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PUBLIC SECTOR TECHNOLOGY

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LEADERSHIP

Driving digital culture change from the top

Public sector experts reveal that it's a cultural rather than technological challenge that could be stopping leaders from making the progress they so deeply desire

Morag Cuddeford-Jones

ow are you going to deliver digital services in the public sector when you can't pick up my bins?" That was the question faced in early 2017 by Martyn Wallace, the freshly minted chief digital officer for the Digital Office for Scottish Local Government.

Initially a project set up for three years to help Scottish councils digitally transform, the project is in its seventh year and shows no sign of slowing down. "It's never-ending," Wallace admits. "Always one more mountain to climb."

But back to the bins. "Do you think that's what local government is? We just pick up your bins?" he answered. Wallace outlines the real scope: 5.5 million customers, the education of 700,000 children daily, dealing with social exclusion, healthcare delivery, telecare, births, deaths and marriages - and bins.

He admits that, in the eyes of the public, it is sometimes a thankless task. "We're an easy target for the press," he says. Not just the press, it seems. The MP Jacob Rees-Mogg famously toured civil service departments, leaving a 'while you were out' note on hybrid workers desks. Given that one of the positives of the pandemic has been a shift to hybrid working, this seems a retrograde step.

"We've had more interaction with the Highlands and Islands and the | chief barriers to technology invest- | CEO of Cyber-Duck, a digital agency Borders because I can use Teams to ment in the public sector. Data use that works extensively with a range talk to anybody across Scotland." Wallace says. "Why would staff of digital skills at practitioner and come into Edinburgh when they're based in Stonehaven or Glasgow?"

Wallace concedes that hybrid working is an incentive to stay in the public sector, as is the sense of purpose from the job. But he admits that there are aspects of the role that could be improved. "Being allowed to fail. In private-sector organisations the culture is to fail fast but learn from it," he suggests

But transferring private sector mindsets to the public sector isn't that simple. "The challenge is that we have less money and higher expectations and scrutiny, and we look after the whole population. Being able to fail and learn – rather than being crucified – that culture of risk has to move," Wallace insists.

It's a challenge they must meet. In the latest 2022 Digital Trends Public Sector in Focus report from Adobe, only 14% of respondents said their digital experience was ahead of customer expectations, with more



than a third (37%) admitting they were falling behind.

Neil Bacon is a senior digital strategist at Adobe. He says: "We see two Danny Bluestone is the founder and and skills. There's an uneven spread leadership level. While great strides the government's GDS Academy, more needs to be done to ensure people leave education and training with the relevant and desired digital skills, so they can hit the ground

running when they join the public sector workforce."

But it isn't all doom and gloom. of public sector departments.

"The government has for the most part adopted lean and agile managehave been made in this area through ment frameworks to govern, support and deliver large-scale enterprise programmes and projects mimicking the private sector," he explains. "Combined with knowledge sharing and continual improvement, the



government can create a culture of nnovation both internally and with key suppliers."

The Adobe research also found that 61% of staff felt their organisation lacked critical public sector digital skills such as design thinking or journey mapping. Bluestone points out that looking to the private sector may help to avoid some of the more unfortunate and bigger failures:

"Government functions have tried to reinvent the wheel, spend substantial sums and only then realise it's better to use software development kits from big techs like Apple and Android," he says.

Wallace points out that the public and private sectors are different beasts and notes that how technology and digital transformation are positioned in the public sector is key. He relates how robotic process automation (RPA) made it possible o speed up and improve data shar ing to deal with housing and social problems, leading to improved customer satisfaction and improving community wellbeing.

"We need to reapportion staff to go out and be frontline. In the housing department, they were trying to get too much done and morale was low. Now, [with RPA] they're getting job satisfaction," he says.

"We have to focus on frontline digital skills and awareness of what digital is and what it isn't. In the current climate, there's the fear factor that whatever you're transforming will lead to losing your job.'

Bluestone has been part of many transformation projects. "Any organisation can have a fantastic strategy, delivery and technology But without the right culture any programme or project will either slow down or fail. This is where models like ADKAR - awareness desire, knowledge, ability, reinforcement - are proven change man agement frameworks."

With pressures from the public the press, internal culture and cost considerations, are purpose and a work/life balance enough to keep leaders like Wallace at the public sector coalface? "I've had moments wondering if I want to continue with this," he says, but adds: "We're so risk averse in putting our heads above the parapet and celebrating the wins because that's not the culture we have in the public sector. We're just doing our job. But I'm proud of my efforts, I'm proud of my team and what we do with partners across Scotland. Why wouldn't I want to celebrate that?"

How to make change predictable through data

Building resilience into your asset portfolio is essential to maintaining positive customer perception while capitalising on process efficiencies



the wake of the pandemic, resilience' is at risk of ecoming a bit of a cliche But in an uncertain world, it really is key to business strategy. Data-empowered software can help organisations transform their efficiencies and gain better oversight over vast operations.

Traditionally, managing operations may have relied on the hiring of more staff. But, with the new capabilities of software to support water, utilities. transport and other critical services, money, time and manpower can be proactive rather than reactive. Software can make a positive difference. Evidence-based asset management is kev

Rachel White, CEO of Arcadis Gen, says: "Every organization is operating in an environment that is becoming more complex by the day. It is no longer sustainable to rely on spreadsheets for managing your organisation's future actions or asset needs. To be truly resilient requires evidence-based real time decisions. We make change predictable through data.

She adds: "Business leaders need to know how likely is it that an asset will fail in the near future or how much will it cost to repair. What do we tell regulators when they ask about the state of this asset? To get these answers, you must leverage the power of data."

For asset-intensive organizations, the health of physical assets is critical for the health of the business. Knowing the true state of those assets, and how they're likely to perform, is the first step to a resilient strategy.

Unlocking the power of data

Arcadis Gen products unlock the power of data, providing an industry-led framework with analytic insights that can be applied to existing datasets. These products have been developed with three key objectives for customers: efficiency, sustainability and resilience.

Arcadis Gen's AppliedInsight solution is a one-stop resource for advanced analytics, using a secure cloud-based platform, which transforms asset data nto actionable insights. It offers a library of apps including two, complementary data apps, each focused on a key stage of data analysis and improvement. The first helps to examine and visualize data; the second focuses on repairing it. Arcadis Gen also offers an interactive tool called Proiect Prioritizer, which helps to identify 'quick win' projects to develop a personalised plan

White says: "We encourage people to start their journey towards digital maturity with the data they have, using industry specific frameworks and then scaling up over time. This enables them to ga greater understanding from data."

Asset management is essential asset intensive oganisations, particu larly for reducing failures and unplanned outages. Smart asset man gement helps to mitigate risk and stay one step ahead in a landscape that is ore complex than ever.

Moving from spreadsheets to soft ware is critical to effective asset man agement. You can only hope to achieve rganisation-wide efficiencies if every one is working from the same platform Siloed spreadsheets, maintained by different people or teams or depart nents, are a recipe for inconsistency and inefficiency. Conflicting data points, inconsistent parameters, disjointed updates, will only become more apparent, and more concerning, as your data grows. Software can bring an organization together, identify and resolve data discrepancies, and trans orm data management

Access to company-wide data supports decisions that benefit the entire organisation, not just specific func tions potentially at the expense of others. For example, if you have an asset in poor health, but has low criticality and low risk, you can be less



Business leaders need to know how likely is it that an asset will fail in the near future or how much will it cost to repair. To get these answers, you must leverage the power of data

Commercial feature

concerned about it than a high-risk asset in a similar condition. But if your data is siloed, you will lose this insight. Arcadis Gen works across a wide range of sectors, including water, energy, rail, aviation and highways. UK clients include Transport for London, Leeds Teaching Hospital NHS Trust. Electricity North West and Costa Coffee. Network Rail has chosen Arcadis Gen to help improve asset and workforce planning.

Plan for the future with confidence Arcadis Gen has been supporting Severn Trent Water's digital transformation. The company serves more than eight million customers across the UK, operating from the Bristol Channel the East Midlands. With a wide variety | nificantly and consistently outperform of assets on its portfolio and a growing customer base, Severn Trent needed to up its data management game to make the right investment choices. Through Arcadis Gen's Enterprise Decision Analytics solution, the company succeeded in optimising this key part of its operation and set up more efficient ways to manage its assets.

For more than a decade, Severn Trent's decision-making roadmap has combined investment scenarios, risk and uncertainty, conducting thousands of optimizations each year. Because this vas a time-consuming exercise, the company sought a proven decision support tool that was capable of complex sset-level investment modelling, risk nanagement and optimization.

Using Arcadis Gen's industry-leading EDA software, Severn Trent now man ages all its asset and portfolio optimi zation needs in a single, web-based, platform. EDA's rich visualisation dashboards enhance communications, and predictive analytics allow the company to plan for the future with confidence. Severn Trent has made significant changes to planning processes and culture for non-infrastructure assets, creating cost efficiencies of more than 15%

This performance has placed Severn Trent consistently in the upper quartile

to the Humber, and from mid-Wales to | in industry rankings, and a record of siging performance commitments to the regulator has resulted in record-break ng rewards of £50m

> Min Grimshaw, Severn Trent Water's ormer head of regulator oversight. says: "We have worked collaboratively with Arcadis Gen and we have been using the EDA system to help us make ore informed and optimal decisions. Over time we have extended and evolved our suite of asset models to cover all of our above and below round assets. These asset models nsure the decisions we make are fully otimised and provide long term asse resilience to our customers.'

There's no question that successful sset management increasingly depends on successful data manage nent. The two will only become more tertwined as time goes on. This is why it is so important for organisations to lay the foundations for effective data mar gement as early as possible to benefit from improvements in asset manage ent and the impact of resilience.

To find out more, please visit arcadisgen.com

ARCADIS

London's police service is trialling the use of AI to root out misconduct in its ranks, after a string of damaging events

Mark Taylor

Metropolitan Police Service. A subsequent review into the conduct of those based at Charing Cross in London discovered a toxic environment where officers bonded over jokes about rape, killing Black children and beating their wives.

Heads had to roll, starting with the former Met commissioner Dame Cressida Dick. The poor handling of suage conclusions by its own watchdog that the Met is "systematically and institutionally corrupt".

Parr said that the Met had "someappear arrogant, secretive and lethargic" in response to investigatively monitor" communications with any effect, "despite repeated warnings from the inspectorate".

AI software that analyses data from

in England





LAW ENFORCEMENT

Should we be watching the detectives?

ppalled by the brutal murhands of a serving officer. the British public demanded a swift response to the crime from the

Inspector of Constabulary Matt

One regime change and millions of pounds later, the Met now owns

Acting commissioner Sir Stepher der of Sarah Everard at the House told parliament's Home Affairs Committee that the technol ogy, which applies programmable algorithms to an individual's datasets, can learn behaviours over time and warn when something is amiss

> "This would sit above our systems and look at internal emails and Metropolitan Police mobile phones issued to officers to check for alarm ing keywords, and at the amount of vertime worked," House said.

Various communication and per sonal data points would be harvest the Everard case did little to as- ed to spot officers going off the rails with hopes the intelligent system would become more accurate as i learnt from the data.

"Today's society is so reliant on electronic devices that it is a logical times behaved in ways that make it step to widen surveillance to those used in public office to be held accountable - especially those who tions into dirty cops, and that it did have wide legislative powers," says "not have the capability to proac- Dr David Lowe, senior research fe low in policing and security at Leeds Beckett University Law School and a

> former police officer. "The issue is how the data obtained will be stored and used, as well



Without careful implementation and justification, the algorithmic tools proposed could embed corruption vet further

osters highlighting

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let's headquarters

Met officials are tight-lipped on details, other than stating that the aim is to have the surveillance tools in place "next vear". "To further advance our counter-corruption capability, we are preparing to invest a multimillion-pound sum in technology to monitor the use of devices by more than 40.000 officers and staff." a spokesperson says.

The police union is unimpressed at the prospect of Big Brother looking over shoulders. "The Public and Commercial Services union believes there needs to be a culture change in the Met, but we question whether snooping on employees is the answer," PCS general secretary Mark Serwotka says. "While the assistant commissioner has announced plans for new software to monitor staff phones and computers, he has not consulted us on the issue."

Algorithms trained to predict police misconduct have been in use for several decades, with varving degrees of success. In the 1990s, the Chicago Police Department built a neural-network tool that generated alerts when an officer's behaviour was showing red flags. The software contained models to predict which officers would be sacked for misconduct. It connected complaints of bad behaviour, logged by colleagues or the public, to personal stressors such as divorce or debt.

Then, in 2015, police and academics in Charlotte, North Carolina, took the baton from Chicago's early intervention system and created a more advanced behavioural analvtics platform able to process wider data points.

They found officers are as likely as anyone to underperform at work if experiencing personal issues, but they are also exposed to a wholly different level of stress to the people they serve and protect.

Those involved in suicide and domestic-abuse calls earlier in their shifts were much more likely to become involved in adverse interactions later in the day, researchers found. Stressful calls emerged as a leading indicator of later wrongdoing, but forces have little control over which officers are dispatched to crimes during their shifts

Employee surveillance trends the corporate world are favouring predictive analytics about employee welfare, especially as work moves online. Companies want a bette view of staff they cannot manage or neasure in person, while old-fashioned supervisory tasks are being utomated and outsourced to AI.

Regulated businesses are often re quired to have clear policies on pri vate devices and the use of encrypted communication apps such as Signal, WhatsApp and Telegram, but the Met has refused to say whether such private channels could or would be monitored in future.

The lack of transparency has concerned experts, who say this goes to the heart of the problem and the focus should remain on improving the culture of the force and setting the tone from the top.

"There is good reason to be sceptical that the Met will successfully rebuild public trust and confidence

through an increased reliance or emerging technologies," says Dr Gabrielle Watson, University of Oxford fellow and author of Respec and Criminal Justice.

This is because misconduct often occurs outside official company channels and heavy-handed surveillance could push the problem elsewhere, Watson says. Algorithms scanning for keywords need wider ontext, she adds, leading to questions around what behaviours will be monitored and who retains ulti mate power over the system and how its results are used.

"Without careful justification and mplementation, the algorithmic tools proposed could embed corruption vet further by prompting of ficers to take their discussions offline and so continue undetected. Watson argues. "The reputational damage incurred by the force in recent years is simply too great to be lispelled through excessive spend ing on technology alone."

Chicago's attempt at solving en demic corruption in its force with echnology failed. The neural-netvork tool worked too well in identiying rogue officers and without a framework to improve the culture of the organisation in tandem, it was orpedoed before it could cause fur her embarrassment

It lasted two years, but not before all of its reports, recommendations and predictions went missing, Union figures blocked the system from being used again, arguing po lice were hampered in their jobs by such intrusive monitoring and that officers were being punished for crimes they hadn't yet committed.

The Met has its work cut out to overcomeg similar hesitancies, but given its current standing, it has no other choice.



LOCAL COUNCILS

London embraces the new data economy

The Borough of Newham is working to put the UK capital on the map as the centre of the global data economy by embracing data in the public sector

Christine Hortor



ogy, you probably think of equivalent HQ for data? The answer London is embracing the challenge with an ambitious goal to become the heart of the burgeoning data economy, globally

The good news for London is that it is still early days for data; the full economic potential of the data economy is yet to be realised. But that po tential is enormous.

The London Borough of Newham recently publishhd a report in collaboration with University College London's (UCL) Institute of Global Prosperity. Its conservative forecast is that the UK open data market will ties, including Newham, and a and local educators are also backing be worth £42bn in 2025, £46bn in 2030 and £5bn in 2035.

around 3.2 million jobs related to da and investment in digital infra- responding to this. Businesses have data by the end of the decade. This structure in the capital, He believes contacted the Mayor to say. 'I work

hen you think of the centre \perp would be worth around £28bn to the of the universe for technol- UK economy by 2030, of which for businesses to locate." London's share is around £5.5bn. In Silicon Valley. But where is the London alone, around 140,000 jobs in open data will be needed in the is that there isn't one – yet. But | next 10 years. As such, several local | helped establish Silicon Valley as a boroughs are spearheading efforts to make the capital the 'centre of the East, as well as the University of East data universe'.

In London, Newham is leading this charge. Newham Sparks is an initiative that positions the borough as a population in London. "That's pow hub in terms of data jobs, skills, businesses, education, and the application of data to solve problems. It is an ambitious plan to accelerate the growth of the data economy in Newham and London as a whole.

Omid Shiraji is a consultant CIO plans, alongside firms like Microsoft who works for several local authori- and Amazon. Smaller organisations member of the Mayor of London's the launch of Newham Sparks. Smart London Board, which helps In the UK, there is the potential for shape the capital's smart cities agen-

there is "an amazing opportunity for London to be the centre of the universe when it comes to data as a sector. And Newham has spotted that and has grabbed hold of it".

Although the comparisons to Silicon Vallev mav not be immedi ately obvious, there are several reasons why Newham is well-placed a a location for data scaleup and start ups, he explains.

"Newham has the Royal Docks as an Enterprise Zone, and the bor ough offers business rates and other incentives that make it a great place

Shiraji also notes that it was it proximity to internationally renowned academic institutions that tech hub. Newham, he says, has UCL London (UEL), in the borough Another positive for Newham is that it has the youngest and most diverse erful on so many levels," he says "Early adopters, mouldable profiles of people, plus that diversity of thought, culture and background." Critically, Newham's council lead-

ers are a driving force behind the

"Primary schools and further and higher education providers are all

London's Olympic Park in the Boroug f Newham, where he local council is leading the charge on smarter use of data and analytics

the southwest of London there's a boroughs where they want to drive the IoT agenda, in areas like social care. And if you look at Camden

STREAMLINING SERVICES, CREATING JOBS

otal UK open data employment estimate and forecasts, in thousands of open data employees



66

There is an amazing opportunity for London to be the centre of the universe for data. Newham has spotted that and has grabbed hold of it

in data. How can we get involved?' | a mix of private equity, venture and You've got big responses to the calls to action. There is a melting pot of people coming together to harness this agenda," he says.

So, what can local authorities, in ondon and beyond, learn from he says. Newham's example and apply? The

most successful authorities are the ones that care most about linking digital and data to the citizen, an not just doing data for the sake of it. savs Jason Foster, who is CEO of Cynozure, a data and analytics strategy consultancy based in London, which has several local govrnment clients.

"The local authority's superpoy s that they do care about the end product, which is the service and the itizen who receives that service onnecting those dots between the ervices they offer as a council, and how data can play a part in unpicking where their problems are and solving them in a cross-department way, is where they win."

Newham and UCL make several recommendations for creating a roadmap for a data society. At the heart of the strategy is data citizenship. This translates to equipping residents with the tools and skills they need to understand the value of data for the public good; the skills to read and analyse data in their everyday lives: and the confidence to share their data.

While Newham is leading the pack in its efforts to unlock the value of the data economy, other boroughs are looking to follow suit.

"If I look to the west at Westminster. it wants to be recognised as the smart city, globally. If you look to partnership between three or four across and down to Newham, there's

angel investment in data startups and scaleups. So, you can see these data economy nodes are popping up. "When I put my London hat on, connecting those parts is exciting,"



Focus on data literacy

The government's National Data Strategy, first published in September 2020, notes that there will be a demand for data knowledge not only for experts with advanced analytical skills but for the entire UK workforce While not every worker needs to become a data scientist, everyone will need a basic level of data literacy to operate and thrive in increasingly data-rich work environments.

In 2021, the UK Government published a report which said that 178,000 to 234,000 jobs would be required to fulfill the demand for data skills. It noted the gap between the ability to both provide the skills and make sure those jobs are created in the UK. In London alone, just under 140,000 jobs will be needed in open data in the next 10 years.

Colin Cook, the director of economic development for the Scottish government and member of the Digital Leaders advisory, discusses how public sector technology can support businesses and solve challenges

nesses and entrepreneurs. jor challenges faced. At the heart of this lies CivTech, a growth businesses.

tor in the world.

Q closing the productivity gap. cant economic impacts.

'Digitalisation is not just nice to do, it's a business necessity'

sector technology when it but necessary. comes to delivering economic development?

Technology plays a role in which economic development support and advice is provided to busi-

The Business Support Partnership, which brings together representa tives from Scotland's skills and economic development agencies, and national and local government, has developed a website, FindBusiness Support, to enable businesses to find the support they need. The content on the site is developing constantly, with an ambition to include information on every public sector service available to businesses in Scotland.

Second, in the way in which the public sector works to create opporservices that address some of the ma-

Scottish Government programme with a mission to drive innovation in the public sector by collaboratively generations of sustainable, high-

CivTech uses highly effective syscommon in the private tech sector. methodologies that have done so much to transform almost every sec-

> How is Scotland encouraging its businesses to adopt technology and close its productivity gap?

Γhe national strategy for eco nomic transformation identifies the adoption and application of digital technology as critical to

We have successfully delivered the Digital Development Grant programme which has invested around £50m since January 2021 to support over 6000 SMEs in improving their digital capability and capacity. This has already unlocked more than £60m of private sector invest ment and is demonstrating signif

We need Scotland to have a culture that makes the digitalisation Digital Leaders

What is the role of public | of businesses not just nice to do,

Not only must we support our businesses to adopt digital technologies, we must improve our management two ways. First, in the way in and leadership practices, along with our digital skills. The ONS claims that doing this can deliver an increase in productivity of up to 20%.

How can the public and pri-Q vate sectors work together to create more opportunities for entrepreneurship?

In a world where technology is lisrupting markets and changing how organisations and individu als work, we need to be open to ideas and experience from every sector of the economy. We believe that entrepreneurship can drive social mobility, create fulfilling jobs and deliver the economic prosperity necessary tunities for entrepreneurs and busi- to sustain thriving local communinesses to build digital products and ties and positively disrupt traditional sectors that might ordinarily be considered less productive.

Our new national strategy talks about the creation of an entrepreneurial mindset. In the private sector we know that high-growth startups solving challenges to make people's and scaleups can create skilled jobs. lives better and, in doing so, create pay higher wages and drive increased productivity. In the public and third sectors it can improve services, increase efficiency and address the key tems, methodologies and practices social, economic and environmental challenges of the day. Of course, if we These include open challenge sys- | can do that at home, it also opens up tems and tech accelerators - the to export our products and services and promotes new ways of doing things across the globe.

CivTech is just one great example of how we can encourage entrepreneur ial thinking in the public sector, but we want to go further and establish Scotland as a key player in an international tech r



Colin Cook Advisory board member

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GREEN AMBITIONS

A recent study has shown that a quarter of the UK public want Britain to be known for its actions on tackling climate change, but when it comes to green innovation, just how much progress are we making?





2016

2017

2018

Deregulation of environmental standar

Environmentally related bailout without green strings

Subsidies or tax reductions for environmentally harmful products

REGULATION

Making the internet a safer place to surf

The Online Safety Bill seeks to protect users and their privacy, but may do the opposite unless changes are made

Joy Persaud

technology increasingly | right way to go it is very much a drive to keep both children and adults safe online has rapidly grown in urgency. While the Online Safety Bill (OSB)

will include the world's first cybersafety laws, it is unlikely to be a panacea, as the balance between online safety and personal privacy is a precarious one

"Placing some accountability on the platforms, which currently have almost none, is a pro of the OSB," gy and society evolve. says James Bore, a security consultant specialising in online and cyber-

dominates our lives, the debate - I don't see there being a and Wales, increasing by almost right answer. But what is clear, given the damage that platforms have done in terms of assisting the spread of misinformation and manipulation of democracy, is that the balance is very much in their favour." He says the sticking points surround a lack of clarity over what is considered 'harmful' behaviour, as criminal threshold. Abusers frethis subjectivity will lead to people quently use social networks to post challenging definitions as technolo-

advisor at Impero Software, which | er forums and the dark web. The security, "Whether the OSB is the provides advice on safeguarding to NSPCC says the government must

schools, concurs. "The OSB will have to be dynamic and evolve every year to address emerging trends," she says. "We haven't even started thinking about the metaverse, for example, where everything is interactive and where considerable harm to children is already being reported. It's important that we are respon sive to developments through code of practice that Ofcom will develop alongside industry."

That said, Aynsley believes the OSB is an important step in the right direction towards protecting children and adults online, particularly as the internet was not designed for children and always lacked adequate controls. "For the first time, technology companies, including social media and search engines will be responsible and held accountable for harmful content hosted on their platforms," she says The NSPCC strongly backs the OSB but in its report Time to Act, pub lished in April 2022, it said further changes are urgently required unsurprising given that, in 2021, UK law enforcement received 97.727 industry accounts relating to online child abuse, a 29% increase on 2020 And online grooming offences in 2020/21 reached a high in England

70% in three years. Among its requests, the NSPCC wants the bill to take a proactive approach to tackling the child abuse risks in private and group messag ing, and to stem the ways in which abuse is facilitated on social net works but where it may not meet the so-called digital breadcrumbs that signpost to illegal content hosted on Charlotte Aynsley, a safeguarding third-party messaging apps, offend-



The Online Safety Bill will have to be dynamic and evolve every year to address emerging trends

> also strengthen its approach to tackling harmful content for children.

cially for children.

"Fines will be issued to those who fall short and executive teams held accountable," she says, "Shifting social media platforms to be aware of the content they host."

But she adds that the spotlight on mean that harmful behaviour not be sufficiently motivated by financial penalties.

Bore agrees: "It's worth remembering that the companies targeted by this law have been shown time and time again to be uncaring about the damage they knowingly cause to nications will be scanned. Is this the society and democracy," he says. kind of surveillance state we want in "Even if individuals within them are the UK?" well-intentioned, their ability to soften the overall negative impact is OSB will degrade the UK's security negligible. That's not to say there throughout its online infrastrucaren't also benefits to society that | ture, reducing inward investment, come about, but we need to work to as companies will have little incenmitigate the harm, and holding tive to invest in a market for insethese organisations to account – cure products, or the insecure regardless of how imperfectly – is a services built on them. huge step when they have shown for vears that nothing else will work."

According to the government, the individuals safe and maintains their OSB will "[deliver] the government's privacy, while avoiding the some manifesto commitment to make the what ironic potential outcome of UK the safest place in the world to be | leaving people with even poorer pro online, while also defending the tection online.

right to free expression". But cyber experts beg to differ, warning that the OSB risks devastating the UK's online security

Robin Wilton, director of internet trust at the Internet Society, is damning, calling it "an unworkable mess, with overreaching powers based on vague definitions, poor accountability structures, and new categories of offence added almost every month".

The government, he adds, should refocus its approach by admitting Aynsley believes the OSB marks a that the problems it claims to be shift from liability to accountability solving with the OSB are societal and protection, whereby companies and stop legislating as if regulating will need to demonstrate that they technology is "the miracle cure". He have evaluated key risks such as is also concerned that the bill could misinformation, predatory behav- force firms to undermine strong iour and cyberbullying, and put encryption, making everyone less suitable protections in place, espe- safe, as service providers weaken or withdraw end-to-end encrypted services from their offerings.

"The bill," he says, "makes [service providers] liable for the behaviour of responsibility will benefit everyone. their users if they are unable to monespecially children, as it puts the itor and control their users' converonus on big tech companies and sations. Nadine Dorries, the Digital, Culture, Media and Sport Secretary. recently expressed her delight that citizens in Ukraine could stay large technology companies could | informed via secure messaging services and encrypted news sites. If occurring elsewhere is missed, the UK passes the OSB, companies while billion-dollar behemoths may | will be forced to either leave the UK market or undermine the security and privacy of all their users, including the most vulnerable in Ukraine and other conflict areas.

"What the public doesn't realise is that the content of all their commu

Wilton goes on to caution that the

Clearly, the OSB still needs work to hone it into a robust tool that keeps

increase in online grooming offences over the three years to 2020/2021

ndustry reports relating to online child abuse received by UK law

290 increase on the

enforcement in 2021

of cases where children are contacted by someone they don't know online take place via private message



of 11- to 13-year-olds who reported aving seen pornography describe neir viewing as mostly unintentional NSPCC 2022

years and beyond

trust they seek to maintain with the

sanitation First and foremost, water is more scarce as climate change brings hotter, drier summers and less predictable rainfall to Britain. Without action, this increased drought risk, according to has estimated that summer rainfall will by the 2080s

Part of the solution is reducing consumption. For example, the average per head, per day, which utility compamate change

large proportion of greenhouse gas emissions globally. In 2020, the water sector became the first in the UK to commit to net zero carbon emissions by 2030, which others have followed. But achieving this goal requires not only for utility companies to reduce their carbon footprint, but all of their suppliers and contractors too.

Meanwhile, the environmental further. Sewage and effluent spills into bathing waters, rivers and watercourses where people swim and kids paddle, are never too far from the media spotlight. Political and regulatory pressure, including new legislation forcing utility companies to curb the spills, will continue to grow.

"Underpinning all of these issues is

Informing a richer picture of UK utilities

Technology, data and human domain expertise must combine seamlessly to overcome the pressing issues facing the UK's utilities sectors in the next few

iencing a collision of key public. Such trust is crucial to the ability of these vital services to fulfil their functional through steady supply and

person in the UK uses 140 litres of water to deal with supply issues in the next five years. Efforts to alter consumption behaviours must be assisted by the industry's own actions to help halt cli-

The industry is responsible for a

impacts of these sectors extend much

Mark Kaney, MD of water and infrastructure services at specialist util-

e utilities sectors are expe- | drive to bring down the cost of providing water and removing sewerage challenges that threaten the is at odds with the need to invest in our ageing asset base. One way to pro vide more resilient, sustainable infrastructure, which will improve service obligations to keep society safe and and performance, is by digitally enaoling the infrastructure, but that also requires upfront investment.

"There is a cost of living crisis and the last thing people want to hear now is their bills are going up to help fund investments in digital transformation. could lead to water shortages and So utility firms are looking at how to become more efficient, lowering the the UK's Environment Agency, which cost to serve. The answer ultimately lies in data, and using it more intelligently decrease by 15% by the 2050s and 20% to drive much-needed efficiencies and make better decisions."

Technology is not only central to the solution but it also helps uncover the extent of the problems that utility com panies face, informing them rapidly nies want to see fall to around 100 litres on both what is happening and what is required to solve the challenges Technology within networks and out falls, for instance, can show when the are spilling, how long for and what the quality of water is

By putting sensors on utility assets ompanies can understand their cor dition and performance in real or nea time. Each sensor or visit to an asse collects more data. And while they have started to use this data in useful ways including alerting customers when there is a storm coming or posting ser vice failures and sewerage discharges online, there is a considerable way to go until utility companies can claim to be fully data-driven

"Collecting data and turning it into nsights is the only way to make better faster decisions and to meet these big challenges on both the custome side and the utility side," says Kaney. However, most utility companies are data-rich and information-poor. They have more data than they probably know, and what they do know of isn't an exacerbating cost problem," says used to maximise its value.

"In most big companies, between 55 and 60% of their data is dark data. ity services provider Ipsum. "But the | It's collected once, used once for one





and it's never used again. That's a lot of at which Ipsum can collect data and tive without skilled people with solid data and value that these companies are not taking advantage of.

lpsum is a leading provider of specialist power, water, infrastructure and digital technology support services. It works in partnership with customers across both regulated and non-regulated environments to optimise asset performance, supporting the security, resiliency and longevity of their critical networks. As a frontline provider of infrastructure services - investigating, enhancing and optimising the

asset inspections on Combined Sewer Overflow

pollution events were prevented through these early

house digital technology Sewer Viewer from 2020 data

nterventions, prompted by Ipsum's data-driven insights

The second piece on Pollution Events Mitigation came from our in

and Outfalls over the past 12 months

purpose, and then it just swills around | operation of utility assets - the speed | turn it into strong insights has a direct influence on the avoidance or mitigation of incidents and management of performance issues.

> lpsum.Live is a cloud-based platform which brings all these insights together, whether they are collected from sensors, drone surveys, physical surveys on site, 3D photogrammetry or in-asset and in-pipe surveys such as CCTV ameras. This helps facilitate new insights such as pattern recognition, rend analysis and remote inspectior and interrogation, playing back a rich picture of information

> The platform is designed to be nteroperable with a utility company's own digital infrastructure, regardless of the solutions and vendors it uses. lpsum works collaboratively with the whole ecosystem to ensure all data and insights are easily and dynamically connectable. Whether datasets came from Ipsum, a strategic partner or the utility company itself, every body sees one version of the truth and, through effective collaboration can respond, diagnose, triage and make decisions accordingly.

While these intelligent uses of tech ology, and the data insights that flow hrough them, will be essential to helping the utilities sector become more efficient and sustainable in the

years ahead, they will not be effec domain expertise.

"Utility companies are talking to us about their big challenges and initiatives and how we can help them better serve society and the planet through data and technology," says Kaney. "But data on its own is not a silver bullet. We're not going to digitalise the utility sector and suddenly everything will be brilliant. We still need real core omain expertise

"We are losing so much expertise in ne utilities sector. If we are not careful, that expertise will be gone forever. Technology needs knowledge background and context to serve its urpose. To really unlock data-driven decision-making and improvements, e need people who understand how these things work. Al is great but who rains it? If it's not an expert, the Al will get it wrong. So people are really mportant to succeeding in the age of Jtilities 4.0."

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SKILLS

The low-code revolution

Upskilling employees, smarter outsourcing and new technology could help cut costs, reduct debt – and deliver better service

Oliver Pickup

the words: "April is the cruellest | rise in living costs could plunge the month." One hundred years on, con- economy into recession this year. costs for British people and business squeezed; the public sector is in April 2022, it's hard to disagree. It appears worse is to come, so how can for public services is likely to reach the public sector cope?

ed interest rates to a 13-year high for National Statistics show that

S Eliot's poem The Waste | and forecast that inflation would Land, published exactly a soar above 10% in the coming century ago, begins with months, warning that the surging sidering the huge rise in energy | But it's not only citizens who are already in the red - just as demand unprecedented levels.

On 5 May, the Bank of England lift- The latest figures from the Office

total public sector debt stood at | maintenance and data analysis. £2.3tn at the end of March, equiva- Computing is embedded into job lent to 96.2% of GDP, a level not roles in these departments, particuseen since the early 1960s. Further, public sector net borrowing was £151.8bn. This is the third-highest borrowing figure since records Their relative ability should inform began in 1947, and equivalent to 6.4% of GDP.

Given this gloomy backdrop, how should public sector organisations plagued by money worries invest in technology solutions that best serve struggling citizens? Granted, costly gambles on the metaverse and vanity projects are not a good idea right now, but what's the best way to allocate funds?

Jon Crowcroft is one of the co-founders of iKVA, an AI knowledge management company, chair of The Alan Turing Institute, and Marconi professor of communications systems in the computer laboratory at Cambridge University. He is well placed to answer these critical questions.

"My advice would be to match the budget to the current skills base, or organisations will face the challenge of undertaking a huge retraining exercise that will overwhelm their resources," he says.

"Government departments including transport, energy and healthcare are relatively technologically advanced and staffed by individuals who inherently use technology for timetabling systems, power grid

larly in healthcare."

more limited skills, Crowcroft says. where additional funds will be required to support the deployment of technological solutions.

Alex Case is public sector industry principal at Pegasystems and a former senior civil servant at 10 Downing Street and the Cabinet Office, who oversaw cross-Whitehall Brexit delivery. He has also led large-scale public sector reform ini- es," he says. tiatives in the UK and Canada and is in no doubt of the scale of the task.

face huge delivery challenges, from human workload. This will offer coronavirus, Brexit, the war in cost-savings, improve accuracy, and Ukraine or the cost-of-living crisis. enable people to do other things that



Low-code can help to evolutionise how government designs and builds IT. It can help a business to get what it wants and needs from a new system, not the system the IT team thinks the business needs

driving levelling up, getting the health service back on track, transforming social care and dealing with the safety of tall buildings. These need government operations to run effectively and efficiently and for the least amount of cost possible."

Low-code software development could be the answer. It uses dragand-drop features instead of extensive coding language to build applications. The result is that it is faster to complete and non-professional coders can use it. This makes it an excellent option to accelerate innovation and reduce costs, suggests Case.

Its uses across government depart ments could include streaming and improving outdated and clunky customer service processes, digitising inefficient and complex programmes and back-office processes. and modernising debt collection while reducing fraud.

"Low-code software development can revolutionise how government designs and builds its IT systems. It can help a business to get what it wants and needs from a new system. not the system the IT team thinks the business needs."

Additionally, Case believes this approach can bridge the frequent divide between business users, subject matter experts, product owners, Other sectors, such as legal, have and the technical design and developer teams

Where, though, should the public sector focus its investment now? Crowcroft contends that it is less where and more how the money should be spent, celebrating the increased adoption of AI and machines learning. "During the pandemic, the public sector successfully used AI and automation to meet increased demand for servic-

"AI can automate bureaucratic processes that are currently very "The government continues to resource-intensive, reducing the including dealing with backlogs, have a positive return for their

> Microsoft Partner

> > Microsoft

"Increasingly, the government has recognised that low-code can help take the pressure off and has invited proposals for innovative platforms and software for digital public services," says Mark Smitham, more user-centred costreusable work."

is a prime example of a local service provider that used low demand from its residents and local businesses. "In just 24 hours, the council built an application that enables Knowsley residents to request assistance or volunteer their

data to identify and plan where further improvements can be made." worker can spend with people in the pandemic need increases.

"The processes at the human level are reflected in documentation, and cludes Crowcroft. "But using techthat shouldn't be the case anymore." he adds. One obvious way for the public sec- the information will improve confi-

£bn 🔵





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community," continues Smitham

need help with those who can help, providing support for 7,000

vulnerable residents.

Elsewhere, a low-code

financial debt with core

business transformation at

debt management charity

points out Alex Case, public

sector industry principle at

Pegasystems. "Additionally,

low-code solutions are being

deployed to tackle costly fraud

and errors for the Department

of Work and Pension," he says,

"transforming how the country

registers land and property,

and even supporting how the

essential skills to predict and

Ministry of Defence recruits

deal with a fast-paced and

changing environment."

StepChange, the UK's largest

platform is helping to address

"This app connected people who

Is low-code the answer to public sector worries?

lead for public sector marketing at Mendix, a low-code platform. "Their shared vision is to deliver effective, local public services through open, collaborative and

He suggests Knowsley Council code to adapt to the increased services to support their loca

organisations, such as analysing | smarter with outsourcing while

improving in-house skills. For instance, the value of contracts An example of this is in the care awarded by the UK government and sector, says Crowcroft. By automat- public bodies to consultants was ing as much of the paperwork as pos- £2.5bn in 2020-21, as organisations sible, the amount of time a care used the private sector to deal with

"Consultants will always have a place in the public sector," connology to unlock data insights and training our people to understand tor to reduce costs is by being dence in their decision-making."

GOVERNMENT DEBT CONTINUES TO RISE

General UK government gross debt, from the years 2016





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E-GOVERNANCE

Lessons from e-Estonia

The Nordic nation runs an entirely digital government on a relatively shoestring budget. Why, then, does the UK struggle to do the same?

Charles Orton-Jones

С two nations. On one side we have the UK, a land where one in five NHS Trusts is paperbased. This means records must be ed as a paradise for digital living. so on. It's chaos physically transported between hospitals, sometimes by taxi. Records are occasionally lost

When computers are used, the performance can be appalling. A medic in Kettering hospital says it takes her 10 minutes to log into the hospital system. "Sometimes I just give up and go to another computer," she reveals. Overall, only one in 10 trusts is completely digitised.

speeding tickets to drivers and demands an ink signature posted At birth, Estonians are assigned an police confirm it is possible to send system is built around it. Britons

popular in the 1980s. Now swivel the globe to Estonia. This tech unicorn factory is regard-The entire government runs on a

slick online interface. A single ID code offers citizens access to almost all its public services. The login is identical for all. Vote online. Get a prescription. Pay tax. Form a company. All with a single personal number and PIN.

Most incredibly of all, the entire Estonian system is run for around €100m a year, according to 2020 fig-How about in the police force? ures from the State Audit Office. So Northamptonshire Police still posts why is the UK so far behind Estonia? A big reason is the single identifier. back. Do it online? No chance. The ID number for life. The national IT

mpare and contrast these | that primitive network of printers | use a multiplicity of identifiers passport number, NHS number, National Insurance number, Unique Tax Reference, driving licence and

> "We're not joined up," observe Deryck Mitchelson, who was chief information officer of NHS National Services Scotland from 2018 until



A single ID code provides Estonian citizens with access to almost all public services. Vote online. Get a prescription. documents by post or fax. Yes, fax, have no such number, but instead Pay tax. Form a company

January. "Even in the same service, things differ. In Scotland, we've got the CHI - the Community Health Index number - which is the same as but separate from the NHS in England and Wales."

There are three distinct NHS num bering systems: one for England, Wales and the Isle of Man; one for Scotland; and one for Northern Ireland. Mitchelson has studied the impact this fragmentation has on government IT.

"There are just too many identifiers," he says. "Data is siloed in local systems. In Scotland, each health trust manages its own records. None of them passes on information, which is why there are big delays. There's no one source of truth.'

During the pandemic. Mitchelson needed to create an integration laver to share patient information across the Scottish and English NHS systems to monitor patients. "People ask what sits between the NHS systems and connects them. The answer, really, is nothing."

It's a disaster. The NHS app failed show double vaccinations if one vas in another nation of the UK, neaning some Brits couldn't prove heir status when abroad.

Even the current ID processes are oor, being based on names and late of birth. Mitchelson says he vent for a blood test and the nurse orgot to ask his middle name, preenting the system from recognisng him. The sample was thrown away as it could not be logged.

I deliberately tried to disrupt the vstem," he says. As a small gesture. e would refuse to print documents. nstead demanding a digital verion. "Unless people take a stand, it sn't going to change.

Back to Estonia. The nation runs on a national data-sharing platform called X-Road that stores data on the cloud on compatible systems. The education department maintains school records and the department of health logs medical data, but all the state systems are interoperable.

There is a once-only policy, so another with no information loss. old. Anything older is rebuilt. This means, for example, that ambulance drivers can view patient information on an e-ambulance app. Doctors and paramedics can see blood type, allergies, treatments or pregnancy at a glance.

The X-Road backbone allows apps and services to be built at speed. Almost 100% of the work is undertaken by private contractors, usually smaller agencies rather than the big consultancies used in the UK.

The Estonian approach is so outstanding that Finland and Iceland are now using the X-Road model. Mexico is a recent adopter. Even Japan has signed a digital cooperation agreement with Estonia for mutual assistance and learning.

Could the UK follow? The structure is there. The UK is a member of astic about sharing their knowledge the Digital Nations group, a collec- with other countries. tion of nine countries that includes New Zealand, Denmark, Israel and thanks to a soaring GDP per capita Estonia with a common goal of modernising IT. But there's no obvious | land of code – its example will prove sign that the UK desires to learn.

ESTONIA'S X-ROAD SYSTEM IS MADE UP OF:

164 Public sector institutions



ity servers installed by members

688

1,525

52,000

an Union European Regio

Sion Smith, CTO of OSO, a tech onsultancy that works on software design for the likes of NHS Wales and the Department for Work and ensions, savs there is no plan in place to emulate Estonia. "I've never heard Estonia mentioned. Never. Instead, he says, the mindset in the UK is "reactive", focused on fixing immediate problems as they occur. "I don't blame civil servants. They

lack experience. They lack under standing," he says. Even lone politicians are hard to point the finger at. "It's the system. Politicians don't stay around long enough. There's a four-vear lag between what gets approved and what gets done. By information is never input twice. that time the politician has moved Data can flow from one service to on." The result is archaic, dysfunctional systems. "We talk about tech No application is more than 13 years debt when code is not optimal or usable. The NHS is tech debt on ster-

> oids," he savs Could the UK take baby steps and adopt a single ID code, like Estonia? Political objections over Orwellian surveillance are a major obstacle. Estonia evades this by giving citizens the right to see who views their data, thus increasing transparency

"If it's done properly, a single ID gives you much tighter security and controls," says Mitchelson, who is now chief information security officer of cyber firm Check Point. "If there is a fraud, you can immediate ly switch off access to other services. It gives more visibility and allows the consumer to manage their data.

So, a model exists for the UK to learn from. It's cheap to run. Secure. Proven. And Estonians are enthusi

As Estonia rises in prominence ever harder to ignore.



nology as a crucial component to tion tools like video conferencing to adequate systems remains.

move on from the Covid crisis, for the NHS its legacy lives on. For example, the waiting list for routine NHS treatment has now reached 6.4 million people in England alone. Few operational settings could benefit more from digital efficiencies than NHS hospitals, behind their cousins in primary care. their records online. They can receive

come with them.



Hospitals must digitise now to relieve pressure

Hospitals have not only fallen behind other industries but also other sectors of care when it comes to leveraging technology to provide much needed efficiencies and better services

he pandemic accelerated digitisation across all sectors and healthcare was no different. Hospitals sought to embrace techrelieving the extreme pressure their staff were under. But despite pockets speak to patients remotely, a lack of

While most sectors have been able to yet they have found themselves falling When people need to see a GP today, they can book and track appointments through smartphone apps and access communication via text messages and urgent need to relieve pressure on the NHS, many hospitals still predominantly rely on paper documents and the inefficiencies which naturally

Many IT professionals who have been in the healthcare sector for some time will be familiar with the resistance to T projects in certain quarters of the NHS. Previous costly national digitisa tion programmes have led to the patchy use of technology seen in hos of success, including using collabora- pitals today. However, given the mamnoth administrative burden on NHS staff, change is a necessity.

"In the digital world, we still see nany hospitals that are not leveraging echnology and that are left playing catch up with primary care," say Ashley Brook, director at healthcar technology company TPP. "It's becom ng more apparent, both nationally bu also within individual organisation that technology is needed to help relieve some of the pressures the NHS s still under. We're not iust talking about improving patient care but fundamentally making the lives of clin cians easier.

"In NHS frontline care, digital trans ormation only happens with the right other digital platforms. Despite the buy-in and an appetite for change. must bring benefits to patient care and safety. The public is more demanding than ever and keen to interact with the health service digitally. Much of the NHS workforce has a thirst to take advantage of technology too, but we need to get better at getting this technology to the front line.

Technology has a critical role to play not just in driving efficiencies but also facilitating the NHS's desire for more integrated systems. Regional services need to work together more seamlessly and provide care whenever and wherever patients need it. Patient pathways between primary and secondary care, for example, would be substantially better served by a digital platform through which all data is available and accessible both by patients and their care team. Secondary care in particular has highly complex patient pathways



In NHS frontline care, digital transformation only happens with the right buy-in and an appetite for change. It must bring benefits to patient care and safety

that are incredibly time intensive to deal with manually. And though the efforts to everage technology during the pandemic were commendable, they didn't stretch far enough

TPP's philosophy for joined-up nealthcare, based on shared electronic health records, improving access to clinical data and empowering patients to take part in their own care, offers the NHS an opportunity to embrace digitisation in a far more effective way. Used by more than 7,600 NHS organisations across more than 25 different care settings, SystmOne, TPP's core platform, already hosts over 50 million patient records in the UK alone. Meanwhile the company's patient-facing healthcare app, Airmid, enables people to take control of their own health

"Our technology collates information and streamlines how hospitals deliver care. be that by providing great standalone systems or interoperating with other systems," Brook says. "Clinicians can spend less time staring at a monitor and more time on patient care. There is so much we can all now do on our mobile devices, so it's crucial to replicate that in hospital settings.

"Whether it's the patient or the cl nicians requiring access to information, our out-of-the-box solutions simplify these interactions. Our mobile app Airmid puts the power of our software in citizens' hands, while our clinician smartphone app Brigid untethers the medical record from the PC workstation.'

The `out-of-the-box' functionality attractive to the NHS, but only if the technology can constantly evolve with it. Healthcare is a fast-paced environnent that evolves based on new learr ngs, evidence and data, so a digita wstem that both records changes and adapts to them is vital to facilitating high adoption. Put simply, the technology

nust support the jobs of clinicians doctors and nurses, not add additiona urdens to their workloads, while taking nto account new learnings

Crucially, technology that unburdens NHS staff also needs to be affordable The NHS has been burned in the past by costly solutions that have not beer fit for purpose. TPP's solutions enable large-scale transformation and next-generation systems, while taking nto account the financial pressure many hospitals are under

"The platforms deployed in the NHS need to be flexible enough to deliver care now and in the future," says Eric Finlay, consultant paediatric nephrologist and clinical advisor at TPP. "I spend an enormous amount of my time phoning patients, answering telephones, looking for people, chasing results - all things that can verv easily be solved by technology. With a unifying digital system like the platform from TPP, you could make some ery quick and easy wins.

"Patients are ahead of us in the hosoital sector. They are trying to contact us using digital platforms and social nedia but we have no way of safely ommunicating in those ways. We could very quickly provide a lot of clini cal wins and time while also bringing all ne evidence together and using it as a tool to facilitate engagement. Clinicians can ultimately then focus less on admir and more on clinic care, better prior itising patients. It's time to embrace digital health."

For more information, please visi tpp-uk.com



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