, who is about to take the online edu.school portal from successful lockdown trial to national rollout.

“Now we have a cohort of children who are very disconnected from what should be available to them. Those gaps need to be closed in a way that reflects not only their ability to access learning online, but the way in which you need to engage with them. Traditional schooling perhaps isn’t the right way. So it’s about a kind of reinvention,” he explains.

“The ‘Open School’ piece is about trying to get industry and educators to collaborate and to come up with something that reflects the Open University structure that can bring less advantaged children into something to support them in a sustainable way. That’s still the gap and something we’d love to help accelerate.”

Using the power of a digital platform to “give students agency” is critical, says Gluu chief executive Christine Major. “It’s a once-in-a-lifetime opportunity that we have now to reshape the way we educate through the way we engage with technology,” she concludes.

OPINION

## ‘We must bring together all the ingredients needed to build a smarter state’

This has been a year like no other. No one has been unaffected by the coronavirus pandemic. From a public sector tech point of view, it has changed how the state works, the services it has to deliver for the country and how it engages with partners to help address the crisis.

As we come towards the end of the year, it is important we take the time to reflect on what good digital learnings we can take from this unprecedented time as we prepare for what comes next for our services, economy and people in 2021.

Like many others, techUK, representing the technology industry in the UK, has long been an evangelist for greater collaboration between government and industry to drive innovation, increase efficiency and improve outcomes for citizens. That collaboration has never been more important, nor more intense.

The past few months saw major developments in how public services and industry work together. The government issued a procurement policy note advising public bodies to provide contractual relief to suppliers affected by COVID-19 and provision for more direct awards and urgent procurements in these exceptional circumstances were demanded. Mechanisms were set up to help channel innovative solutions and offers of support from industry to local and central government.

What legacy will these developments leave in terms of how the public sector accesses industry capabilities? How will buyer and supplier behaviour change? How can we maintain procurement dynamism and agility while ensuring a level playing field and fair competition?

Alongside these questions raised by the COVID-19 crisis, all the familiar issues that were top of the govt agenda still need dealing with and came to light at techUK’s flagship public services conference Building the Smarter State.

The legacy IT estate still represents about half of central government IT spending and it is welcome that this issue has now risen up the priority list. Over the past few months, serious efforts have been made across Whitehall to address it. Public sector bodies still need to improve their access to innovation, improve the lot of small and medium-sized enterprises in this sector, and get more value out of their data. Brexit and the end of the transition period mean

there will shortly be an overhaul of public procurement regulations.

This all points towards a period of upheaval for the govt sector and over the last few months we’ve seen hints that more major change is on the way. It has been reported that Lord Maude who, as a minister, founded the Government Digital Service (GDS), recently led a review of the role of the Cabinet Office and its relations with departments.

In his first blog for GDS, Alex Chisholm, chief operating officer (COO) for the Civil Service, emphasised his commitment to recruiting a government chief digital officer to lead the digital, data and technology function and shape and deliver the government’s transformation strategy.

The blog also announced that Alison Pritchard, who impressed as interim director general of GDS, will be moving to the Office for National Statistics as director general for data capability, to make progress on the perennial issue of government use of data, with Fiona Deans, current COO of GDS, taking over leadership of the organisation. This is all happening alongside the launch of the much anticipated *National Data Strategy* that will help drive the vision of the UK as a world-leading data economy.

As we consider all this, ten years on from the report that led to the founding of GDS, it feels like we are on the cusp of the next step-change in digital government. Now is the time to be ambitious and have a vision for the future of our digital economy and services. As we move forward, we must continue the engagement between industry and public sector organisations and bring together all the ingredients needed to build a smarter state that meets the needs of its people and places.



Julian David  
Chief executive  
techUK

# simplecloud

Creating • Working • Learning • Together

For the **Public Sector**, Simplecloud is the easiest, instant, flexible, collaborative and secure global remote workplace solution for desktop users. It also provides solutions for demanding tasks in Architecture (BIM), Construction and Engineering. Please ask us for references from Ministries and local councils we have worked with.

For **Education Institutions**, SimpleCloud Education provides a fully integrated digital learning environment, allowing professors and students to be connected to a true virtual classroom from anywhere around the world, accessing any resource from any device, handling even the most demanding tasks and projects securely. We enable real access and equity in education, with additional functionalities for architecture, engineering, design art, vfx and games, as well as research.

Powered by:  
IBM

[www.simplecloud.io](http://www.simplecloud.io)



Contact us for more information  
[info@simplecloud.io](mailto:info@simplecloud.io)

Gartner names SimpleCloud as one of the vendors in “Enabling Remote Access to PC Labs in Higher Education” report. Stuart Downes, Robert Yanckello, 27 August 2020.

Download report here

Gartner

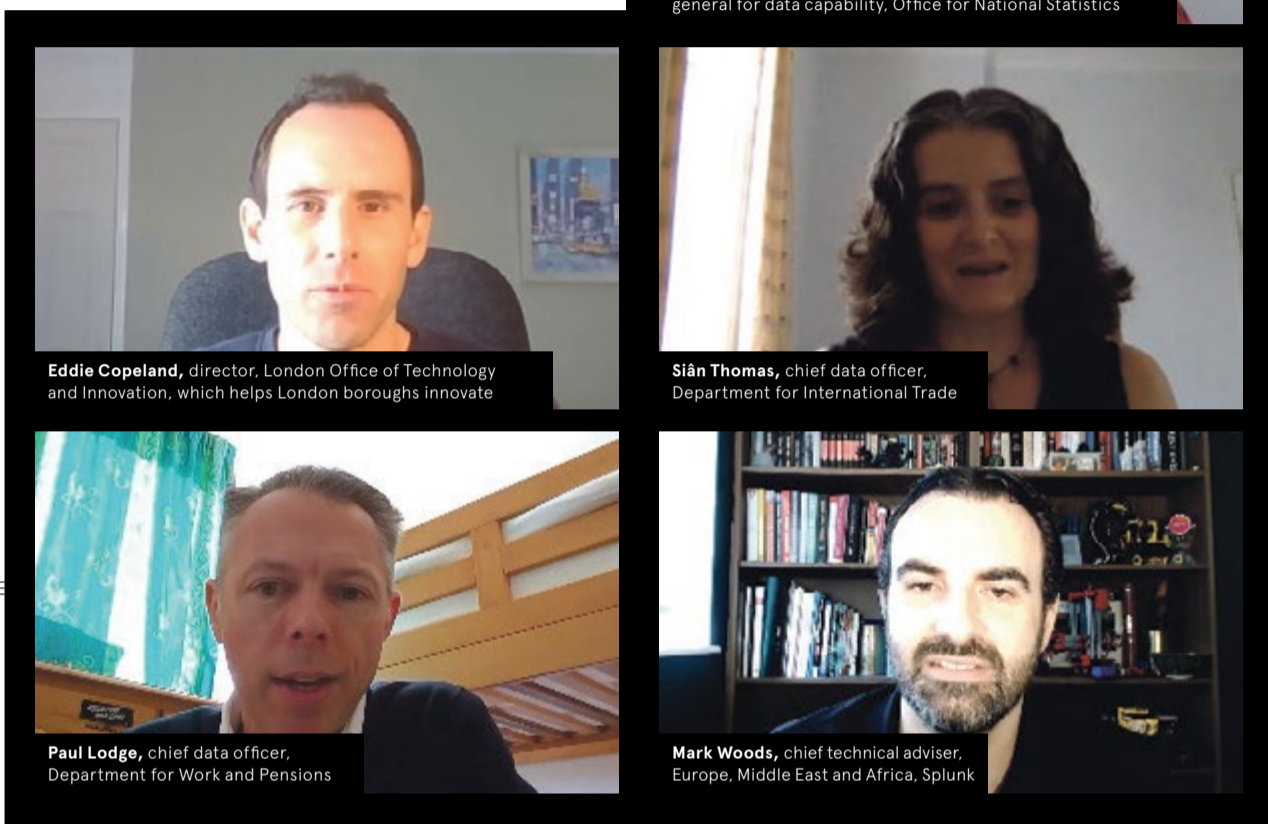
GARTNER is a registered trademark and service mark of Gartner, Inc. and/or its affiliates in the U.S. and internationally and is used herein with permission. All rights reserved.



ROUNDTABLE

# How joined-up thinking turns data into innovation

The government's use of data has become more agile and creative as it reacts to the coronavirus pandemic. A virtual roundtable of experts considers whether this accelerated innovation is here to stay



**Alison Pritchard**, deputy national statistician and director general for data capability, Office for National Statistics

**Eddie Copeland**, director, London Office of Technology and Innovation, which helps London boroughs innovate

**Siân Thomas**, chief data officer, Department for International Trade

**Paul Lodge**, chief data officer, Department for Work and Pensions

**Mark Woods**, chief technical adviser, Europe, Middle East and Africa, Splunk

Gren Manuel

**Q** Is data culture taking root in government?

**AP** I think we're on a good trajectory. If we gathered a group together to talk about government data a few years ago then, quite rightly, the focus would have been on data security and protection. Now, I think the focus is on utilising data effectively. We still have lots of technical, legal and administrative hurdles and constraints that we're working with, but we are on our way.

**PL** [GDPR [General Data Protection Regulation] has been very helpful because it has forced the recognition that the data doesn't belong to us in government; it belongs to the citizen. That forces conversations about how data can improve citizen outcomes. That's a really important shift.

**EC** The big gap is that most of the key opportunities to improve how the public sector works are where data flows between organisations. If we

want to target resources effectively, a massive priority right now, it requires co-ordinating different teams and that means combining data sets from different organisations. We've seen during the COVID crisis the difficulty of getting data shared between the central government, the NHS and local governments: that's the bit we have to nail.

**MW** That's why I like the term "data fabric" because most of the time it's a patchwork. I think for data-sharing in government, the default should be to open unless there are strong reasons, otherwise you are putting up roadblocks.

**Q** Has the pandemic helped change internal attitudes towards sharing like this?

**PL** At the very beginning of the crisis, when people with clinical needs needed to very carefully shield themselves, the Vulnerable Persons Service broke down a huge number of barriers between government departments to deliver more than a million food parcels. For instance, the Department of Health and Social Care needed to share patient-level records so other government organisations could understand the broader picture on vulnerability. We used technologies, such as "data trusts" built by the Government Digital Service, and quickly unlocked a whole load of really difficult problems.

**AP** I think Paul is talking about one of the best use-cases we have and we should use it as a pattern. Other use-cases have a similar feel about them, such as tackling homelessness, where you need to understand health implications, contact with the criminal justice system, geographical issues. We're seeing, I think, a breakdown of so many of the government's siloed operations.

**EC** There was an urgent need at the beginning of lockdown to identify which families were most vulnerable and one of the indicators is whether a child

receives free school meals. But if a child goes to school in a neighbouring borough, their home borough doesn't know if they are on free school meals. We were able to put in place the information governance arrangements to share the data across London in two days, when normally it would take six months.

**MW** One thing the crisis has shown us is that if you haven't invested in people and systems to collect data and store it in a ready-to-share way, then at some stage you may have to ask front-line operational staff, who really need to be getting on with their day job, to stop doing it, to start collecting data or answering questions. They only have five days a week; how many of those days do you want them filling in data?

**ST** That's why you have to understand your data fully. Projects that may have been low burn a few months ago can become quick wins because you've learnt about the data. Also, the data and the team can interoperate in a good way. If you've held data for many years and have a lot of experience using it, you can achieve benefits you wouldn't see if you put a new team on it.

**“**We've learned a lot over the last few months, not just what worked but also what didn't

**Q** Does government need more data scientists?

**MW** Anybody who has been in an area for a number of years can be a data scientist. People get intimidated; they say it's maths and quite complicated, but sometimes being a data scientist is just about asking the right questions. What are we trying to achieve? Is this number big in this particular context? What would happen if this went wrong? Or went right?

**ST** You have people who have strong skills in analytics, they're very good at ensuring data quality, but sometimes the timeliness of the data gets lost. But if you're at the other end of the spectrum with people who understand real-time data, how do you make sure the quality is good enough? It's difficult because the skillsets can be different.

**Q** Will the public support more data-sharing in government because of the experience of the pandemic?

**AP** I think the public now expect and demand we use data effectively. Now, in this country we have a history of scrutiny and focus and making sure the right questions are being asked about data, quite rightly. So we need to be clearer about the benefits derived from the usage of data and help with a narrative for the public.

**EC** We shouldn't share every type of data and where we do, it has to be done ethically, securely and legally. But from what I've seen, the

public's perception of the risk and reward has shifted in favour of sharing more data.

**Q** The pace of government innovation seems to have quickened over the last ten months; can this be maintained?

**ST** We've learnt a lot over the last few months, not just what worked, but also what didn't. Actually we may have learnt more from what didn't work. We can take all this into the future and sustain progress.

**MW** Another important way to keep the pace going is some central co-ordination, which doesn't overly restrict particular departments that need to do something different.

**PL** If we can continue to draw together different organisations to solve genuine, citizen-facing problems, that's where we can end up with fantastic successes. It has forced us to think about our organisation design around data and how we can break through internal organisational and team barriers to join up data better. I think these are all positive things to take forward.

For more information please visit [www.splunk.com](http://www.splunk.com)



CLOUD

# Innovation could be COVID's silver lining

The cloud has been a game-changer for public sector organisations that migrated pre-pandemic and an eye-opener for those that did not

Dan Thomas

**T**he public sector lags far behind private enterprise when it comes to moving legacy IT systems into the cloud, something brought into stark relief by the coronavirus pandemic.

As councils, police forces, schools and hospitals have faced unprecedented challenges, they have had to find, implement and scale solutions at breakneck speed.

Those still using inflexible on-premise IT systems have found it harder to cope than their cloud-native peers. Not only is it more difficult to buy and "plug in" new cloud solutions, they are also likely to have missed out on considerable savings gained from moving to the cloud, leaving them with fewer financial and human resources to throw at the crisis.

"If all your energy is spent keeping the lights on and limiting IT failures, you can't focus on new initiatives that might transform your operation," says Rahul Gupta, cloud expert at PA Consulting.

One organisation that largely bypassed these issues was Liverpool Women's NHS Foundation Trust, which serves more than 50,000 patients on Merseyside and across the UK.

Working with the IT digital transformation partner Fortrus, it had spent the previous few years moving all its paper health records onto a new digitalised system hosted on

Amazon Web Services, which enabled clinicians to access patient data far more quickly.

Not only was this more efficient and secure – previously records had to be manually retrieved from storage by a dedicated team – it also meant the hospital was in a stronger position for a shock it could never have foreseen.

"Without a digital records system it would have been a logistical nightmare. Instead they were able to reconfigure hospital workflows without the risk of physical paper records and porters transmitting the virus," says Jon Atkin, chief operating officer at Fortrus. "They could also keep regular tabs on patients who had been sent home, but were still sick, and tackle the crisis as it unfolded."

In 2014, the UK government made it mandatory for central government departments to consider potential cloud solutions before any other option when procuring new IT services. It also strongly recommended the policy should be adopted by the wider public sector.

But according to a freedom of information request by IT management company SolarWinds last year, only 30 per cent of NHS trusts had adopted any level of public cloud in their organisation, while the figure for central government departments was 61 per cent.

This will not have helped in 2020 as vast numbers of public sector employees have started working from home, where they need secure remote access to centralised data on various devices. Organisations have also had to scale up IT systems at record speed, for example to cope with a large rise in unemployment claims or to underpin wholly new services such as COVID testing centres.

However, the crisis has succeeded in strengthening the case for change, says Gupta. "The pandemic has surfaced a lot of hidden problems, but also some real game-changers that people are going to want to hang on to when this is over."



UNPREPARED FOR CLOUD

A freedom of information request just over a year ago showed cloud readiness to be extremely low in the public sector



SolarWinds 2018

One such success story is Haringey Council in London. Before the pandemic, it was already working to improve in-person collaboration across the organisation through its Agile plan. But in March it had to take the whole project online, a move that has uncovered new ways of working which should outlast the pandemic.

The council had already implemented Microsoft 365, a cloud-based collaboration tool, so was able to move many of its staff seamlessly to remote-working arrangements. It also identified and quickly implemented a range of online tools to aid collaboration, including an online whiteboard with virtual post-it notes, an online polling tool to capture feedback and preferences in real time, and the virtual meetings app Microsoft Teams.

"Being able to adapt our Agile approach in this way helped the council to respond in the early stages of the pandemic by running virtual workshops with groups of staff, residents and communities to understand the impact COVID-19 was having on our communities," says Andrew Rostom, head of programmes and transformation at Haringey Council.

"Staff have also been able to meet up, share data, collaborate and learn together in a manner almost equivalent to that offered within a physical room." Dennis Vergne, who runs the public sector management consultancy Basis, and worked with Haringey on Agile, has seen this sort of innovation more widely and expects it to last, not least as a way to cut costs. "A number of local authorities went through something like this before the

pandemic, but we'll see more. Putting apps and data into the cloud allows more of your staff to work from home or hot desk and this allows you to get rid of property or leased buildings that are costing the earth," he says.

"You've also seen councils replacing old legacy systems with more flexible, cheaper and secure software in the cloud models."

The problem many organisations face is that they invested heavily in on-premise systems years ago and are still locked into expensive contracts with the suppliers that built them. The prospect of under-training complex IT migration also scares many.

However, IT managed service companies such as Fortrus say they are breaking this mould by transitioning public sector organisations from legacy single-vendor systems onto more flexible wrap-around solutions. In such cases, clients pick from a wide range of different software vendors, safe in the knowledge they will integrate seamlessly in the cloud.

The pandemic has left many public sector technology departments with shaky finances and an impetus to try new ways of working. Gupta believes it could be the catalyst many need to finally make a concerted jump to the cloud.

"In the public sector, changing the culture is usually much harder than changing the technology. But the pandemic is changing culture very fast. People who were scared to make that jump are now seriously thinking about it and allocating budget," he concludes. ●



# AUTOMATION

Artificial intelligence and automated technologies have the potential to revolutionise the way in which companies and their workers operate, and public sector organisations are no different. Their challenges may be unique, but automation will be critically important in ensuring an efficient and productive public sector in the years to come

## £6.4BN

was spent by the public sector on science and technology in the 2018-19 financial year, up from £5 billion the year before

Office for National Statistics 2020

## 63%

of UK adults believe the government needs to tackle tech issues and modernise for the future

ThoughtWorks 2020

## 80%

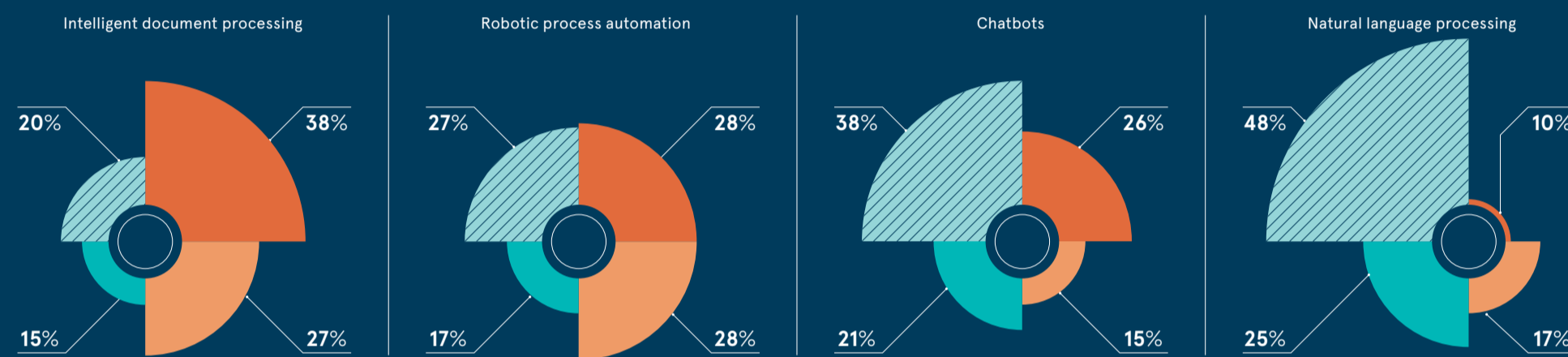
of public sector workers believe AI empowers people at their organisations to make better decisions

Deloitte 2020

### AUTOMATION TRANSFORMATION PLANS

Survey of UK technology decision-makers within central government

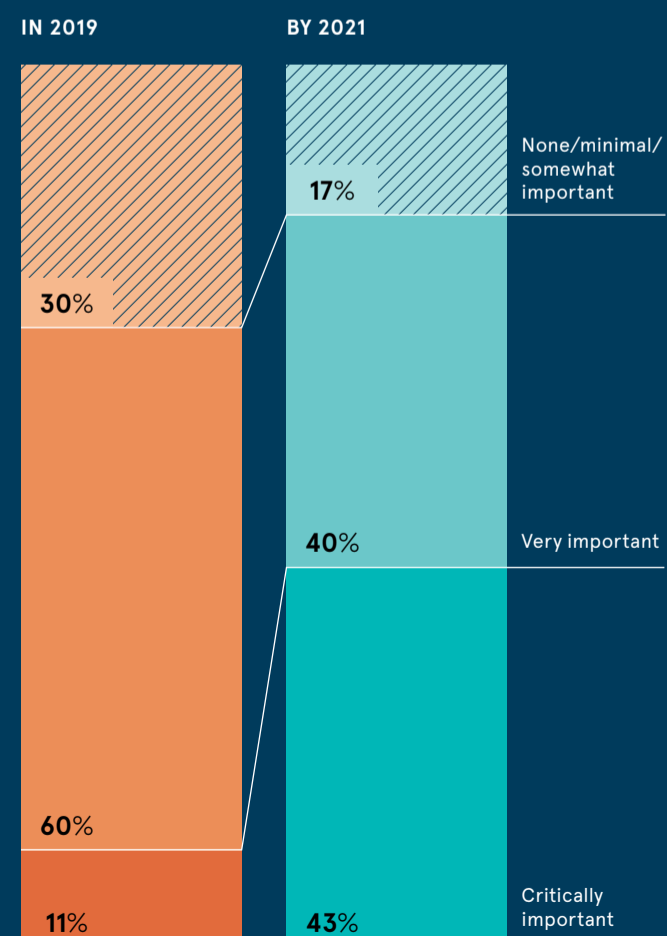
● Already implemented ● Planning to implement or evaluating ● Interested, but no commitment ● Not aware of nor interested



Applan 2020

### IMPORTANCE OF AI

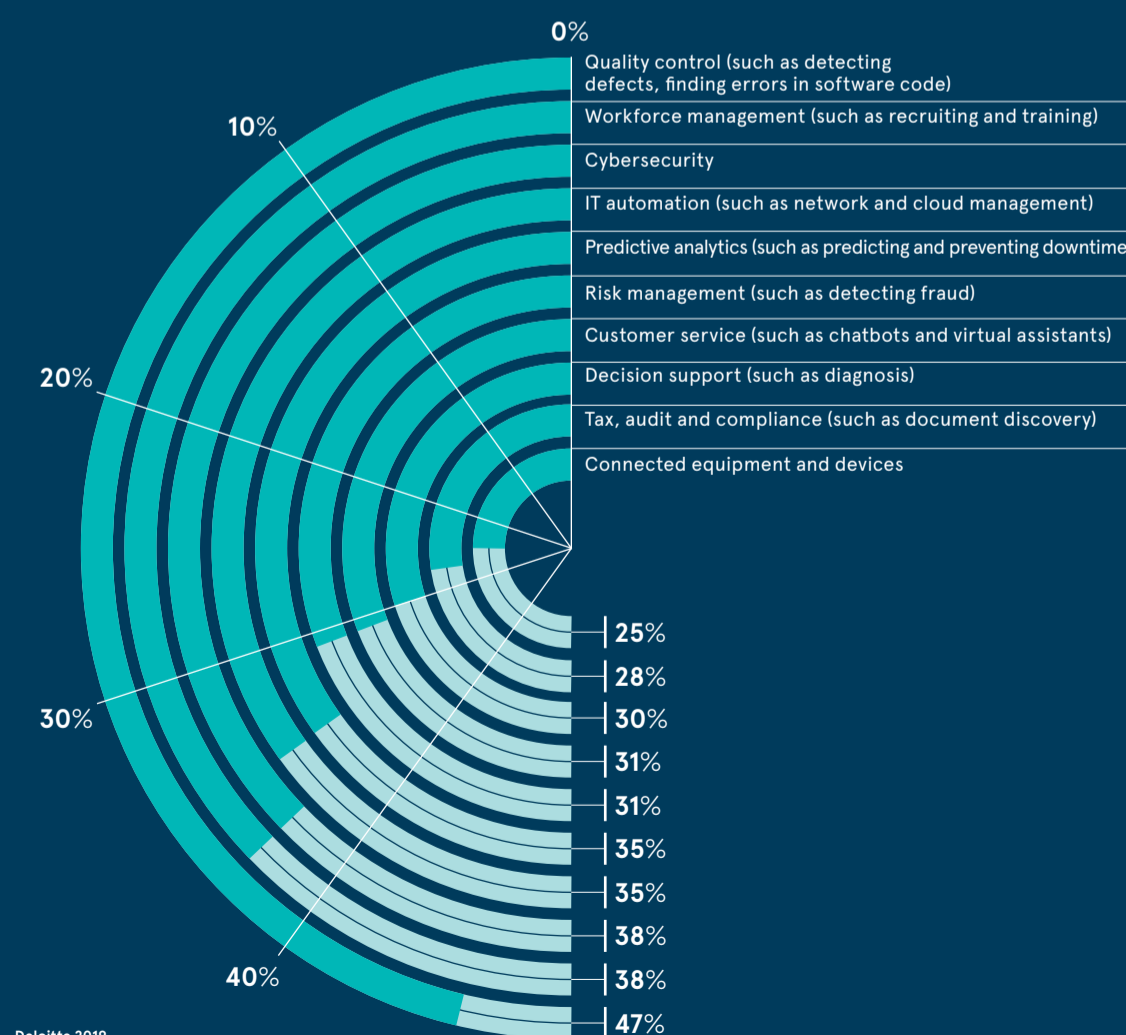
How public sector organisations rate the strategic importance of adopting or using AI/cognitive technologies to their overall success.



Deloitte 2019

### TOP AI USE CASES

Share of public sector organisations that are using AI/cognitive technologies in the following areas

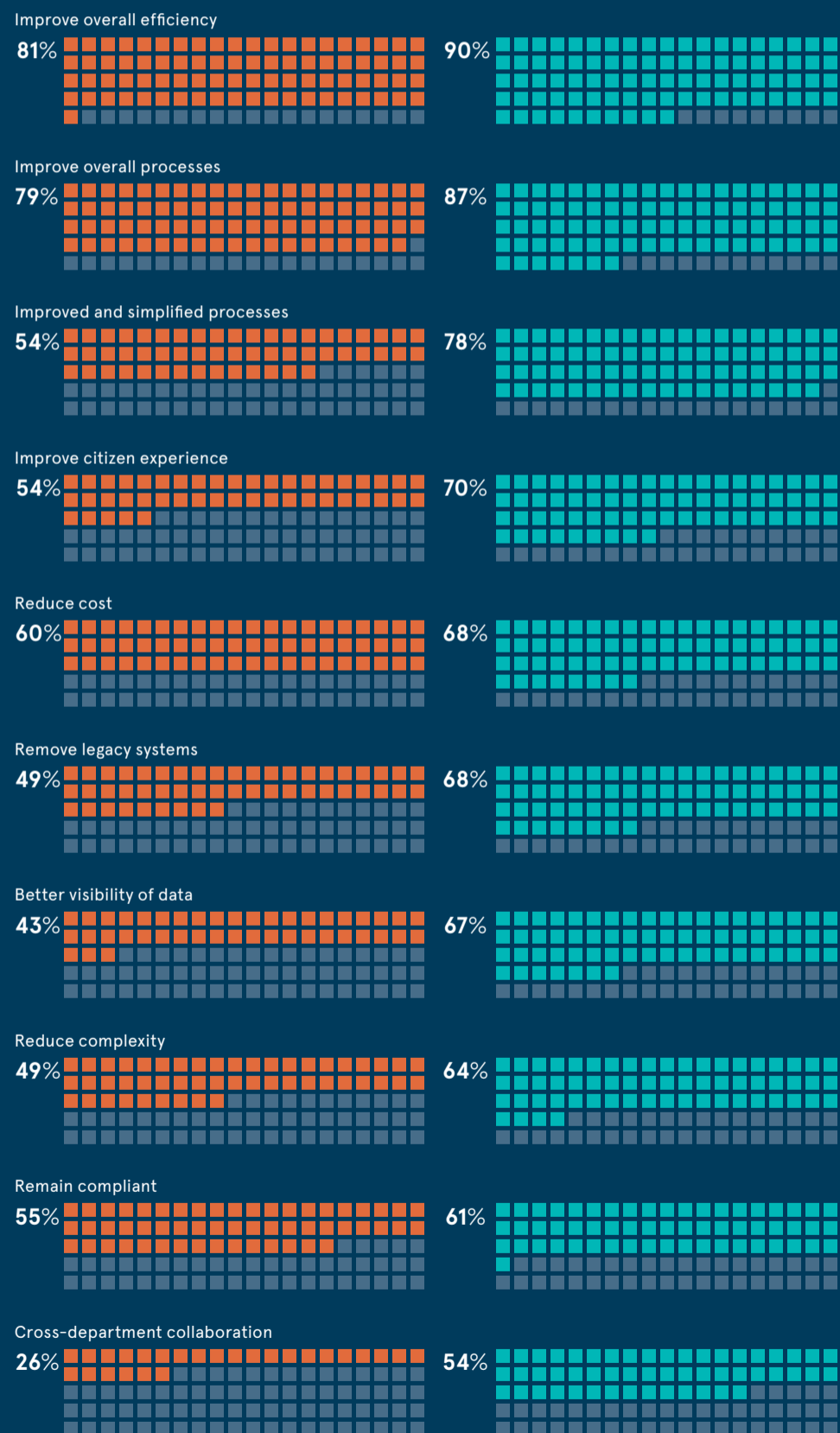


Deloitte 2019

### DIGITAL TRANSFORMATION PRIORITIES

Survey of UK technology decision-makers within central government

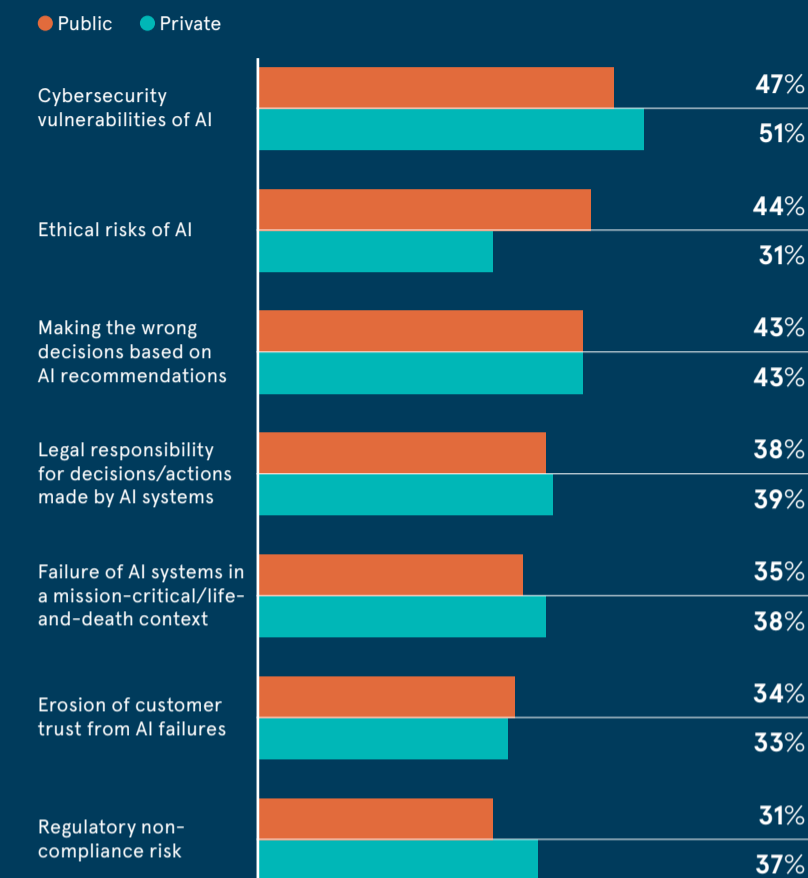
● Last five years ● Next five years



Applan 2020

### AI CONCERNS: HOW PUBLIC/PRIVATE SECTORS DIFFER

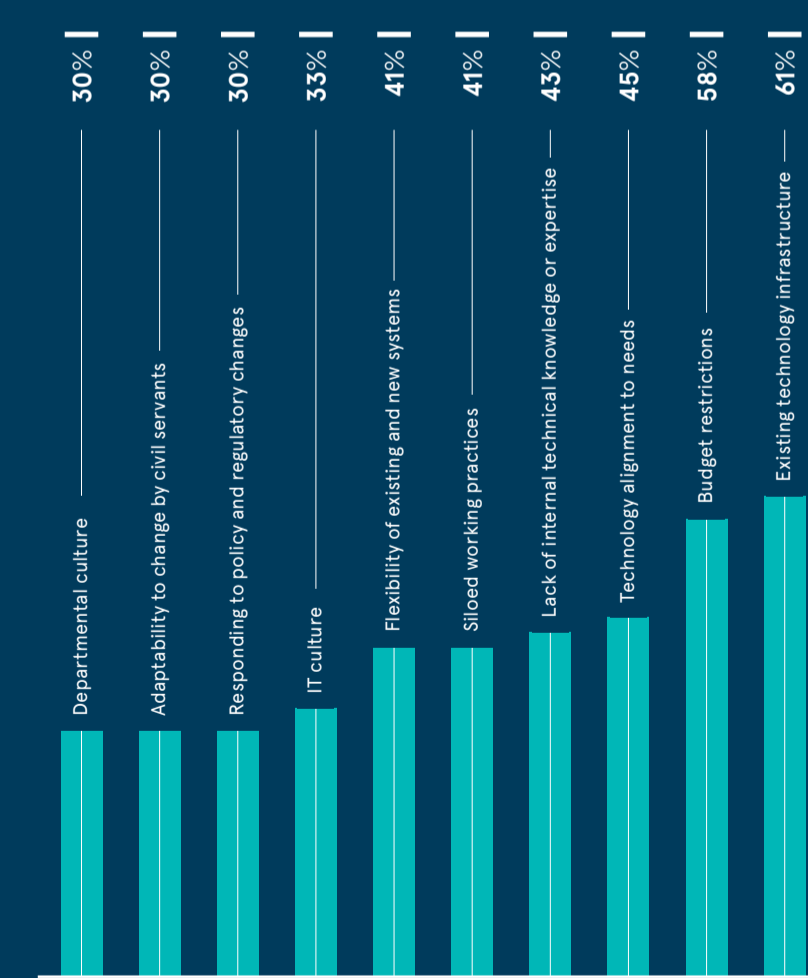
Top risks of AI/cognitive technologies, according to AI adopters from the public and private sectors



Deloitte 2019

### TOP BARRIERS TO DIGITAL TRANSFORMATION

Survey of UK technology decision-makers within central government



Applan 2020





CHANGE MANAGEMENT

# Creating a culture of change

Legacy infrastructure and outmoded ways of thinking can trip up digital transformation projects in the public sector

Oliver Pickup

Private sector organisations that began digital transformation before the coronavirus pandemic suffocated business as usual were equipped and agile enough to revamp their strategies and operations, and thrive despite the chaos.

And laggards quickly realised that to keep pace they needed to invest in digital technologies and accelerate digital transformation plans. Meanwhile, those operating in the public sector, lumbered with legacy systems unsuitable for the digital age, looked on with envy, twiddling their thumbs.

A slight exaggeration, perhaps, but it is a truism that the public sector is notoriously slow to embrace technology. There is a pervading sense,

though, that COVID has necessitated a levelling-up across the sector.

Given the mass shift to remote working, the strain on public services, especially the National Health Service, and the immediate need to streamline operations and reduce spending while improving efficiencies, digital transformation is critical. As private sector business leaders can attest, change management is paramount when deploying new technologies and ways of working.

While there is great urgency for speedy improvement, it's appropriate to acknowledge digital adoption within the UK public sector is well behind other countries. Johnny Hugill, head of research at PUBLIC, a govtech venture firm, notes that

although many public services have been moved online, to www.gov.uk, the harmonisation of digital services has much ground to make up. For instance, he says, around 60 per cent of citizens fill out online forms to public authorities here, while digital front-runners such as Denmark, Norway, Estonia and South Korea enjoy rates of up to 80 per cent.

The coronavirus fallout served to expose the UK public sector's woeful lack of readiness to operate in the digital era. Indeed, a meagre 6 per cent of public sector workers said they were "extremely prepared for the pandemic", according to research published in mid-November by Pure Storage, a global data storage solutions firm.

More than two-thirds (67 per cent) responded that "legacy infrastructure is holding up digital transformation progress". This hindrance leads to "increased operational costs, reduced efficiency, and reduced operational agility", says Shaun Collings, Pure Storage's director of public sector in the UK.

The organisation's research suggests eight out of 10 public sector workers believe agile methodologies and design-thinking are more important now than before the pandemic. "Clearly, many are constrained by legacy infrastructure," says Collings. "The challenges and upheaval that public sector organisations have been faced with should act as a catalyst for reviews of supporting infrastructure and consideration of what is needed for the future."

This advice is supported by new data from SAP, which indicates that

28 per cent of UK civil servants say they still lack adequate IT systems to support remote working. Leila Romane, the enterprise software provider's head of SuccessFactors in the UK and Ireland, says: "Public sector organisations often operate independently and many are burdened by old and siloed technology infrastructure, which has made digital innovation more challenging."

"In the private sector, however, technology is increasingly seen as a tool to drive efficiencies by sharing data across departments and geographies," Romane urges public sector organisations to be more collaborative, digitally focused and flexible, not least because they will otherwise find it harder to attract and retain top young talent, she warns.

While public sector leaders may realise the need, and show a willingness to upgrade their digital capabilities, there are, frustratingly, many hurdles to overcome. Professor Julie Hodges of Durham Business School lists them. Of the many barriers, budget constraints and legacy infrastructure is a big one. Lack of leadership and vision also ranks highly, as does a reluctance to change among managers and frontline staff. Possibly most limiting is a culture that does not support transformational change, says Hodges.

PUBLIC's Hugill agrees. "Together, culture, skills and practice form a fairly significant stumbling block to getting the public sector on board with projects," he says, making the case that tech companies and start-ups should be considered over traditional partners that might not be best placed to drive digital adoption.

"Public sector officials have fallen into a routine of 'this is how we've always done it' when choosing preferred suppliers. The truth is that these suppliers were often chosen because they were good at what they did 30 years ago, but then became better at winning contracts than they were at innovating."

Thankfully, there is a growing list of case studies where public sector

**“Culture, skills and practice form a fairly significant stumbling block to getting the public sector on board with projects**

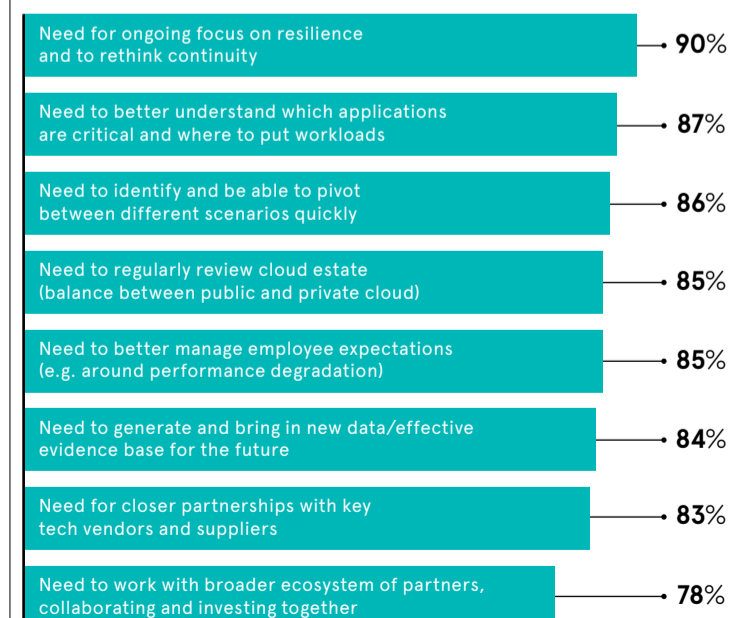
bodies have teamed up with tech organisations to great effect. For instance, the North East Ambulance Service (NEAS), a completely mobile and essential frontline organisation with 2,500 staff covering 32,000 square miles, uses Workplace from Facebook's communication platform to enable employees to connect and communicate better with each other.

"When the pandemic hit, I wanted a safe and secure space for staff to ask questions, challenge each other, share stories and help us build a stronger team and supportive culture," says Helen Ray, chief executive of NEAS. "Workplace has helped us move away from having conversations behind closed doors to more openness and transparency. The social media platform has helped to bring us closer together and instil a sense of belonging."

The last word of advice for public sector leaders seeking to navigate their digital transformation journey, which once started should never stop, comes from Romane at SAP. "To drive change in any organisation, leaders need to first listen to their employees, especially those who are on the frontline," she says. "Then empower them with the tools and training to manage the change effectively and efficiently. Finally, create a mechanism for them to collaborate and feedback any learnings about their experiences." ●

MAJOR LESSONS LEARNED FROM THE PANDEMIC

Percentage of IT leaders in central government departments across Europe who agreed with the following statements



PureStorage 2020



Commercial feature

# 'Great rethink' drives public sector transformation

As one of the most disruptive periods in modern history causes a radical rethink in how people collaborate and interact, the public sector must embrace this new equilibrium

Organisations are experiencing the fastest, deepest, most consequential technology disruption ever. Working from anywhere, at scale, has transformed workforce models. There has been a direct-to-consumer explosion. Social commerce is on the rise. Contactless technology is powering all manner of experiences. Supply chains are becoming more digital and regionalised. Customer expectations continue to evolve at speed. And it's all being rapidly accelerated by a once-in-a-century pandemic.

We are the first generation of humans to truly experience two worlds: one physical and one virtual. This is rewriting the rules of how people eat, work, shop and live, and the services they expect to consume. Meanwhile, there is a clear desire to create a kinder, more socially just world and technology is the vehicle to get us there, whether it be developing vaccines, using artificial intelligence (AI) to remove biases, embedding sustainability into supply chains or promoting

a deeper understanding and alignment between communities.

"It is the time for the great rethink," says Mark J. Barrenechea, chief executive officer of OpenText, a market leader in information management software and solutions. "The fault lines of our economy and society have been exposed by the pandemic. In physics, a neutral equilibrium is a new position when disrupted. We were already seeing massive disruption through the likes of Industry 4.0, AI and huge computing power."

"What we're seeing now, with COVID-19, is an accelerated and interrupted equilibrium. There are very systemic, long-term structural changes happening. At the centre of the road ahead is agility, flexibility and trust. We all need to evolve and come together as a society, through a new social contract, to create a better world powered by technology."

Though hugely disruptive, COVID is providing a golden opportunity for governments to accelerate digital transformation. In September, the UK government launched a *National Data*

*Strategy*, putting data at the heart of the UK's pandemic recovery by overhauling its usage across the public sector. The strategy includes a programme of work to transform the way data is managed, used and shared internally, and with third parties and private citizens, creating an ethical and interoperable data infrastructure.

There is clearly a long way to go until these ambitions are realised, however. Recent data obtained by OpenText, following a freedom of information (FOI) request, revealed local authorities in the UK are yet to fully embrace digital government services. Some 31 per

**“There are very systemic, long-term structural changes happening**

cent of the 263 local authorities that answered the FOI request were unable to confirm exactly how much of the information they store and manage for citizens is digitalised. While two in five said they have digitalised the majority of this information, only 11 per cent confirmed they have fully digitalised all of their citizens' records.

"The story is similar around the world," says Brian Chidester, head of worldwide industry strategy for the public sector at OpenText. "COVID is forcing the public sector to rethink their operations. The ability to bring more value at a lower cost is one of the primary drivers, as well as remote work and the security around that. They have to be ready for this and do it in the right way. The pandemic was bold and radical, and it changed everything. It's going to take public organisations also being bold to rebound and advance their mission in the ways that are necessary on behalf of their citizens."

The public sector has long been stuck in a reactive posture, trying to respond after events have happened. Powered by data, and a new impetus for digital change fuelled by the pandemic, many are now attempting to shift to a more proactive posture. Governments are among the largest creators, consumers and disseminators of data, but data is only really useful when it drives insights. Technologies like AI are fundamental to that, but it does little good to layer technology on top of a problem.

Cloud is a focal point of the great rethink and crucial to overcoming some of the legacy challenges public sector organisations face. The public sector may be late to the cloud, but with security concerns now firmly appeased, due to cloud compliant security measures and governments seeing the value in remote working during the pandemic, this is changing. Another part of the rethink is economies of scale where there's overlap across an enterprise, which is driving vendor consolidation that allows the public sector to scale at a more feasible cost, while becoming

more efficient and breaking down silos.

OpenText enables intelligent and connected enterprises by managing, leveraging, securing and gaining insight into enterprise information, both in the cloud and on-premise. It's also the underlying foundational technology supporting any egovernment services around the world. People's experiences with government differ depending on where they live, creating a digital equity challenge that OpenText is keen to solve.

"Technology is one of the things that can level the playing field and that's where governments have sought to go first, creating on-demand self-service portals," says Chidester. "From soup to nuts, OpenText provides the portfolio the public sector needs to get the job done, from collaboration to security to content management to citizen experience, intelligent automation and supply chain management. And as governments look to consolidate their solution providers, it's one of the reasons they're coming to us."

"However, they mustn't overlook culture. Some organisations had no problem shifting to remote working and that wasn't just down to technology, but their mindset as well. When governments are doing these technology implementations or trying to layer innovation into the gaps they've found, they need to make sure culture and the buy-in from the enterprise is really there, otherwise it's not going to have the effect they think it's going to have. It's all about people: citizens and employees, and how they can come together to make it work. That's how to achieve the great rethink."

For more information please visit [opentext.com](https://www.opentext.com)





PROCUREMENT

# Reforming procurement to build trust

In a year when public sector procurement has been subject to intense scrutiny, open data could be the key to regaining the public's lost trust



Helen Beckett

Public sector procurement is an ongoing and major challenge for nation states everywhere, accounting for one third of government expenditure, according to the Organisation for Economic Co-operation and Development. Coronavirus exposed governments that favour narrow procurement processes over timely outcomes or don't follow due process at all.

It's no coincidence that a leader in government procurement, South Korea, has one of the lowest death rates from COVID-19; open, shared and contextual data means it can procure and distribute personal protective equipment (PPE) and tests effectively and fairly.

As the world emerges from the first phase of the pandemic, the chorus for a socially just and sustainable recovery grows louder and trusted procurement must play a central role. The Institute for Public Policy Research (IPPR) recommends central government, local authorities, and metro mayors build consideration of the use of data for local public good into procurement guidelines.

"Competition policy alone is not the answer; ways to pool, share and use data must be developed so it can be used for public benefit rather than private profit," says Rachel Statham, senior research fellow at IPPR Scotland.

Trust in governments is falling, according to the Edelman Trust Barometer, which most recently

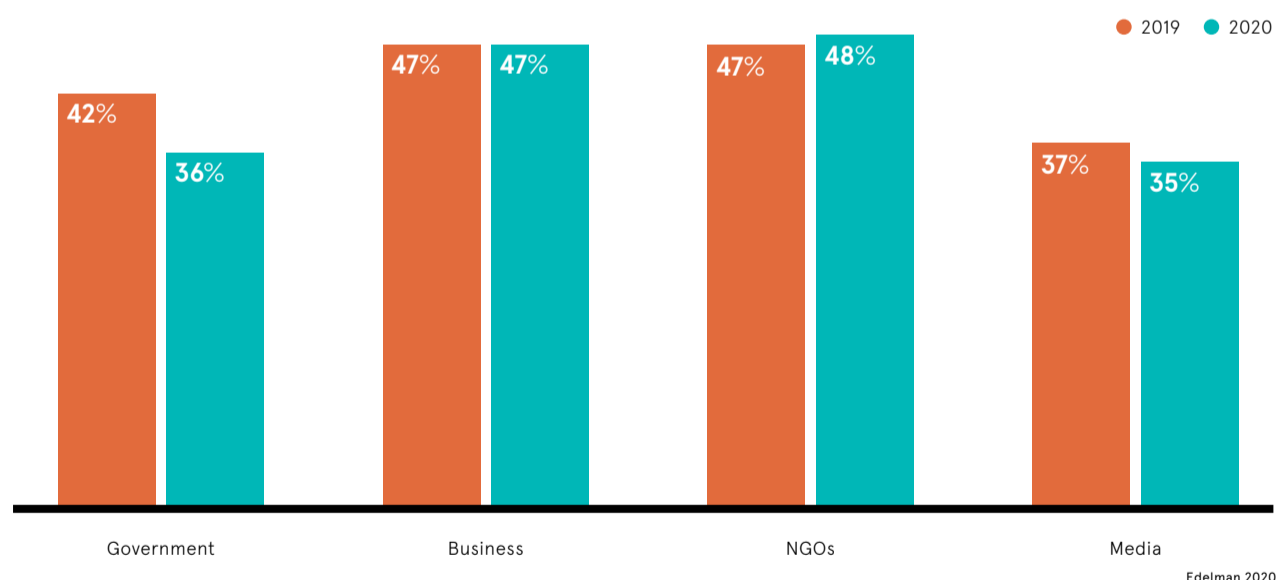
ranked the UK in 27th place, just above Russia. National Audit Office (NAO) findings that UK government contracts awarded during the COVID-19 pandemic were opaque, undocumented and partial is likely to dent citizen trust further, the NAO warns. "While we recognise these were exceptional circumstances, it remains essential decisions are properly documented and made transparent if government is to maintain public trust that taxpayers' money is being spent appropriately and fairly," it says.

In particular, the NAO highlights difficulties that accrued when UK government agencies didn't plan in advance and purchased PPE at the last minute. A myopic procurement perspective coupled with an annual spend of £350 billion spells trouble, says Neville Cannon, senior director analyst at Gartner. "What could have helped was transparency and open data. Rather than a narrow focus on procurement, a deep and contextual look at supply chain management would have flagged up shortages early on," he notes.

Kevin Sample, senior consultant with healthcare supply chain management specialist GHX, says: "Healthcare providers had no view of what PPE they had or what they needed and no ability to forecast demand, meaning suppliers couldn't scale up accurately." Real-time knowledge isn't only important during a pandemic, says

## PUBLIC TRUST IN THE GOVERNMENT SINKS

According to the Edelman Trust Barometer, no other organisation has lost the UK public's trust like the government has this year



Sample, it is best practice. "Rather than being reactive organisations, public agencies need a forecast model, then suppliers aren't put in the position of choosing which orders to fulfil and clients to prioritise," he adds.

COVID-19 provides an opportunity to reset public sector procurement and reconfigure an exercise that traditionally balances risk and value, says Cannon. The pandemic disrupted normal practices and continuity of services was prioritised over looking after the

economy, a disruption that's created a new context for procurement. "Local authorities bought cloud-based applications to enable staff to work from home and learnt the value of doing things in a totally different way," he says. Consequently, many are reviewing their real estate to see what can be released to balance the books.

Using data contextually and throughout procurement life cycles, including monitoring and measurement of service delivery, would help achieve the

recommendations of Westminster think tank Reform. A primary criticism contained in its 2019 review of UK public sector procurement was: "Too many resources are invested in the contracting-out phase of the procurement cycle, at the expense of contract management, resulting in an imbalanced procurement cycle and a lack of effective monitoring for outsourced services."

Assessing procurement needs in context, according to real-time data and current circumstances,



## Reform procurement through connected, clean data

Comprehensive, up-to-date, and publicly accessible data is vital, not only to manage government procurement better - but also to reform it, argues Spend Network. The government data analyst specialists are on a mission to capture data from every government contract in the world and openly publish it.

At present, public sector procurement contract data is patchy, inconsistent and sometimes incorrect: only 4.5 per cent of tenders are published with an estimated budget; over 86 per cent of contracts don't feature an end date; and supplier data is hard to identify and aggregate, often recorded as acronyms, or brand and project names, according to Spend.

Good data would put government agencies on the front foot, letting them identify the best sub-contractors for a contract, predict tenders that only attract single bids, and spot

fraud and collusion. Instead of focussing on over-protective measures that stifle innovation or underestimate the impact of failure, data should be used to shed light on the actual risks associated with contracting, argues the data specialist.

NHS Scotland is saving money and increasing patient safety through data-driven procurement and inventory management and by linking the consumption of products to individual patients. An inventory management system enables items to be bought in bulk and stored centrally and lets each healthcare provider run a Top-Up Service, ordering stock by scanning barcodes from a smartphone.

"The system allows real-time recording of procedures and increased transparency of what is being used", explains Elizabeth McSorley, modality lead, Interventional Radiology at NHS Greater Glasgow and Clyde. "Reports, generated at the click of a button, can be tailored to the examination, consultant or item used. We have confidence in maintaining accurate patient records as items are scanned at the point of use," she says.

The software from healthcare software specialist, GHX, combined with global data standards (GS1) and input from clinicians in acute environments, is also set to improve NHS Scotland's capability to manage COVID-19 consumables. Making procurement automated, intuitive and joined-up provides data about consumption and makes the entire supply chain visible, in turn supporting improvements to patient care and staff safety.

is some way off. But the mandatory use of the Open Contracting Data Standard does assist transparency of procurement and some agencies share best practice.

The Government Digital Service (GDS) is a protagonist: G-Cloud set up framework agreements that let agencies buy cloud services without having to run full tender or competition procurement process. Best practice has since expanded into the government's Digital Marketplace and October's Digital Buying Guide, which uses international exemplars to show how to procure IT in an open, fair and effective way.

"Procurement reform at the GDS is aimed at sustainability, fairness and opening up markets," explains Natalie Taylor, managing director, public sector, at Foundry4 consultancy. Spreading government spending and extending competitive dialogue across different businesses and demographics stimulates the economy and promotes fairness. "As well as openly publishing all contracts and tender opportunities on a digital platform, it's important to open up framework agreements to smaller and diverse players," says Taylor.

While all contracts awarded and tendered on the Digital Marketplace are public domain and adhere to open data and contracting standards, they lag behind the South Korean government procurement model in one important respect: there's no digital dashboard for citizens to check supplier performance and value delivered after the procurement event. Such details cannot be accessed without resorting to a Freedom of Information request.

The lack of technical expertise in making and managing procurement decisions is another continuing concern. Despite efforts to upgrade commercial skills in the Government Commercial Function network and Crown Commercial Service, Reform notes: "The Public Accounts Committee has a long-standing concern about the ability of the civil service to not only draw up contracts, but also to manage them." The net result is public sector procurement across central and local government remains fragmented and opaque.

"It can be complicated to do business with government", suggests Simon Payne, client director at procurement specialist, Proxima. "It's a complex landscape to navigate with a high cost to entry for some. If you want to tender for central government contracts, you have to be registered on multiple systems. Contracts tendered on OJEU (Official Journal of the European Union) are designed to ensure an open, transparent and fair tender process". This is critically important but the complexity can mean that decisions take months or even years.

Payne believes a post-Brexit world provides the opportunity to rewrite tender procedures and produce more equitable and trusted outcomes. At present, OJEU rules prevent the use of social value as an evaluation criteria unless it's directly related to the goods or service procured. "In future, social value could be hardcoded in supplier evaluations, whether being carbon neutral or paying the living wage, and suppliers' track records evaluated through open data," he says.

“ Ways to share data must be developed so it can be used for public benefit rather than private profit

Using digital technologies, such as blockchain, a distributed, immutable ledger, offers a further opportunity to embed trust within procurement life cycles as an unalterable record of supplier history and buyer procedure creates a trusted context for all parties.

The Food Standards Agency piloted blockchain for regulating procurement chains and discovered additional benefits of sharing data across ecosystems. Sharing trusted data could help suppliers monitor inventory usage and forecast demand better, a key procurement weakness exposed during the pandemic.

The disruptions of Brexit and COVID bring opportunities to recast public sector procurement with a fresh focus on data and context. But reframing procurement language is important too. As Foundry4's Taylor concludes: "There is a gap between transparency and gaining trust; to achieve trust you have to publish data in a way that's clear and usable by everyone." ●

Email address\* (required)



Hate giving up your data for bad content?

Your prospects do.

So many lead gen campaigns fail because the content behind the data capture offers no value, causing frustration and negative brand sentiment. The lead gen campaigns we run for brands are based around high-quality content that answers a need.

Find out how we can help you make the most of your leads.

raconteur.net/lead-generation

RACONTEUR



CYBERSECURITY

# There's no vaccine for ransomware

Hospitals are already fighting against the odds when it comes to tackling coronavirus, so it's never been more important to protect healthcare systems from cyberattacks

Andy Jones

In an era of extreme health-care crisis, there is one added threat that can't be repelled with personal protective equipment, a vaccine or social distancing. While frontline medics battle the present threat of coronavirus, many hospitals have been paralysed by a new plague. This summer, ransomware attacks have been shutting down hospitals in their time of need.

A single attack paralysed Dusseldorf University Hospital, which meant ambulances loaded with emergency patients were re-routed to other emergency centres. A female patient died on the way to another unit. Elsewhere a network of 400 health centres with university health services were shut down by Ryuk ransomware, denying staff access to radiology studies, lab reports and cardiograms.

NHS Digital blocks more than 21 million items of malicious activity every month. This didn't stop a Wannacry outbreak in 2017 which cost £92 million and left doctors and nurses using pen and paper to send notes and phone texts.

According to a recent IBM security report, healthcare companies suffered the largest breaches in each of the past six years and so far this year 52 per cent were malicious attacks. Around 13 per cent are believed to be the work of hostile governments, with rival states knowing the best way to undermine another is to crash their healthcare. Ransomware is a political issue as well as a matter of security.

While mass vaccination may be on the horizon for COVID-19, there is no such silver bullet for ransomware. It does not infect by contact, moving

from one IP address to the next. It is much smarter. Inside a system, ransomware actively seeks out high-security privileged passwords or logins so it can wreak much more havoc. Ransomware never sleeps and is human behaviour-specific, says Theresa Lanowitz of AT&T Cybersecurity, who trains employee networks to understand threats. "Hackers already know, over a long holiday weekend, a large organisation doesn't have people staffed 24/7 and they target that path of least resistance. Therefore, COVID and remote working

present unique opportunities for ransomware," she says. Ransomware hackers target hospitals because they typically have a mix of ageing and new technology, a huge workforce of varied privileges and, most importantly, they often have no choice but to pay and pay fast. Also, the caring nature of healthcare staff lends itself to having kindness used against them. Post-lockdown, emails containing ransomware, either claiming to be raising cash for victims or to come from healthcare directors or trustworthy

organisations, such as the World Health Organization, plague healthcare. They have plausible subject lines to increase the chance of being opened and acted upon. Remote working increases cross-contamination, with staff relying on personal devices. An Android app claimed to provide a map that provided real-time virus-tracking. In reality, the app delivered ransomware onto victims' phones and demanded a ransom to return access. Others, such as Trickbot, install on machines via a spam targeting email to not only steal confidential information, but also assist in installing other forms of malware, increasing the scale of the attack. There's also the threat of double extortion. Ransomware actors know if hospitals don't pay, they face a much larger data breach fine from their regulators, says Tom Lysemose Hansen of security analysts Promon. "TA2101, the aggressive group behind the Maze ransomware, have even gone as far as creating a dedicated web page which lists the identities of their victims and regularly publishes samples of stolen data," he says. Of victims who pay the ransoms to restore capability, only 19 per cent ever get their data back, according to a report from the CyberEdge Group. In the case of the attack on Baltimore, threat actors asked for \$15 million to recalibrate the city, but many are reducing ransoms to ensure a quick payout from hospitals. "They are asking for \$10,000



the front in creating good cyber-hygiene and not rely on a single IT department, says Conrad. "Just as staff wouldn't dream of coming onto a ward with a cough during coronavirus, health staff should be obsessed about not being the one who infects the entire network with a ransomware or phishing attack."

Unfortunately, many training firms and advisers are only brought in after a breach, says Javvad Malik, client trainer at KnowBe4 security employee training. One client had a brand-new site hacked and data stolen. Upon investigation, it was found that, as security testing often took a number of days to clear a new site, marketing had not conducted any security testing before launching, as they didn't want to wait. After all, they'd never had a breach before.

Apathy leaves units wide open. Hospitals are a huge internet of things (IoT) growth area, yet many get new devices and keep the default password, says Lanowitz of AT&T Cybersecurity. "All a hacker has to do is get the original default password from the manufacturer and they are then into that IoT device and can move laterally across your network shutting everything down."

A centre is only as strong as its weakest link. Where possible, with staff working remotely, be clear to remove responsibility where possible. "Don't give users the ability to install their own software; manage it centrally, even in lockdown," says Conrad. "I've seen instances where, working remotely, an employee has gone on the internet to get software they need for their job and then download something corrupt or with Trojan horses built in."

Like defending any structure, employ reconnaissance to see threats coming and to help you understand the risk to your organisation.

Securonix director Jon Garside was the notification officer for Obamacare in California from 2014-15, a responsibility which covered 60 million personal records. He insists any major organisation should subscribe to multiple threat intelligence feeds and share the information they provide with staff. "I would advise to use Gigamon or Opora; Opora shares not just attack vectors, but adversary techniques," says Garside.

AT&T Cybersecurity offers European and US teams, who are part of the Open Threat Exchange, a forum of 145,000 security professionals who identify suspicious URLs, emails and threats, and seek to understand how they might behave. Ransomware, almost like a virus, readily mutates and has to be tracked.

"You don't just tell your unit, you tell the world," says Lanowitz. "Information is vital: to say this threat is moving across the Atlantic into Europe. Protect your digital assets by knowing a threat is coming."

Keep surgical levels of hygiene and insist anything that comes into contact with a network, whether it is a desktop computer, laptop, medical equipment, applications or even a patient's wearable device, must be protected. If you don't, it is not a case of if, but when a hacker will be holding your organisation to ransom. ●

“They are asking for \$10,000 because they know you will pay that. And they'll come back for another ransom next month and the one after

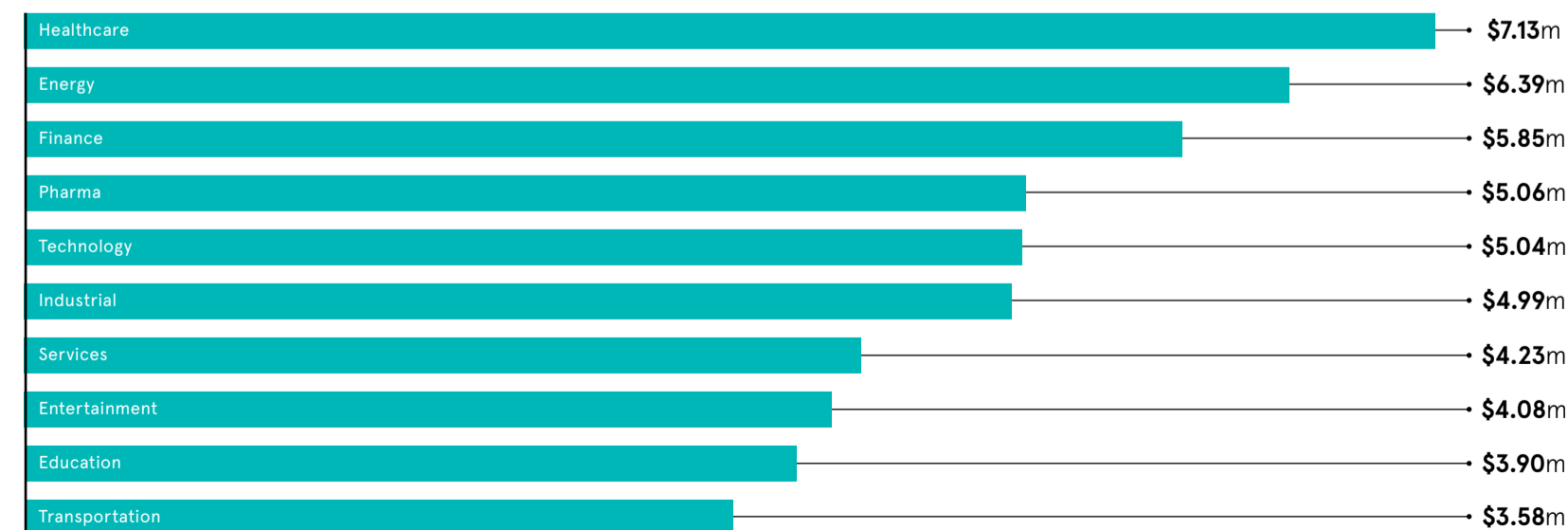
because they know you will pay that," says Daniel Conrad of One Identity, who advise on privileged access management and employee security training. "But, the thing is, they stay within your network once you've paid. And they'll come back for another ransom next month and the one after. Pay it and you are not solving the problem."

Before confronting the enemy at the gates, focus on ensuring your staff don't leave the drawbridge down. Promon's survey of 2,000 remote workers found 66 per cent haven't been given any form of cybersecurity training in the past 12 months, with a further 77 per cent saying they aren't worried about their cybersecurity while working from home.

Staff can no longer leave their workstation unlocked, fail to challenge things they don't recognise or practise bad password management. Executives need to lead from

## DATA BREACHES COST HEALTHCARE DEARLY

The average total cost of a single data breach by industry



IBM 2020

foundry4/

# Rapid problem solving for organisations asking the tough questions



## End to end Public Sector transformation

Built on our model of expertise at scale we provide world-class talent across strategy and delivery. Our deep technical expertise covers all areas of the digital spectrum, from automation to user centred design, high quality product engineering teams to agile coaching, and extensive sector knowledge to enterprise cloud and data strategy.

foundry4.com





END-USER

# ‘Think citizen’ is key to better public sector tech

Private sector companies can't roll out successful new services without considering the customer and it should be the same for the public sector

Nick Easen

The way the UK government delivers services is going through the same kind of transformation we're seeing in our personal lives with a shift towards online. Businesses that get our trust, trade and time are the ones which are most customer centric. Yet officials delivering public sector technology are only just waking up to this idea with a new focus on citizen-centric services.

Whitehall has ambitions in this area and top officials are on the hunt for a chief digital officer. The job is to "better leverage data and emerging technologies to design and deliver citizen-centric services." This newly created role, near the top of the Cabinet Office hierarchy, shows how important these issues are. However, it's not without challenges.

Many systems operate in silos, since they've been built up and

upgraded gradually over many years, others are outdated, running on incompatible architectures and operating systems that are difficult to integrate. At the same time, the needs of the citizen have fallen between the cracks, as public sector leaders have scrambled to manage technical complexity and resources.

How the public sector procures technology may be the issue and a

major challenge impacting many projects, including the rollout of applications that are easier to use by the general public.

"Ultimately, digital transformation of the public sector must start by regaining control over the supply chain. For the last few decades, the public sector has been encouraged to outsource its IT services to third parties," explains Romy Hughes, director at Brightman Business Solutions.

"Many departments have become beholden to outsourcers for the delivery of many of their long-term goals, including citizen-centric services. Since you cannot transform what you don't control, the public sector needs to take back control of its supply chains before it can deliver many of its goals."

Despite there being 17,000 digital, data and technology specialists across government, £2 billion is spent each year on IT outsourcing, according to the Arvato Outsourcing Index, the value of which has climbed over time. Yet many public sector technology services aren't meeting the needs of the very people they're supposed to serve.

"It's easy for practitioners to assume citizens have a level of knowledge about a service that is simply not reasonable, which leads to workflows that don't match citizens' expectations and instructions that don't make sense," says Charlie Bruin, chief executive of Liberata.

"According to our research, more than two thirds of citizens we polled complain they receive disconnected experiences from public sector organisations. This is a major cause of frustration," says Ian Fairclough, vice president for customer success, Europe, Middle East and Africa at MuleSoft.

That's not to say there aren't platforms out there delivering first-class services. The simplicity of HM Revenue & Custom's website to deal with millions of furlough payments during the height of the coronavirus-induced lockdown earlier this year showed how it can be done effectively and without a significant meltdown.

"HMRC is a great example of citizen-centric services, which continues to evolve and improve. Many local authorities have also led the way, as was demonstrated by the speed at which many were able to deliver online portals to administer grants and support at the start of the first lockdown. They were able to deliver services quickly because they already had a wealth of experience doing it for other local services," says Hughes.

Also, local government understands local needs and that's a key element. Citizen-centric digital services start with public sector leaders putting themselves in the shoes of the public. Taking a lesson from successful digital-native consumer brands would not go amiss. Most of their business models start with the customer and their data, then build outwards.

"It begins with outcomes. Public sector organisations shouldn't be building technologies that they think are the right services. It's about engaging with the end-user and designing services with their needs firmly in mind. My 92-year-old grandmother can work a smartphone and WhatsApp the family because it's designed for simplicity; if technology is done well, it can be more inclusive, not less," says Richard Walker, partner for data and insights at Agilissys.

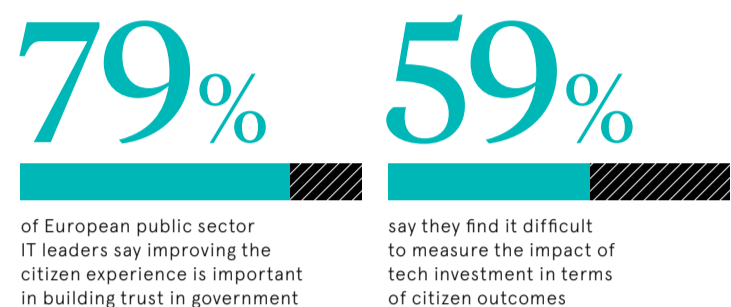
A good example is the Driver and Vehicle Standards Agency's use of GOV.UK Notify to remind people when they need an MOT vehicle test. The service is easy to use, pared down and uncomplicated.

"We need to be more strategic about joining up multiple sources of data. I don't think the European Union's General Data Protection Regulation helped. The tone around fines and penalties for data misuse obscured the ability to think of it as an enabler and the mechanism through which you can share information safely and lawfully," says Walker.

"Take domestic violence, there'll be things that hospitals know, things the police know and local authorities know, not to mention the third sector. What happens at the moment is we don't share that

## WHAT MATTERS WHEN IT COMES TO CITIZEN SERVICES?

IT leaders in central government departments across Europe choose the most important citizen outcomes when it comes to prioritising tech investments



PureStorage 2020

“My 92-year-old grandmother can WhatsApp the family because it's designed for simplicity; if technology is done well it can be more inclusive, not less

“After all, an app may work for a public sector leader, but they're not representative of their target base. Compared to most users of an application, they're probably more experienced. Simplicity and truly understanding the user's needs are crucial.”

Data, and joined up data at that, is also key to delivering the next generation of citizen-centric services. The siloed approach within the public sector has not helped, nor has the myriad of services deployed using countless databases. As in the private sector, a single, 360-degree view of the customer is essential. Reducing duplicated information sources could save the government millions.

"We need to be more strategic about joining up multiple sources of data. I don't think the European Union's General Data Protection Regulation helped. The tone around fines and penalties for data misuse obscured the ability to think of it as an enabler and the mechanism through which you can share information safely and lawfully," says Walker.

"Take domestic violence, there'll be things that hospitals know, things the police know and local authorities know, not to mention the third sector. What happens at the moment is we don't share that

information anywhere close to the extent we should be able to take the preventative measures that must be at the heart of more effective public service delivery."

One potential answer is to drive innovation from the citizen's perspective by setting up challenges that need to be overcome and how digital services can solve these issues. Barcelona's i.lab is a good example of this, which begins by defining the problem then works collaboratively with stakeholders, including the public.

"The challenge is outlined to relevant players and the public. i.lab oversees the rollout of pilot innovation projects with different areas at the city council and municipal level, and if they are successful they then scale them up," explains Georgina Maratheftis, head of programme for local public services at techUK.

There are also examples in the UK. They include the GovTech Catalyst challenge, which is a £20-million fund to help solve public sector problems, as well as TechForce19, aimed at deploying technology to help vulnerable people isolated because of COVID-19.

Saviour of the public sector and its drive towards citizen centricity is the availability of cheap off-the-shelf tech solutions that are being deployed at speed by even the smallest operators.

"Early solutions were once costly, bespoke and only designed to solve one problem. However, the world has changed," says Anna Assassa, chief executive of Tissski.

"Technology is now available to build open systems, accessible to multiple organisations, which brings all the relevant information together. Not only does this reduce the burden on an organisation itself, freeing up valuable resources and reducing complex processes, it also provides a much better experience for the public."

Certainly, the future is now brighter. ●

# Building the foundations for meaningful transformation

The coronavirus pandemic has no doubt accelerated the need for digital transformation, but public sector organisations must first deal with the legacy IT that is inhibiting their progress

As citizens increasingly demand more seamless ways of accessing and interacting with public services, the pressure is on government departments to embrace digital transformation. However, legacy IT infrastructure is acting as a major inhibitor. Legacy applications sitting on old hardware in ageing datacentres are not only inefficient, but are failing to provide the necessary availability and security required in the digital age.

The first step to digital transformation is rehosting applications on a modern cloud infrastructure. Security and availability issues can be solved almost immediately, and efficiencies mean organisations can have greater resource and budget to think more seriously about delivering new cloud-native services. But the journey to cloud is not always as easy as some vendors make out.

"There is so much legacy in the public sector that the majority of IT spend goes on simply keeping the lights on," says Simon Hansford, chief executive of UKCloud, a trusted multi-cloud provider, which enables successful digital transformation in the public sector.

"Clearly, that's a massive inhibitor to change and the ability to deliver better

services for citizens and greater value for the taxpayer. But you can't simply transform overnight, despite some cloud providers saying to government departments 'drop all that legacy stuff and dive straight into the cloud'.

"That's far too big a step to make for most applications because there is so much complexity and investment in that legacy. There is a whole series of small steps to get to the final digital transformation, otherwise it's too costly and challenging. The public sector doesn't have the continuity of commercial organisations because leaders, budgets and staff can change frequently. That makes three to five-year programmes with large upfront investments more difficult."

Desire for strong operational resilience during the coronavirus pandemic has only accelerated the need to digitally transform and be more available in a virtual world. It's perhaps understandable, then, that 87 per cent of public sector organisations in UKCloud's State of Cloud Adoption survey said they'd move all their IT to the cloud if the perfect solution existed.

That perfect solution, however, isn't an immediate migration to a single cloud platform, but rather a more measured approach using a variety of different clouds to serve specific purposes, also known as multi-cloud.

A multi-cloud model leverages multiple cloud platforms to ensure all applications and workloads are hosted in the most optimum environment. UKCloud champions this model for the public sector, offering two cloud platforms ideal for legacy workloads - VMware and Oracle - and two for more digital-native applications in Microsoft Azure and OpenStack. This ability to mix and match specialist cloud services enables public sector organisations to reduce their costs and risks, and increase speed of delivery.

"For a government chief information officer who wants to digitally transform, it's quite frankly madness to move hundreds or thousands of applications to one single cloud platform," says Hansford. "It costs far too much and it is far too risky. And we see that all too often, when years later only a small

number of applications have actually been moved, because it proved to be far too difficult.

"With a multi-cloud model, they can move, say, virtualised applications to a VMware platform or Microsoft applications to a Microsoft platform. That's much less risky, and indeed cheaper, than trying to move only to AWS or Microsoft Azure, which is like trying to fit a square peg in a round hole."

Adopting the cloud is the first step to achieving meaningful digital transformation. By creating a more agile environment and reducing not only costs, but also the time required by IT teams to manage legacy infrastructure, public sector organisations have both the ability and the resources to improve digital services for citizens. IT becomes an enabler, not a blocker, of digital transformation.

"The real value is in data," Hansford concludes. "Data provides new insights, and the insights bring new ideas and industries which create jobs and wealth. It's imperative the UK has a national data strategy and capability under the UK's jurisdiction, and data is treated as the national asset it is."

"British companies, like UKCloud and our ecosystem of partners, have invested in a robust digital infrastructure to give the UK public sector real choice and a genuine alternative to the hyper-scale cloud providers.

"Given the regulatory uncertainty caused by the recent Court of Justice of the European Union Schrems II ruling [that EU standards of data protection must travel with personal data when it goes overseas], this is something our customers are actively seeking out, particularly those providing the most secure and sensitive public services.

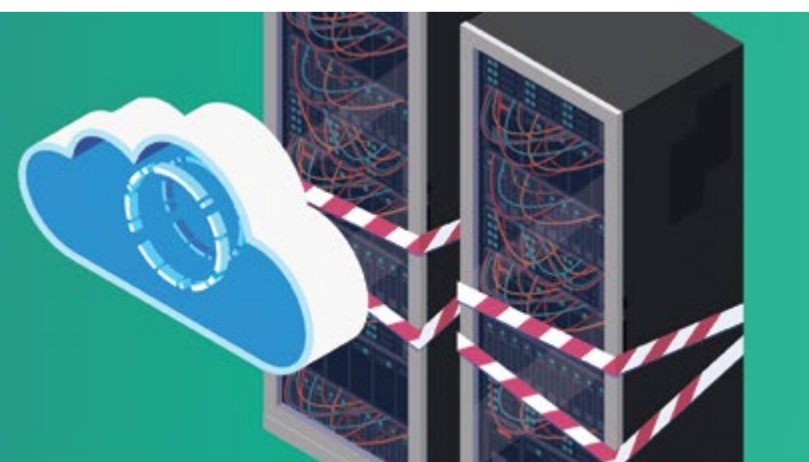
"Digital transformation in the public sector is still well behind the private sector. We're just at the start of the runway."

For more information please visit [ukcloud.com/digital-foundation](https://ukcloud.com/digital-foundation)



## BUILDING THE DIGITAL FOUNDATIONS

Read the eBook: [ukcloud.com/digital-foundation](https://ukcloud.com/digital-foundation)







Lindsey Parnaby/APP via Getty Images

LAW ENFORCEMENT

# How tech is transforming policing

UK police forces are enlisting technology to help fight crime and keep the public safe

Hazel Davis

There was a time when policing relied on the nous of officers on the spot, but now technology is transforming how the UK deals with crime.

As police forces across the country are increasingly being asked to do more with fewer resources and less funding, facial recognition software, body cameras, artificial intelligence, drones and innovative ways of collecting data are all being used to fight crime on the frontline and behind the scenes. Technology is helping officers respond more efficiently, share information more quickly and, most importantly, catch criminals.

Data is key for 21st-century crimefighters. West Midlands Police is the first UK force to hire

its own data scientists, data engineers and visualisation specialists, deploying data-driven insights to radically improve its capabilities and help provide cutting-edge services for its 2.8 million citizens.

“Back in 2015, when I joined the force as a consultant, all our data was held across different platforms and was difficult to manage,” says Helen Davis, assistant director of IT and digital at West Midlands Police. “These legacy processes made it hard to garner real insights from the data we held.” Working with Cloudera and Accenture, the force

has created a core data hub, consolidating information from previously disparate, siloed systems and enabling quick data insights and positive interventions.

The single source of key police data can be securely accessed by 6,000 concurrent users, in real-time, across desktop and mobile. Now police on the street can access vital information, about a location or car registration for example, at the touch of a button and the hub

A police officer carries a drone used to aid in a crime scene in Manchester 2019

“The basic foundation for the use of this technology is that everything happens somewhere

has already been used to inform more than 1.5 million inquiries.

As criminals operate internationally, data such as biometrics, criminal history and arrest warrants are beginning to be shared by forces all over the world.

The focus on data – collecting, analysing or sharing with other forces – has become a top priority, not only in the UK but across Europe. The Police Service of Northern Ireland, for example, has worked with Civica to integrate its backend systems to allow law enforcement to make better use of the available information.

Drones are substantially cheaper, quicker to deploy than a helicopter and less obtrusive to the general public. Some early-adopting UK forces have been using drones for several years, while others have only recently started to adopt them.

Compact, lightweight drones can also be very quiet, with advanced cameras that include 32x zoom lenses, perfect for scouting an area or observing a scene safely from a distance, and a thermal camera. They can be flown easily by first responders to gain quick situational awareness of a scene and in some cases provide a tactical advantage.

Asif Gillani, Parrot regional director for Northern Europe, Middle East, Africa and India, thinks the use of drones is set to increase. “Portability is key, with drones small enough to be put into a vehicle boot, or even the footwell of a patrol car, to be quickly deployed in emergencies,” he says.

Technology is changing how police respond at a crime scene too, in particular live-streaming tech that’s being used in hard-to-reach areas. When applied to officers’ body-worn cameras,

devices are helping overstretched and under-resourced forces to do more in less time.

Innovative live-streaming tech is enabling officers to share footage from the scene of an incident instantly, without needing to return to the station to download it. Companies such as Digital Barriers have come up with technology that works even when network conditions are poor. Digital Barriers is also behind the SmartVis Identifier, a live facial recognition system for body-worn law enforcement cameras.

Drones are substantially cheaper, quicker to deploy than a helicopter and less obtrusive to the general public. Some early-adopting UK forces have been using drones for several years, while others have only recently started to adopt them.

Compact, lightweight drones can also be very quiet, with advanced cameras that include 32x zoom lenses, perfect for scouting an area or observing a scene safely from a distance, and a thermal camera. They can be flown easily by first responders to gain quick situational awareness of a scene and in some cases provide a tactical advantage.

Asif Gillani, Parrot regional director for Northern Europe, Middle East, Africa and India, thinks the use of drones is set to increase. “Portability is key, with drones small enough to be put into a vehicle boot, or even the footwell of a patrol car, to be quickly deployed in emergencies,” he says.

“Being able to ‘slice and dice’ information from different systems allows officers on the ground to access the data they need to do their jobs efficiently

“I believe we will soon see drones being used by all first-responder vehicles as part of their standard kit, due to the situational awareness that can be gained from a quick drone deployment.”

The quieter streets of lockdown created greater opportunities for criminal activity in the City of London. As the business area’s streets and buildings emptied almost completely, police needed to ensure the security of premises.

Using spatial technology, City of London Police were able to create a dashboard showing real-time data on where businesses were closed, tracking 23,890 business premises, where foot traffic was still happening, where police staff were available, as many had to self-isolate, and other data. Using these findings, senior officers could visualise where the most vulnerable areas were and better allocate resources.

Spatial technology covers everything from simple digital map provision through to advanced analytics, investigations, intelligence and briefings. “The basic foundation for the use of this technology is that everything happens somewhere,” says Adrian Friend, head of defence, national security and public safety,

with Esri UK, whose tech is being used by the City of London Police. “In fact, 80 per cent of all data has a location component.”

PC Dan Baker says: “Another area where this technology has been a massive help to us, is it also enables us to send out surveys to businesses by email, with the responses automatically being collated and displayed on the interactive map.

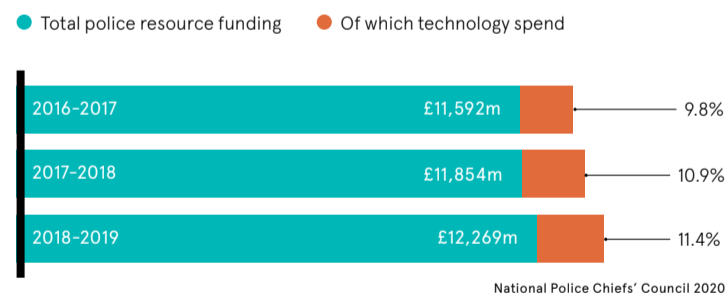
“One of the first surveys we conducted using the Esri solution showed that just 3 per cent of the City of London’s usual workforce was still working there. This was based on survey responses from businesses with a combined workforce of 123,000 people.”

Using this automated survey facility enables the police to communicate easily with human resources and facilities personnel, who may be working from home outside London, and gather a large amount of data very quickly.

Baker adds: “Geospatial technology has really been a game-changer for us and our Esri security dashboard helps us to provide a gold standard of policing in the City of London at this exceptional time, reduce crime and protect the public.”

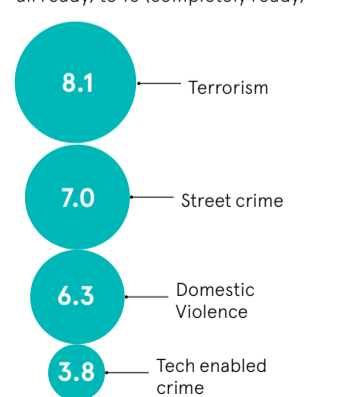
## POLICE TECH SPEND ON THE RISE

The percentage of funding allocated to tech continues to increase year on year.



## POLICE STILL NOT CONFIDENT ON CYBERCRIME

UK police rated their readiness towards crime challenges from 1 (not at all ready) to 10 (completely ready)



## HOW PREPARED ARE POLICE LEADERS FEELING?

Police chief officers rated their readiness towards leadership and management challenges from 1 (not at all ready) to 10 (completely ready)



# DELIVERING VALUE IN PARTNERSHIP WITH THE PUBLIC SECTOR

At Proxima we work alongside public sector commercial teams to deliver value for money. We know the difference that effective procurement makes to public services. It’s what inspires us every day.

www.proximagroup.com

**Proxima**  
The Procurement Specialists

Proud sponsors





PREDICTIVE ANALYTICS

# Could the pandemic have been predicted?

Governing in advance may seem like something from science fiction, but by using artificial intelligence and predictive analytics, experts say it's possible

Oliver Pickup

When the coronavirus pandemic hit UK businesses in the spring, forcing organisations to lock down, it required open minds to grasp technology and reimagine ways of working. Government and the public sector sought to solve challenges old and new, including rushing through essential financial support to companies and their furloughed staff, and improve service delivery and data-driven decision-making by dialling up investment in tech, especially artificial intelligence (AI).

After all, with predictive analytics, governments can conceivably prevent, rather than cure, issues or respond to citizens' needs before they arise. But how far off are we from governing in advance? And what are the ethical implications of such a system?

Around the world, there are numerous narrow-scope use cases of authorities using predictive analytics to life-saving and life-enhancing effect. In Durham, North Carolina, the police department reported a 39 per cent drop in violent crime from 2007 to 2014 after using AI to observe patterns and interrelations

in criminal activities and to identify hotspots, thus enabling quicker interventions.

Also in the United States, AI has helped reduce human trafficking by locating and rescuing thousands of victims. Knowing that approximately 75 per cent of child trafficking involves online advertisements, the Defense Advanced Research Projects Agency developed a platform using software that monitors suspicious online ads, detects code words, and infers connections between them and trafficking rings.

Further afield, the Indonesian government has partnered with a local tech startup to better predict natural disasters. By analysing historical flood data, collected from sensors, and accessing citizen-complaint data, prone areas can now be quickly identified, speeding up the emergency response and improving management.

In the UK, the public sector has much work to do, and requires people to do it, if governing in advance is to become a reality, says David Shrier, adviser to the European Parliament in the Centre for AI. "More investment in predictive analytics will help with risk mitigation, although this exacerbates the already extant shortage of data scientists who can develop and manage these models."

Predicting trends through data analysis is vital for governments and has been for some time. "Forecasting approaches using historical data to build mathematical predictive models have been core to government economic policy for decades," says Andrew Hood, chief executive of Edinburgh-headquartered analytics consultancy Lynchpin. "Whether those models allow governments to govern in advance effectively depends

“It’s too tempting to see predictive analytics as a magical answer, a black box that can solve all our challenges

on to what extent they have enough political motivation and capital to apply the model outputs directly.

"Arguably, there has been no shortage of predictive models kicking around as the pandemic took hold. However, the pandemic also points to the reality of a lot of prediction and forecasting: it is not about having one crystal ball to rely on, rather a set of predictions based on the best data to hand that need to be reviewed constantly, updated and critically applied."

Hood stresses that skilled humans must remain in the driving seat and warns of the dangers of solely relying on technology to steer choices. "As with any application of predictive analytics," he says, "it is the integration of those models within the context of governing and the processes of human decision-making that is the critical success factor."

Futurist Tom Cheesewright, whose job is to predict trends, posits that predictive analytics is "one subset of a wider array of foresight tools for scanning near and far horizons". Should governments be making better use of such tools? "Absolutely," he answers. "But I think it's too tempting with predictive analytics to see this as a magical answer, a black box that can solve all our challenges. It's not like Minority Report-style predictive justice. It's about pulling policy levers in time to dodge obstacles or maximise opportunities."

Echoing Hood's advice, Cheesewright adds: "Foresight needs time and investment of cash and political capital, both of which are in short supply in our volatile, post-austerity era."

Nick McQuire, of specialist technology market intelligence and

advisory firm CCS Insight, says: "Historically, the public sector has been behind most sectors in terms of maturity in deploying and investing in AI," but senses the purse strings are being loosened. "We are starting to see more AI applications in the public sector: chatbots, contact centre assistance and demand forecasting," says the senior vice president and head of enterprise research.

AI has been excoriated in the UK media this year, though, making citizens and politicians wary of the tech and by extension predictive analytics. "Public confidence in AI is not high," McQuire concedes. "To build trust in AI, organisations are now having to double-down on areas like data governance and security, privacy, explainability and ethics."

It didn't help that prime minister Boris Johnson, the most powerful politician in the UK, blamed the Ofqual exam-marking fiasco in August on "a mutant algorithm", says Dr Jeni Tennison, vice president and chief strategy adviser at the Open Data Institute. "We have to recognise people are at the heart of designing algorithms: it's not that algorithms go off and mutate on their own and we have no control over them," she says. "We need to ensure there is a good end-to-end process that recognises the AI isn't always going to get things right."

Tennison, a fervent supporter of open data, believes those in the public sector must take care of how they deploy the technology. And, as such, predictive analytics, if applied, should be closely managed. "Algorithms that are used by the public sector have a much bigger impact on people's lives. Government has a particular responsibility to make sure it uses AI and data well," she says.

"Right now we're operating from a position where people distrust the use of algorithms. The public sector has to be very proactive and win that trust."

Given the public scepticism around AI, and the paucity of data scientists to make best use of predictive analytics, it seems we are some way off the UK governing in advance. Ethically, perhaps that is no bad thing. ●

## PUBLIC ARE BEHIND SMARTER USE OF DATA

UK citizens' views on whether a government data strategy would have helped in the fight against COVID-19



\*Rounded to nearest whole number

Survation 2020

## PREDICTIVE ANALYTICS SUCCESS IN THE US



of chief data officers in the US government use predictive modelling

saved in Medicare payments with the use of a predictive analytics tool

Deloitte 2019



# Our solutions are designed to meet border management challenges of a global UK of today, and the future

Brexit has highlighted the crucial role that border management has on UK trade, the flow of people and goods, and keeping the country secure. Brexit presents the opportunity to reinvent border management operations. Innovative, efficient and rapid approaches to provide value to UK citizens, government, and industry are real and available.

Leidos is a global leader in information technology, engineering and science that is solving some of the toughest border challenges for countries around the world.

At Leidos, we're already engineering solutions that reinvent and reimagine the way government works with award-winning results.

Visit [Leidos.com/uk-borders](https://www.leidos.com/uk-borders)



AlexShy/Shutterstock



# *THE SCIENCE OF WHERE*

*Everything happens  
somewhere*

*See what the  
power of location  
can do for your  
citizens*

[esriuk.com/about](https://esriuk.com/about)

