Digital Vision for Government

Trusted partner for your **Digital Journey**

Atos

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Adrian Gregory, Chief Executive, Atos UK & Ireland

Digital vision for Government

Atos has a vision for digitally transformed Government, and a unique perspective on the opportunities that digital change puts into the hands of our customers – and our customers' customers, in this case, UK citizens.

We are experiencing digital transformation and disruption across all industry sectors. We see more collaboration and learning between different sectors. For example Utilities are learning about data driven preventative maintenance from Manufacturing and Manufacturing is learning about 'Servitisation' using data and analytics combined with the Services sector business models. In turn, those Service models are now being redesigned through a second or even third-generation perspective that has automation and technology as a priority but, more importantly, customer experience as the prime outcome.

Technological change has already happened in the world around us. Our daily lives have been accelerated through the tangible impacts of smartphones, Wi-Fi, streamed ever-accessible and malleable content, available at any time and to anyone. Add to this the possibilities through Internet of Things, cognitive computing, wearable devices and the platform economy it is clear that this change will only accelerate.

The concept of a citizen consuming services from multiple departments through a unique identity and a familiar consumer interface is achievable. This ability changes the need for Government to push a rigid set of services out to citizens: it provides an opportunity for citizens to receive what is right for them in an efficient and convenient manner.

Creating our Digital Vision for Government helps those who now have the opportunity to use digital to re-imagine truly citizen-centric services and transform our collective vision for where this potential can take us.

Kulveer Ranger, Vice President, Public Affairs & Strategic Communications, Atos UK&I

The changing landscape

As we enter the next cycle of technological change, websites and email are becoming outdated and Snapchat and Instagram are already creaking as augmented gamification such as Pokémon GO pushes the boundaries of what we seek to experience through a digital interface. The question our public services providers need to pose is, what does this all mean for us and for the digital citizen?

The average person is being inundated by digital services and devices that are not just new and exciting ways to spend time and collect points, they are fundamentally redefining everyday services and creating a 360° digital experience that will soon become the norm. Our major institutions, from banks to utilities, are racing to keep up. Easy-to-use apps, online services, and push and pull electronic mail are de rigueur. But in the digital race, to simply switch to online can mean you stand still. The real challenge is to grab the opportunity to re-shape and re-position the service. The art of disruption is viewed with scepticism, but that view tends to be from the incumbents and the establishment. For taxi firms who own no taxis, hotel businesses who own no rooms, and challenger banks that have no branches, the norm is not the starting point. This is what is feeding the digital economy and will shape our digital expectations.

The disruption we have seen in business and leisure is going to continue apace. The ability to buy a ticket to watch a live show in your own personal augmented reality space is going to happen soon. The monitoring of our body's functions will enable us not just to guess what we need to do to keep ourselves healthy, but will give us personalised data and evidence-based advice. This goes way beyond today's postcode lotteries and assumptions of illness based on symptoms. We are entering the era not just of predictive analysis but of precise digital diagnostics.

So the question arises, as the relics of the Information Superhighway and the cumbersome infrastructure of the World Wide Web become less relevant, how do we, the citizen, become the focus? Expectations of services that are easy, seamless and integrated will become a fundamental requirement and the key factor for measuring quality for public services and the Government that must manage and deliver them. This is a pivotal moment of change. The structures of Whitehall have already been bending to the requirements and demands brought by implementing new technology – from the establishment of GDS to the need for ever-adapting contracts and concepts such as Platform as a Service, Value of Data, and the potential of high performance computing and analytics to bring policy modelling into the world of 4K precision.

We are truly entering a citizen-centric digital age that requires Government to have a digital vision. The challenge to deliver services and innovations that will enhance the lives of the many is not new: it is a consistent priority of Government. But the opportunity that digital transformation and maturing digital technologies bring provides Government with the chance to champion a new Digital Vision for Britain.

Government at the heart

65.11m
UK population – June 2016 (ONS)

69.0m
UK population – estimate 2024 (ONS)

30h42m
average time spent browsing per month[1]

24.7m
number of UK fixed broadband lines[2]

81%
proportion of adults with broadband in the UK (fixed & mobile)[3]

28.9Mbit/s
average UK broadband speed[4]

73%
proportion of online adults who use social networking sites[5]

66%
proportion of people who use their mobile handset to access the internet[6]

71%
proportion of UK adults with a smartphone[7]

14%
proportion of adults who live in a mobile only home[8]

39.5m
number of 4G mobile subscriptions at end of 2015

+20%
increase in the number of people working from home in the past decade[9]

27%
of households now own a smart TV[10]

30%
in March 2016, nearly a third (30%) of mobile internet users used their device to access their bank accounts[11]

20%
used their device to pay/ transfer money electronically[12]

76,500
electric cars in the UK, with 11,528 charge points[13]

1/3
of all pre-school aged children have their own iPad and use it on average 1hr 19 mins per week day[14]

[1] @ March 2016 (http://media.ofcom.org.uk/facts/
[2] @ End 2015 (http://media.ofcom.org.uk/facts/)
[3] @ Q1 2016 (http://media.ofcom.org.uk/facts/)
[4] @ Nov 2015 (http://media.ofcom.org.uk/facts/)
[5] @ @ 2015 (http://media.ofcom.org.uk/facts/)
[6] @Q1 2016 (http://media.ofcom.org.uk/facts/)
[7] @ Q1 2016 (http://media.ofcom.org.uk/facts/)

[8] @Q1 2016 [downward trend from 2014] (http://media.ofcom.org.uk/facts/)
[9] (Q4 2015) (https://www.tuc.org.uk/workplace-issues/home-working-fifth-over-last-decade-tuc-analysis-reveals)
[10] (http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/cmr16/tv-audio-visual/)
[11] (http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr16/uk/UK_Internet.pdf)
[12] @March 2016 (http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr16/uk/UK_Internet.pdf)
[13] (http://www.nextgreencar.com/electric-cars/statistics/)
[14] (http://www.techandplay.org)

David Haley, Senior Vice President, Business Process Services, Atos UK&I

Business Process Services for the digital world

The win: win

When you're designing a new service, there's only one place to start – with people: the customers who will be using the service and the employees who will be delivering it.

With its emphasis on saving money, traditional 'lift-and-shift' business process outsourcing (BPO) now feels anachronistic. In our experience, if you serve the public in the right way, you can achieve cost savings at the same time. In fact, putting your customer (and your customer's customers) at the heart of your operations is imperative to deliver responsive, connected, multi-channel operations.

One example is National Savings and Investments (NS&I), which since 1999 has engaged first Siemens IT Solutions and Services, and now Atos, in a Business Process Services (BPS) partnership that really has been transformational. With over 25 million customers and more than £135 billion invested, NS&I is one of the largest savings institutions in the UK. One in three people across the UK are customers, mainly as owners of Premium Bonds, which are a leading cash savings product.

Atos delivers the operational business alongside a transformational change programme, enabling NS&I to compete effectively in the financial services marketplace. Conceived as a partnership from the outset, the relationship is based on trust, mutual goodwill and shared confidence. NS&I and Atos work collaboratively to develop action plans, and resolve issues – and we think the results speak for themselves:

- 65% of all retail customer engagements are now via digital channels
- Customer expectations have been exceeded: customer service statistics on operational performance (timeliness and accuracy) have reached over 97%
- on a 'like-for-like' basis and stripping out the impact of growth and inflation, the latest contract with Atos will deliver savings to the taxpayer of c. £500 million

And in productivity and commercial terms:

- funds under management have gone up from £63 billion to over £135 billion
- internet sales have gone from zero per annum to £10.66 billion in 2015-16
- 2.3 million customers registered to use NS&I online services in 2015-16
- Since services were first outsourced in 1999, employee productivity has improved by around 400%

So what have we learned on this journey?

Design services from the 'outside in'

Most organisations think 'inside out': they look at what needs to be done in terms of processes, system architecture or even KPIs. Instead, we think 'outside in': starting with customer insight and measurement to understand customer needs, expectations - even their feelings. Through our Customer Experience (CX) Lab, we use agile 'test and learn' methods to better understand our customers' requirements. And through our Employee Experience (EX) Lab, we involve employees in changing service delivery to better meet customer and employee needs.

Employ an automation-first strategy

It is possible to deliver greater collaboration, savings incentives and outcomes through intelligent automation. At Atos, we leverage emerging Robotic Process Automation (RPA) and cognitive innovation to digitise business processes and drive greater efficiencies, responsiveness and productivity. Perhaps one of the most significant benefits of RPA is that it can release talent. No longer do skilled people have to carry out repetitive data-collection or wrestle with mundane spreadsheet tasks. And they are also freer to become more customer-facing, improving customer service without the need for more resources..

Locate operations as close to your customer as possible

It makes sense that the further your organisation is located from your end customer, the less control you have over what's happening day-to-day.

Smart BPS is all about combining intelligent IT with intelligent people to create an intelligent organisation. The result? A suite of business processes that achieve and sustain business excellence and leadership instead of just reducing costs.

Jeremy Welch, Business Development Director, NS&I Government Payment Services

Modernising payment services

As the Government embraces Digital by Default, the proliferation of websites covering everything from paying for our TV licences to filing our tax returns continues. Yet recent research by Dods Parliamentary Communications into payments for childcare has revealed an increasing frustration among citizens about the digitisation of services.

Research conducted by Dods with over 1,100 parents of children revealed that:

84%
of parents would welcome one central portal through which to learn which benefits/credits they are eligible for.

77%
would welcome one place to update information on changes to circumstances.

64%
would welcome one central website to received benefits and pay childcare providers.

58%
would welcome being able to claim everything online (rather than on the phone or face to face).

"There is no obvious point of contact or reference to know what you are or not entitled to and as such we receive very little in the form of assistance."

Male, South East England, 41 – 45

"Information is not available where it should be and is simplistic and often wrong/ misleading."

Male, North West England, 51 - 55

In response to Dods' findings, Atos is already looking at childcare as part of our partnership with National Savings and Investments Government Payment Services. The new Tax-Free Childcare scheme is being delivered in partnership with HMRC and will now be combined with the Department for Education's 30 hours free childcare for working parents. Extending this to include all childcare schemes would enable parents to have one single place to go to for all their childcare benefits and queries, making their experience much more joined-up. The single application process can ensure parents can view all the potential benefits they are entitled to, removing the lengthy process of researching and applying multiple times for many benefits. What's more, it would save time, money and promotion costs, making the roll-out for any new childcare-related solutions quicker and more efficient for Government, parents and the taxpayer alike.

About NS&I Government Payment Services

Originally formed in 2012, NS&I Government Payment Services offers modern, secure and cost-effective banking and payment services that transform citizens' experience and save money for both Government and the taxpayer. NS&I Government Payment Services already works with a number of Central Government departments to deliver low-risk, value-for-money services to meet the highly complex needs of today's Government departments.

As NS&I Government Payment Services is part of Government, it is uniquely positioned to engage in immediate 'crown to crown' collaborative discussions to reshape citizen services. What's more, the infrastructure to deliver low-risk, high-security payments services is already developed and is proven. Both these facts mean that NS&I Government Payment Services can deliver citizen focused results quickly and cost-effectively.

Since the 1999, NS&I has engaged in a transformational outsourcing partnership with Atos that now manages all its operations processing and customer facing activities. A partnership between NS&I and Atos, NS&I Government Payment Services (GPS) was formed so that other parts of the public sector can use NS&I's modern banking engine.

Sandy Forrest, Client Executive, Cyber Security, Atos UK&I

Cyber security

New frontiers: cyber security and economic prosperity

For Governments not so long ago, cyber protection was chiefly about safeguarding National Security and shielding their secrets and data. Today, our lines of defence have moved out of the world of espionage into every part of our public and private infrastructures.

With the implementation of the national Cyber Security Strategy, *Protecting and Promoting the UK in a Digital World*' [1], cyber security is now firmly established as a key pillar of economic prosperity. On the one hand, it protects our public services, citizens and businesses from viruses, dark web assailants and hactivists. On the other, it underpins competitive advantage for the UK as 'one of the most secure places in the world to carry out business on-line'.

Through CESG (the Information Security Arm of GCHQ), Government sets the UK standards for cyber security – and with the recent creation of the National Cyber Security Centre, there is a welcome new emphasis on ensuring that the *'people, public and private sector organisations and the critical national infrastructure of the UK are safer online'*.

Trust and compliance

To prosper, the UK needs to balance security, freedom and confidence so that we are conscious of, but not paralysed by, the need to keep ourselves safe. This balance is founded on achieving the right levels of Trust and Compliance. We give digital marketplace leaders (such as Amazon, e-Bay and the like) our personal and payment details because we trust them. Government must continue to win the same level of public trust – especially as wide-scale digital transformation progresses.

Compliance underpins this trust. In essence, it is about Government working to protect citizens' interests by putting constraints on the way services are provided. It is important – and challenging – to make sure that regulatory and legal obligations stay relevant and responsive as technologies advance.

[1] UK Cyber Security Strategy – Protecting and Promoting the UK in a Digital World: first published 2011 but updated since then.

Availability, confidentiality and integrity

In recent years there has been a blurring of the lines between the public and private. The result is that there are large numbers of daily touchpoints between citizens and private sector partners delivering services on behalf of Government. These companies need to work with public services (and other vendors) to prove their ability to deliver Government's three key data requirements: availability, confidentiality and integrity. Critically, all three are required simultaneously and continuously – even more so than in the commercial sector.

Working with private companies also opens up opportunities to inject learning from other sectors. For Atos, one key engagement has been as Worldwide Technology Partner for every Olympic Games since 2001. At London 2012 we faced off over 250 million security events over the 17 days with zero impact on the Games – a feat we again repeated at Rio 2016 where the number of incidents again increased substantially. Rio also saw the move of key Games capabilities to a secure cloud environment in Brazil (supported from a central technology centre in Barcelona) – another advance in future use of secure cloud facilities for other sectors.

Cyber threat – call and response

So what is Atos' vision to deal with the cyber threat now facing the UK? In our view, protection needs to be moved nearer and nearer to the data itself. Experts now generally agree that 'perimeter protection', while part of the solution, is not nearly enough on its own. Firewalls are permeable – and will soon become so even if they are upgraded. This moves the focus from just Prevention to a balance between Prevention, Detection and Response: it is about getting that balance right.

We will see an increasing reliance on emerging technologies to 'reduce the attack surface' by containing any problems (ideally to the one machine or server that has been compromised). Relatively new concepts like 'micro-segmentation', 'application containerisation' and 'micro virtualisation' are increasingly important because they are about containment. Complementing this is Behavioural Analytics: machine learning that understands what should be happening and reacts when it does not.

New possibilities

The challenge always is to find the equivalent of a needle in a haystack in a millisecond – which is why at Atos, we see major benefits in merging our supercomputing capabilities with our data analytics expertise to create Analytics Platforms. These search vast volumes of raw data for anything aberrant, then react either through an automated response or with near-real-time human intervention. We describe this as progressing from 'predictive security' (which assesses what may happen) to 'prescriptive security', which stops things happening in the first place.

This ability to collect and correlate enormous volumes of data makes it possible to deal with IT delivery, performance and security data all in the same way – putting security right at the heart of operations. We are also developing 'data-centric security', where each piece of data is surrounded by its own metadata (data about data) that defines how it can be accessed, where and by whom – so the data actually helps protect itself.

Cyber security is the Arms Race of the 21st Century. Constant efforts by our adversaries in finding ways to steal or damage our data must be matched by Government and private sector collaboration and investment to keep it safe and secure. The Government has the lead role in this, but needs the support of citizens and businesses to play their full part in protecting our nation state while enabling us all to capitalise on the huge opportunities we have in the world today.

Cyber security is the Arms Race of the 21st Century

Julian David, CEO, techUK

The race to public sector transformation

The coming decades will be one of the most challenging times for Government as it strives to deliver better value for money while meeting the needs of an ageing and more demanding population.

To win the race, Government must accelerate the transformation of public services through the smart application of digital technology. We need a Public Sector that is world leading in its adoption and application of technology and a civil service equipped with the right commercial and digital skills.

Our recent survey of nearly 1,500 Civil Servants revealed that while there is progress, in some areas we were not on the right track.

On your marks: recognition of the potential of tech

There is clear understanding of the potential — 84% agree or strongly agree that tech is critical to delivering their department's business plan. However, there was broad agreement that capability to manage relationships with IT suppliers remains a weakness.

Only 14% rated commercial skills in their department as good, down 6% since 2015. Over half (53%) rated those skills as unsatisfactory or poor, with unsatisfactory up 21% in the last 12 months.

These stats may seem bleak, but I believe it shows we are on the starting blocks – there is increased awareness of the benefits of having the right skills to get the most out of digital.

Get set: the story for SMEs

Government is clear that it must broaden supplier access if it is to get access to the best technologies. However, only 6% said they have access to a wide range of suppliers. This is down from 19% last year and demonstrates the scale of the challenge.

Only one fifth (21%) agree or strongly agree that there is appetite in their department to procure a higher percentage of technology services from SMEs. This lack of understanding of the benefits of a broad supply base is putting the Government's target to procure 33% of tech from SMEs in jeopardy. Managing a broad supply base requires a range of skills that Civil Servants have identified are lacking.

Go! Security and innovation at risk

The survey did identify two clear areas where Public Sector is falling at the first hurdle.

Only 46% said data security was the biggest obstacle in tech adoption. Security concerns are down from 55% in 2015, which is in direct conflict with increased risk of cyber threats. This is due to the fact that only 14% rated their department's digital capability as good. Without the right skills, Civil Servants will struggle to identify the potential threats, which will harm Government's ability to achieve its goals of transforming public services.

Similarly, only 16% of Civil Servants said access to disruptive tech would give Government better value from the tech industry. This suggests that Civil Servants are not confident to embrace the challenge offered by innovative technology.

But they are aware of the potential – 84% see tech as an enabler, instead of a necessary evil, which encourages us to think we can accelerate towards the finishing line. To do so, Government and the private sector must work together to:

- **Think big:** We need big ambition, set at the top and living throughout every department across central and local Government. This vision will be discussed next year at PS2030.
- **Embrace innovation:** incentivise the use of disruptive tech to drive change, the MoD Innovation Challenge is a blueprint for success.

Tech can be part of the solution to many of the social and economic challenges facing the UK today. We must work together to accelerate progress, or the dream of a digitally transformed public sector will slip from our grasp.

The trade association of tech companies in the UK. Championing technology-led growth to build a globally competitive, innovative and sustainable UK economy.

“At a time when demand for public services is increasing, as our population grows and ages, digital technology has the power to transform the way that users interact with a wide range of services from healthcare to criminal justice. With the investment and innovation they bring, businesses must be front and centre, working in partnership with Government to deliver the services that 21st century users expect.”

Neil Carberry, Director of People and Skills, CBI

Tom Swanson, Chief Digital Officer, Atos UK&I

Digital interactions

As Atos Chief Digital Officer, I have the opportunity to look right across our UK&I business and help both our clients in Government and other sectors as well as our own business learn as we progress on a Digital Journey together. Here are some lessons we have learned.

Be aware of changing citizen expecations

More and more connected, informed and digitally aware citizens are challenging the public sector to change the way services are designed and delivered. New technologies keep emerging and citizens are becoming more discerning about what they would like their digital experience to be. They want services to be intuitive, seamless, robust and organised around meeting their needs. So keep on top of new consumer trends, stay open to new technologies (including social media, mobile, apps, cloud, analytics, automation and the Internet of Things), and be prepared to incorporate these into new operations and platforms.

Be ambitious and embrace new technologies and ways of working.

Deliver more joined up Government services

Joined-up has become a buzzword within the public sector, but how often is it achieved? Certainly, digital enablement has increased efficiency, but all too often, citizens have to use multiple access points to get to what they need. That is because it is challenging for large Government departments to make change in collaboration with others – just as it is for any major enterprise – especially when so many silos are still in place. The ability to incorporate digital channel shift into established structures so that everything joins together is key. Citizens do not want to have to rekey their personal details each time they access a service. More integration is needed across departments, with a common digital platform that learns from citizen interactions so that it already knows all about 'you' each time you use a service and when you are using a service for the first time. So the mantra should be for all of us to think 'joined up' with the citizen at the centre when commissioning new digital solutions.

Create a more integrated, unified platform to deliver a streamlined, more efficient and richer citizen experience.

Move beyond alphas

There has been considerable activity across the public sector in developing prototypes for new transformational ways of working. These 'alpha' (or 'proof of concept') services have played a vital part in introducing much-needed 'experimentation' into public sector digital delivery. They have also shifted the emphasis from 'Government-led' services to empowering the citizen, while at the same time empowering Government to be more agile in the way it develops and launches new services. But it is vital to move rapidly beyond the test concept and into a more evolutionary model of incorporating change to launch fully workable, agile and digital solutions for citizens. The true benefits of transformation can only be realised if the lessons learned from the alpha phase are transferred into the end-to-end supply chain.

Move rapidly from alpha 'concepts' to new more unified solutions that deliver a truly transformational customer experience.

Embrace enterprise opportunities

Just as it has been for the commercial sector, becoming truly citizen-centric is a huge challenge for Government and the broader public sector. Now is a good time to learn the lessons from private sector organisations who are already getting results from more 'customer-centric' approaches and solutions. It is also vital for Government to tap into the knowledge, talent and experience of the UK's flourishing digital sector. Yes, working with the private sector requires trust and collaboration, but the advantages of listening to experts who have already 'done it' across multiple sectors are clear. Not only will it help put in place the right strategies and decisions for delivering solid business outcomes; it will also help to ensure that simple, workable action plans are drawn up to deliver low-risk, rapid implementations that make a real difference to citizens, Government and the taxpayer, right from the start.

It is hard to go it alone. Trust and collaborate with the industry partners to lower the risk and cost of digital transformation.

David Haley, Senior Vice President, Business Process Services, Atos UK&I

Case study: workforce inclusivity

Improving access to work through digital transformation

New digital technologies are opening up opportunities for more people to re-enter the workplace and enabling organisations to sculpt the workplaces of the future.

As a digital transformation partner, Atos has been keen to lead the way and explore new ways of growing and diversifying our workforce through digital. New technologies mean we have been able to decentralise our operations and employ talented people no matter where in the UK they live. This flexibility on location reinforces our ethos of supporting local communities by ensuring they benefit from our presence and professional activities.

In Scotland, for example, where we have an established client base, digital working has enabled us to recruit skilled people throughout Scotland and the North of England. Not only does this mean we can fulfil the Government directive to employ more people in areas of lower employment, it is also helped us to capitalise on new untapped talent.

More flexible ways of working (such as compressed or part-time hours) fit well with virtual team-working and digital technologies, and ensure we do not disadvantage specific groups such as working parents or disabled employees. And for clients, it ensures we can be more responsive across a longer working day. We now have a highly skilled local workforce of more than 1,500 people across Scotland and we are committed to creating plenty more high-value IT jobs in areas of low employment such as Moray and Forres.

Digital working also makes it possible for us to employ more home-workers throughout the UK, widening diversity and opening up opportunities for more people to re-enter the workplace. We routinely use video and teleconferencing technologies wherever possible, cutting our travel costs (making our services more cost-efficient) and as a contribution to our pioneering Zero Carbon ambition.

Emerging technologies will create more opportunities for ways of working that we have not yet thought of. Atos is committed to continuing to explore these to grow our business, expand the UK economy, find and retain the talents we need, and remain an employer of choice.

- Employing home workers creates opportunities and widens diversity
- Using video teleconferencing cuts travel costs
- Higher response rate across a longer working day

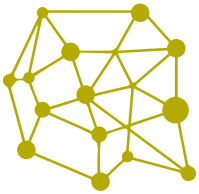
David Cunningham, Chief Technology Officer – Solutions, Atos UK&I

Leading edge technologies

Tomorrow's digital citizens will engage with the world in completely new ways. Augmented interactive Reality TM (AiR) will have daily uses we have not yet thought of. 'Intelligent lightbulbs' and avatars are now fact, not science fiction. And the 'Internet of Things' is becoming part of everyday life for more and more citizens.

All this creates key challenges for public policy-makers. On one hand, how should Digital Government support digital citizens to engage effectively and safely with this transformed world? On the other, how does Digital Government make itself fit for purpose?

Blockchain and distributed trust



To participate in today's digital society, we all share a great deal of information about ourselves, and in doing so we have become used to effectively donating our data. Yet a shift is now underway towards citizens taking ownership of their personal data and permitting social media and other corporations to use it only under agreed terms. Part of Digital Government's role will be to empower and enable citizens to do this.

These changing expectations will also affect citizens' relationships with Government. 'Integrated identity' (that is, one core set of personal data) is much easier to accept and implement when the citizen is in charge of it; and Digital Government needs to become the citizen's partner in establishing and assuring the citizen's possession of his or her own data.

In 2008, the Blockchain concept was introduced as a way of establishing trust between essentially trust-less transacting parties. It became the underpinning protocol for the crypto-currency Bitcoin. Yet Blockchain has applications far beyond digital currency: it could be the fundamental enabler for citizens' personal information-sharing.

Already we see digital enterprises such as Facebook responding to this shift by providing users with the ability to manage their data and permissions in detail. The principles and mechanics of this may be hard for consumers to get their heads around, and different for different digital entities. And because digital citizens usually have to share across multiple social platforms, this complexity is unmanageable and creates many risks of information leakage, even for the most self-organised citizen. Nor does this approach give consumers what they are really going to demand very soon: that their data is theirs and released to digital organisations only under clear and agreed conditions.

In the new Economy of Data, certain data assets will be transacted in a similar way to traditional currencies. A way of establishing smart contracts that validate such transactions will therefore be needed. Blockchain could be part of the solution, and therefore applied in almost every industry from manufacturing (for authenticating supply chain transactions) to media (for managing digital rights). What is more, as transaction ecosystems within the Internet of Things evolve, establishing trust between essentially trust-less entities will become critically important.

Digital Government could be the key enabler for a transformation of the relationship between the citizen and the big beasts in the digital undergrowth (not least Government itself). Citizens will possess (not merely own) their own data, and will grant access to that data to digital entities: for defined purposes, for a defined duration, and with a defined scope. Blockchain is a key technical platform on which this digital trust can be delivered. Digital Government must be the citizen's champion.

Augmented interactive Reality (AiR)

Imagine a technology that enables you to perceive more than the pure physical environment and to interact with graphics and digital information within your line of vision. Imagine virtual interactive holograms sitting within your real-world experience providing smart access to contextual information and IT services.

This is Augmented Interactive Reality (AIR). And we are on the verge of ubiquitously adopting this next-generation technology which seamlessly integrates the digital world into our physical world view to support everyday activities in new and enriched ways.

AIR supplements real-world information with virtual two- or three-dimensional computer-generated holograms that appear to coexist in the same space as the physical world. Users can then interact with these holograms through gestures and speech. AIR advances the classical concept of augmented and mixed reality by using a service-oriented approach. Video-processing and digital enrichment are provided remotely (via data centres), which means that services are highly scalable and that mobile devices have long operation times. This offers users secure access to tremendous amounts of back-end information and services. This ability to combine holograms with back-end services and data really does enhance and push the boundaries of our reality, offering totally new and exciting opportunities for us to perceive and interact with our environment.

Internet of Things and the digital citizen

In recent years, the Internet of Things (IoT) has been a major trend shaping the future of sectors such as health, transport and the home. Wearable sensors that measure one's activity and heart-rate are changing healthcare. For transportation, connected and autonomous cars are beginning to emerge. In the home, there are a growing number of connected objects that enable us to automate the watering of our plants, the opening of our window-shutters and the control of our central-heating systems.

It is predicted that by 2020, 25 billion IoT units will be installed and the value will reach $230 billion globally. This trend is creating major new challenges: the protection of personal data is a key preoccupation of the connected citizen, and connected objects can appear as the weakest link in any individual's security chain.

The connectivity of objects, with each other and to the Internet, is now a pre-requisite for many business-critical processes, demanding a resilient, reliable way for objects to connect within their vicinity. While today's IoT connectivity often relies on a cloud or central platform, the growing importance of local object-to-object communications for critical processes necessitates a rethink of the way devices participate in the IoT ecosystem.

While the IoT will transform the landscape for Government and business and create new opportunities, there are several challenges to overcome. The need for rapid, tactical decisions requires a redistribution of the intelligence required to ensure the system's autonomy, robustness and manageability. Objects also need to be able to exchange data locally very quickly using a wide variety of networking technologies. This local computing and communication capability must be associated with a method to discover what the capabilities of the other objects are. In the future, by using Named Data Networks, this kind of local data exchange and discovery will be straightforward. These challenges drive the evolution from a rather pyramidal Internet of Things today to a meshed, inter-networked web of connected systems.

In these future systems, ad hoc local communication between objects will not replace potential long-haul connections to a remote cloud platform, but will complement them. Objects will be able to use a wide variety of network technologies: from a very local reach like Bluetooth, to very long-range technologies that enable the transmission of very few bits of information over long distances within a limited energy budget. In the near future all of this will be utilized by swarms of distributed (and perhaps moving) computing-enabled objects to take real-time collective decisions.

Jon Mottershead, Client Executive, Home Office, Atos UK&I

Digital policing & security

"I set out very clearly when I became Commissioner the need to transform the MET to be the best crime-fighters and earn the trust and confidence of every neighbourhood in London through Total Policing. My drive for improvement will continue as we focus on fighting London's gangs, reducing knife crime and improving the way we help the public by becoming a truly digital police service. We have a big task to modernise our technology to support digital transformation."

Sir Bernard Hogan-Howe QPM
Commissioner of Police of the Metropolis, November 2015

Digital policing: game-changing transformation

There is no doubt that over the next few years, police forces across the UK will face the twin challenges of ongoing financial constraints combined with evolving and increasing threats to public safety and security. And there is broad consensus that to meet those challenges, policing operations need to harness new technologies. Some, such as the Metropolitan Police Service (MET), have even stated that their future strategy will be shaped by digital Digital policing: game-changing transformation.

Police and Crime Commissioners and commentators envisage the plethora of digital approaches already proven in other domains that can be applied to policing. There are serious debates about whether these should be implemented at force, regional or national level – together with some significant organisational change challenges. Yet the commonly agreed requirements for new digital technologies are around:

- Extracting and joining up intelligence across multiple agencies to direct and focus operations more effectively and efficiently
- Exploiting mobile technologies to push that intelligence to officers and staff, where and when they need it
- Cutting bureaucracy and the need for checks and audits by having transparent processes that support and automate compliance.

In combination, these imperatives release the time of officers and staff to be more effective and efficient in the fight against crime.

It is not what you do but how you do it

What is a lot less clear is how to go about introducing new digital technologies given the huge pressures on every force in the country and the scale of change required. The digital transformation of the MET is perhaps something that others can take inspiration from.

The MET is taking a very bold approach to achieving its ambition to 'make London the safest global city' by becoming the world's first truly digital police service – and the speed of change is breathtaking. It has comprehensively and radically reshaped its own Digital Policing team, and established a timetable to transform IT services to make them fit for the digital age. Transformation involves transferring services to a Service Integration and Management (SIAM), tower-based model. This disaggregated 'mix and match' approach creates much more versatility and means the MET can benefit from the expertise of a mix of best-in-class providers (such as Accenture, Atos, BT and CSC) – all orchestrated through a strong delivery partner who ensures that business needs are met. The scale and scope of change is also impressive: there is a Strategic Portfolio of change that will touch every part of the MET.

Reversing the model

Key to the MET's success in making this transformation is the blend of determination, dynamism and pragmatism that reflects the spirit of policing itself. Focus and commitment have been unwavering; and involving officers and staff in evaluating the real benefits of any new innovation is considered essential. Critically, the MET has reversed the traditional arrangement of project teams introducing new technologies into operational services (which takes time to build acceptance and ownership). Instead, the new digital technology operations 'reach back' into project streams to quickly implement new technologies and benefits into service. This advances the principles of agile further towards a new kind of system deployment that can realise benefits early and incrementally, while also delivering long-term and robust IT services. And it is based on a digital service operations team who understand the business because they are in day-to-day contact with it. This approach is being used to roll out mobile technologies at the MET, **which will have the largest deployment of body-worn video in the world**. It is also one that Atos has been involved with to advance digital policing in the City of Eindhoven. Atos CityPulse combines existing sources of information including visitor numbers and sound levels sourced on the ground from surveillance cameras with data gathered from social media sources to create a powerful picture of the sentiment on the street. Understanding any rising tensions enables Eindhoven's police to make early and low-key preventative interventions in potentially volatile districts before situations escalate.

At the MET, the goal is for operational policing to prioritise emerging technologies which can then be delivered, with urgency, into resilient operational service to deliver benefits in support of the Commissioner's Total Policing vision. And the citizens' experience and confidence in the service will be enhanced, strengthening the effectiveness of the Police in protecting communities in an increasingly unpredictable and fast-changing world.

Innovative digital policing in the city of Eindhoven

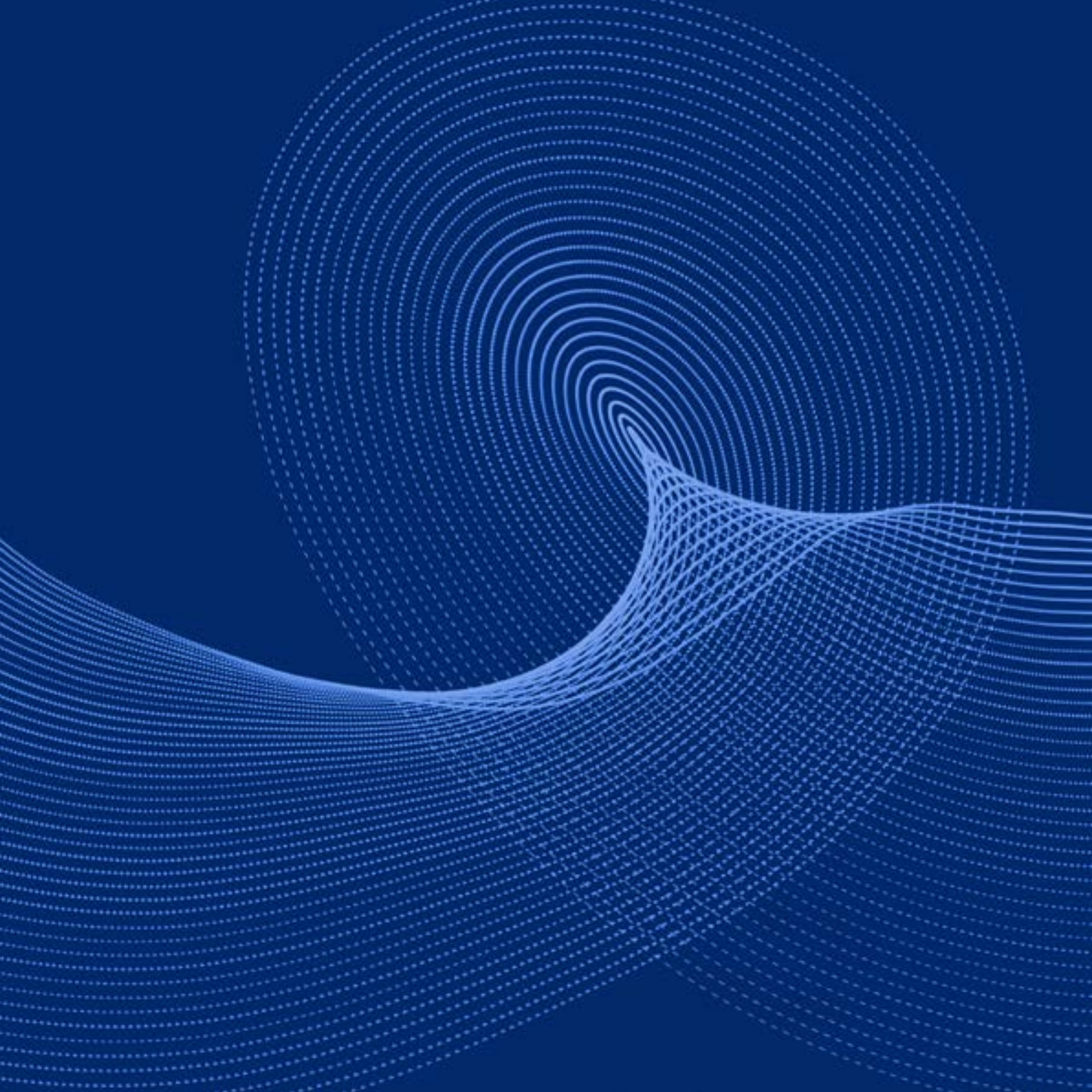
The CityPulse pilot scheme was developed to help the City of Eindhoven manage a street in the centre of town – Stratumseind – the longest and most vibrant street in the Netherlands with more than 50 bars and nightclubs and where 15-20,000 people visit every weekend.

Capturing data from a range of existing sources including visitor numbers and sound levels this "on the ground" information is combined with data gathered from social media sources to create a rich picture of the street and help authorities better identify trends, forecast and react to situations and de-escalate them before they develop.

Big data analytics ensure that any anomaly to what is considered a 'normal' data pattern can be cross referenced against the other data sources. If these data sources confirm an incident, the CityPulse dashboard alerts the police control room allowing them to make informed decisions on any additional action that might be required.

Benefits

- Safer and more sociable environment for visitors and citizens
- Police resources can be focussed where they are really required
- The city and business owners have lower repair and clean-up costs
- Less need for hospital and medical resources due to fewer alcohol-related incidents
- More business and tourism attracted to the city due to a fall in negative PR.



Andy Grant, Senior Vice President, Head of Big Data and High Performance Computing, Atos UK&I

Atos Codex: powering Government through big data

According to some analysts, organisations that can integrate a coherent information management infrastructure into their operations outperform their peers by more than 20%. And transformation through digital technologies creates vast new sets of data for organisations to use.

Analysing 'big data' can make major contributions to Governments by enabling them to identify risks, detect new opportunities, and support timely evidence-based decision-making. The opportunities are almost limitless, and in areas as diverse as emergency planning to fraud detection. For example:

Customer Experience

Enhancing citizens' experience: anticipating needs, demands and behaviours through the analysis of comprehensive data-sets as across Government.

Business Reinvention

Modernising core citizen engagement through new differentiated products and services enabled and shaped by advanced analytics.

Trust & Compliance

Gaining efficiency and agility with data-driven business processes, optimising the use of scarce resources, detecting fraud, or making predictions on future demand.

Operational Excellence

Safeguarding citizens by unleashing the power of complex analytics to protect core Government data assets, improve compliance and ensure the trust of citizens.

Choosing the best analytics technologies is essential, but will only deliver results when complemented by human expertise and experience. There is a widely recognised global skills shortage of data scientists and analysts. So the key question is: how to extract the real value from data in a cost-effective and secure way when new technologies and tools keeping coming onto the market appearing to claim all things to all people?

At Atos, we think the answer is to start by exploring exactly what outcomes you need. While it may be tempting to dive straight into an analytics problem (and many projects fail precisely because of this), we believe that until you know what you want to achieve and what can be gleaned from the raw data, you will not get maximum benefit. Yes, new and surprising discoveries can be made along the way, but starting without clarity on the business problem you need to solve and the right team in place is unlikely to get a satisfactory result.

With such vast quantities of data now available, interpreting and presenting it meaningfully to different stakeholders, from Ministers to citizens, becomes a real challenge. There are a number of tools and techniques to help with this:

Data visualisation

When vast sets of data are presented graphically, this can deeply enhance the brain's capacity to understand the underlying information. Different visualisation techniques can yield alternative perspectives on the very same data-set. It is possible to build advanced dashboards for different stakeholder communities that enable them to view and query data at different levels of complexity (or data access) in real time or a specific timeframe.

Advanced search

While searching seems a basic feature, it becomes increasingly important as the size of data-sets grows. Analysts estimate that business workers lose hundreds of hours each year just seeking information, files and data they already have. The capacity to search broadly and more effectively is a way to leverage data capital; and intelligent searches using emerging cognitive techniques can lead to dramatic time-saving.

Geo positioning

For many Government data-sets, the capacity to watch how objects, events and information are linked geographically can offer particular clarity, insights and capacity to monitor existing elements, detect new opportunities or identify threats.

Analysis

With data sources multiplying exponentially, accurate refinement and analysis are more and more essential. Making sense of machine-generated data (such as networks of sensors) is one of the next major challenges because this data contains another vast mine of untapped information. For example: information from traffic lights can be used to predict traffic flows through cities; information on the use of electrical devices such as kettles can be used to determine the safety of vulnerable citizens living in care homes; and information from wind-turbine sensors can help predict maintenance needs so they are fixed before they fail. One way to extract value from this data is to process and analyse log files from the various types of devices.

We believe big data and analytics are going to be at the heart of any digital enterprise. That is why it is at the core of our business, including 4,500 Atos big data experts and scientists. Today, Atos is the only European player to master the whole data value chain, from infrastructure to software and services. We have developed a methodology and recently launched our new Codex solution to support organisations along the evolution of their project and at any or all stages of the transformation through business analytics.

Data and analytics can be used to improve citizens' lives, predict need, and direct precious Government resources to where they are needed most. Recent successes Atos has been involved with include work with Blaenau Gwent Council on a multi-agency project to use analytics to reach vulnerable people, faster and with better-targeted interventions. And analytics is a key component of a project that is enabling the Home Office to re-settle 21,000 Syrian refugees by 2020, which involves upping its caseload by around 3,000% and has included providing 'chloropleth' maps to Ministers to support communications and decision-making. Analytics enhance more day-to-day experiences too, giving citizens alerts when pollution levels reach a certain threshold, or automatically redirecting traffic when parking or congestion parameters are reached. The possibilities are only ever limited by people's imagination.

Data and analytics can be used to improve citizens' lives, predict need, and direct precious Government resources to where they are needed most.

Meet our Data Scientists

At the early stages of an analytics project we engage our big data consultants to work with clients in workshops and sprint sessions to identify potential business value in data and identify the expected return on investment

Digital transformation requires action at start-up speed. Our labs and co-innovation teams help organisations bootstrap analytics-driven products & solutions design. With our Atos Labs, we offer unique accelerators and fast incubation services to develop innovative use cases and scenarios.

Name

Rob Blanford

Education

BA Psychology & Philosophy, MBA.

Big data project

Worked with a Government department to improve data analysis and availability that enabled 1,000 refugees to be homed in time for Christmas.

Hobby

Kite surfing in Croatia and Portugal.

What is a data scientist?

Someone who enables management to make data driven decisions.

Name

Emily Brennan

Education

MSc Mathematics

Big data project

Worked on a project to develop a 'Data Dashboard' that aided decisions about which hospital is best suited to deal with specific ailments.

Hobby

Cooking

What is a data scientist?

Perceptive

Name

Jean-Marc Depinay

Education

PhD in Applied Mathematics

Big data project

Used High Performing Computing (HPC) and Big data that enables data analysis and tackles some of societies biggest challenges including climate change and global warming.

Hobby

Wild Nature

What is a data scientist?

Someone who brings high-level mathematical frameworks and structuring into data and processes information extraction.

John Hall, Head of Portfolio, Atos UK&I and UK Lead for Atos Scientific Community

The Atos Scientific Community

Innovation lies at the core of Atos' business strategy and the company has organised itself to think one step ahead to help its clients to reinvent their growth models.

The Atos Scientific Community is a key part of this strategy and comprises more than 100 members from all geographies where Atos operates, representing a rich mix of skills and backgrounds. Its aim is to help Atos anticipate and craft its vision of upcoming technology disruptions and the future business challenges that will be faced by the markets it serves. By making this vision available to its clients, and by investing in areas related to the findings, Atos intends to help its clients make informed decisions as the Trusted Partner for their Digital Journeys.

The Scientific Community are "creators of change", highlighting the importance of innovation in the dynamic digital services market and taking a proactive approach to identify and anticipate game changing technologies.

Kulveer Ranger, Vice President, Public Affairs & Strategic Communications, Atos UK&I

Delivering the Olympic Games to a connected crowd

The Rio 2016 Olympic Games was another landmark event for Team UK. It was also the most digitally enabled sporting event in history, delivered to billions of viewers around the world. The technology underpinning the Games has transformed over the last few years and lessons from Rio are already being learned for Tokyo 2020.

A smarter Olympic Games

From managing over 300,000 accreditations for the complete Olympic family attending, to supporting 37 competition venues with complete IT infrastructure, Atos is Worldwide IT Partner for the Olympic Games, and has been since 2001. This year, Atos was responsible for processing more competition data than ever before for the 22,000 media in attendance and keeping the 10,000+ athletes up to date with competition schedules, results, transport and weather forecasts.

Since London 2012 however, viewing habits have shifted considerably, with traditional TV viewing continuing to decline. Today, people are increasingly connected and want a second-screen; for instance, using their smart phones to watch Bolt retain his title or Laura Trott make history, all while simultaneously reacting to the results on social media. They are also producing content on their smart devices and becoming broadcasters in their own right, recording their own reactions to historic sporting moments. Broadcasting events straight to people's pockets and enabling them to 'multiplatform' – watch, like, comment and discuss on multiple screens – marks a big step change in how the Olympics are experienced (and how Atos supports them). And if that was not enough, some of the Games' critical IT services were delivered for the first time via the cloud.

Taking the Olympic Games to the cloud

Hosting key applications such as the volunteer portal and the accreditation system on the cloud ensured that access to information on the move could happen in near real-time. Rio 2016 was the first Summer Games where the Technology Operations Centre (the nerve centre of the Games in the host city) was supported remotely by a new permanent Technical Technology Operations Centre in Spain. The role of this new centre is to centralise support for critical Games IT systems from one location. This will be the operating model for future Games, delivered fully in Software as a Service and over the cloud to improve efficiencies and reduce costs.

Looking ahead to Tokyo 2020

Of course, technology is becoming easier and simpler to use, enabling all of us to enjoy the experience of the Olympic Games without thinking about the technology behind them. Back in 1980, families crowded round TV sets to capture the moment Daley Thompson took gold in the decathlon. In 2016, thousands of spectators recorded their own moments in history on their smartphones as Mo Farah romped home to victory in both the 5,000m and 10,000m, before putting his hands on his head and making the Mobot that is instantly recognisable to billions around the world. How will technology impact our experience of the Games in future? Could we soon be watching through virtual reality headsets from wherever we may be, viewing the athletes as if we are physically there, cheering them on? Only time will tell, but what is certain is that technology is transforming the experience of witnessing historic sporting moments, and I am incredibly proud to be part of the team that delivered every minute of the action this summer.

Kulveer Ranger, Vice President, Public Affairs & Strategic Communications, Atos UK&I

Smarter city & smarter citizen

Evolution of the smarter citizen and the smarter city

Imagine living in a city that has been specifically designed for you. You leave your flat in the morning and see a message flash up on your smartphone, warning you of delays to your normal route and suggesting an alternative. In the afternoon, your fitness tracker alerts you that you have not done enough exercise for the day, but that there are public bikes available on the next street to help you complete your journey. In the evening, you update your Facebook status saying you are craving Chinese food, and at the click of a button, you order a meal from your favourite restaurant, get it delivered to your door, and pay for it with Apple Pay.

It might feel like we are a few years off from experiencing these 'joined up' services, but smart technology is already transforming the way cities operate. It is also powering the global economy, with more citizens and visitors being attracted to better connected urban hot spots.

How smart cities have evolved

Cities are becoming smarter all the time, but this is not something that has happened overnight. Instead, there has been a gradual shift from landlines, the internet and websites to mobile services and apps that we carry around in our pockets. Smarter public services understand more about citizens' behaviours, habits and movements; meaning they can be tailored to meet their needs.

Quite often, I will be asked when services will become smart, but the mark of success is when a new service is accepted without question. Take London's Oyster card, for instance – the first smart card platform in Europe. Prior to its launch in 2003, three years were spent working out how to establish widespread trust in the scheme; and clear communications on how it worked led to near-overnight acceptance.

The citizen digital ecosystem

New technologies are being underpinned by the 'citizen digital ecosystem' – a model that is transforming public and private services. This is made up of a series of connectivity channels – such as Wi-Fi, 4G, 5G, broadband and Bluetooth – which link different communication platforms, including email and social networks, to our smartphones, tablets and wearable devices. It is this platform that is helping us to connect to our cities in smart ways; giving us the ability to access services such as mobile banking, journey planning and healthcare on the go.

Smarter cities, smarter citizens

Looking to the future, predictive analytics will play a key role in delivering next-generation public services. These will require information from various apps to be correlated behind the scenes – your alarm, transport, map and city planner apps could be linked, for instance, to warn you of delays to your normal route and help you plan your journey more efficiently.

In time, predictive public services will redefine how we move around cities; and, taking this one step further, extrapolating this micro view of how an individual operates to how an entire city operates will give us a very powerful view of how different services are being delivered in real-time. This is incredibly important to help public services deal with emergency situations and large-scale gatherings, such as festivals, music concerts and demonstrations.

Pooven Maduramuthu, Vice President – Health, Atos UK&I

Digital healthcare

In today's ever-more digitally connected world, why is it that, when it comes to our health, we wait until we are ill, then seek an appointment with a doctor or nurse working from a costly surgery and wait for paper records to pass through the system until we receive treatment for a condition that has often become worse in the meantime? Does it have to be this way?

Connected Care

What if....

- ...we could wear a device that proactively monitored our physiology and alerted us, and our GP, of a change in state to prompt early intervention and the potential to prevent serious illness?
- ...this was complemented by a same day (24/7), virtual consultation with our GP to diagnose the condition and set in motion the optimum course of treatment?
- ...a single, electronic patient record could then be shared and updated by everyone involved in delivering that course of treatment, the time and cost of treating the patient could be significantly reduced and patient experience and outcomes improved?
- ...the same wearable device that diagnosed the condition could be used to monitor patients during and after treatment, facilitating an early discharge from hospital, in turn addressing the bed-blocking that has such an impact on the NHS today?
- ...throughout this process, the electronic record could drive the authorisation of payment from a Care Commissioning Group to providers, assist the forecasting and rostering of staff to align with demand and feed into the Care Quality Commission and NHS Improvement reporting metrics recommended by the Carter Review.[1]

The reality is that all of this is possible today

- UK sales of wearable health and fitness monitors were expected to reach over 13million[2] last year, and the forecast is for more than threefold growth in global sales by 2020[3]. This represents a significant cultural acceptance for wearable monitoring devices and an established base in the UK that can be leveraged immediately, with the volumes of device shipments bringing down costs, while competition and consumer demands will increase functionality.
- Secure, virtual consultation is a reality today and can be operated between GPs and patients on any device including a simple app, so the click-and-connect functionality we have all become accustomed to elsewhere could be available in the Health Service, and at minimal additional cost.
- The digitisation of legacy patient records is underway in a number of NHS trusts and the creation of a single, real time patient record encompassing GP, CCG, provider and patient is in operation.
- Finally, the management and integration of this data, while a large and complex task, is something that can be implemented today in support of Lord Carter's recommendations.

We know there are major gaps and challenges facing the NHS. Digital transformation to enable step change is one way to help to close them. Digital technologies can help integrate systems, providers, professionals, and carers around the needs of patients at every stage of a care pathway. Harnessing data can help care professionals to understand and cope with changing needs. Digital interfaces can also help prioritise treatment by professionals, aid in self-diagnosis, filter out simple cases and focus resources on higher-priority cases while cutting delivery costs and increasing speed of service.

In many cases, digital solutions are ready for implementation if there are corresponding cultural and organizational shifts. Radical thinking will be needed. Technology partners who can work hand-in-glove with healthcare managers and clinicians to harness digital technologies will be able to improve patient outcomes and target resources where they are needed most.

[1] https://www.gov.uk/government/publications/productivity-in-nhs-hospitals
[2] http://www.statista.com/statistics/407640/number-of-health-and-fitness-wearable-devices-and-app-users-in-the-uk/
[3] http://www.statista.com/statistics/487291/global-connected-wearable-devices/

Romilly Dennys, Executive Director, Coadec

Digital innovations: reimagining health as a service

On July 5 1948, Nye Bevan delivered a broadcast announcing, "the biggest single experiment in social service that the world has ever seen undertaken."

This 'single experiment' is now of course the world's largest publicly funded health service, and faces considerable pressures. Fortunately, we are also witnessing the growing role of digital innovation to drive efficiencies, improve patient care and address future challenges.

Yet despite progress, in 2015, Tim Kelsey, the former NHS National Information Director, told the story of how a doctor said to him "patients did not want computers and neither did he," but there can be no doubt; digital innovation is and will play a vital role in supporting a sustainable NHS.

Take virtual follow-up clinics that can relieve pressure on A&E departments for patients with simple fractures or soft tissue injuries. In the past these patients would have come through A&E, but today they receive all their care online. The service offered at Brighton and Sussex University Hospitals — and adopted by others — has saved the NHS more than half a million pounds in three years. There exists considerable untapped potential for savings if rolled out across the country as a national model, and expanded to include wrist and hand injuries – almost half of all fracture clinic referrals.

While GPs in London are reducing hospital referrals – which rose 5% to 13.6 million last year – with Kinesis, – a web-based software from Cloud2 that allows GPs to confer with local hospital consultants and drive down GP referrals. Wandsworth CCG has saved nearly £300,000 in four years.

Research shows too that if doctors have digital tools to remind them to get the right medication to the right patients at the right time, errors are halved, while cancer physicians say that between 10 per cent and 15 per cent of appointments are cancelled because they cannot access diagnostic results in real time.

What's more, digital innovation is driving cross-border collaboration to save lives on a global scale. Dr Waheed Arian left Kabul for Britain aged 15, and has now established a groundbreaking telemedicine scheme where 50 volunteer UK medics use Skype to advise their clinical colleagues in the Emergency Departments of Kabul's major hospitals.

Back home, NHS-accredited apps include one developed by young people to help prevent self-harm, and another that can help care home workers identify the early signs of dementia among residents. Health Tech as part of a comprehensive care package will be invaluable in helping people to remain independent in their own homes for as long as possible. But also to educate people in their own homes about available support and care options. The health platform Live Better With is dedicated to making day-to-day life a little easier for people living with cancer, but also allows people to become their own nurse from the comfort of their home.

Another important area is the work to support future digital innovations. Over the next three years, the new DigitalHealth.London accelerator will support 80 of the highest potential companies to engage with expertise throughout the NHS, developing digital tech to enable the quality, efficiency and effectiveness of health and social care.

We are also seeing an increase in social enterprises creating solutions to our most pressing healthcare challenges. Selfless recently created a collaborative platform for clinicians and SMEs to create useful #MedTech for the NHS, while Health 2.0 London Chapter has become the UK's largest grassroots health tech community with 1,350 members.

These examples represent only a snapshot of the excellent work being undertaken by health tech entrepreneurs to support our NHS. The task ahead is to accelerate the adoption of evidence based digital innovations on a national scale, and deliver meaningful impact for our doctors and patients — so hopefully, the conversation shared by Tim reflects only the view of a time bygone.

Founded by tech entrepreneurs, The Coalition for a Digital Economy (Coadec) is a non-profit that campaigns for policies to support digital startups in the UK. We conduct research, host events, and run campaigns on behalf of the UK's startup community.

Andy Grant, Senior Vice President, Head of Big Data and High Performance Computing, Atos UK&I

Data and the art of wellbeing

With an ageing population and rapid scientific progress, current healthcare systems need to evolve towards a more sustainable model focused on maintaining citizens' wellness rather than just treating illness once it has occurred. In fact, with new digital technologies, clinicians are getting closer to Precision Medicine based on four pillars (Predictive, Preventative, Personalised and Participatory) that all use data and intelligence to deliver more informed, targeted and proactive care.

Precision Medicine is dependent on the ability to transfer breakthroughs in data analysis into healthcare settings – 'from the bench to the bedside'. That is where emerging technologies come in, combining expertise in complex analytics with powerful high performance computing to overcome the major challenges of storing, processing and correlating such huge volumes of highly complex data.

Atos' ground-breaking Omics & Medical Integrated Compute Systems (OMICS) enable the translation of research into clinical practice. The platform supports methodologies such as cognitive computing to create 'decision support systems' that help clinicians to make effective diagnoses. Doctors can develop highly personalised drugs and treatment protocols by combining the most recent and most complete patient data (including Electronic Health Records, imaging data and diagnostic procedures data, pharmacological data, medical devices data, data gathered by sensors and wearables), together with references to relevant textbooks, scientific papers and clinical trial information. This helps to avoid clinical error and prevent adverse drug reactions.

What is more, patient profiling based on segmentation and predictive modelling enables individual patients to start preventive treatments or make lifestyle changes that minimise or avoid predicted risk of disease. Big Data analytics applied to anonymised patient records and related medical procedures can help to improve the quality, performance and efficiency of healthcare – and offer patients not only better treatment options, but also more transparency and information about the cost and quality of service providers.

This is an example of how the blend between big data analytics capabilities together with high performance computing systems could bring important outcomes in the healthcare setting.

Alison is a 45-year-old English citizen worried about her father's death last year due to a heart attack.

She makes an appointment with her doctor, who carries out real time sequencing by introducing Alison's blood drop into a mini sequencing portable device that plugs directly into the USB port of his laptop.

Processing of the genomics data (filtering, mapping and variant calling) is carried out in the mini-High Performance Computer embedded into the sequencing device.

Anonymized and encrypted, Alison's processed genomics data is sent to a Big Data Computing Platform where the analysis of the genomics variants is made.

The Platform counts also as a repository where the healthcare data gathered through different clinical pathways for every patient in the NHS healthcare system is stored. This Platform is hosted in a NHS Data Centre in the UK and has been implemented by putting in place cutting edge cloud, security and cybersecurity technologies that are fully compliant with all valid European and UK laws. These technologies ensure the privacy of the data at rest and in movement. The data stored in the Platform can only be assessed by authorised medical doctors and healthcare authorities to decide the better treatment options for the patient or to design preventive measures based on stratification. There is a strict audit programme monitoring this Platform that keeps track of all the processes launched on it.

The doctor relies on a decision support system (DSS) that is able to infer an accurate diagnosis from the bulk of scientific, imaging, medical, clinical, omics, research and social data available. Cognitive computing is the mainstay of the system.

Unfortunately, Alison carries three variants that are related to cardiovascular diseases, the same as her father.

After validating the diagnosis, the doctor executes another module of the DSS to find the most suitable treatment for her patient based on her clinical (arterial hypertension), social (single and no family support) and genomic profile (three cardiovascular risk variants). He is advised by the DSS to prescribe her a medication that has been tested in 100,000 patients with identic genomic profile with good results. He also recommends a diet to control her blood pressure.

He suggests the use of a wearable T-shirt that allows monitoring of her electrophysiological heart activity in real time. The T-shirt is connected to a mobile application that sends the data (electrocardiogram and symptoms as requested) to a trained system that is able to predict any possible anomalous event.

Alison stays asymptomatic until the age of 61 when the system alerts her doctor about the risk of arrhythmias. After performing a TT Echocardiogram, an aortic valvulopathy was detected and he programmed an aortic valve replacement. The valve is printed on a 3D printer based on the images taken from TT Echocardiogram.

The doctor requests the help of a cardiovascular surgery expert in the US who propose robot-assisted surgery with augmented reality.

The surgery is successful and Alison is now enjoying a healthy life.

Helen Hall, Client Executive – Cabinet Office, Atos UK&I

Delivering for Government & services

Creating the condition for successful transformation delivery

Anyone who has ever been involved in delivering an ever-improving public service to UK citizens knows just how complex it is. Having worked across most of the key UK Government departments, we can see the imperative to achieve digital transformation while also improving citizen experience. But those twin outcomes are only possible if the right relationships and behaviours are in place to work through whatever challenges inevitably emerge during large-scale change.

In our experience, relationships succeed where client and supplier teams are incentivised to focus on common goals, the value being delivered to the citizen, and the things that can be achieved together. It is important that provider teams behave in the right way, do the right thing and get rewarded for putting their client and citizens at the heart of everything they do. And when you structure relationships and align these behaviours, clients get better value, citizens get better service and delivery teams get better job satisfaction.

It is not just about what you do, but how you do it

Put the citizen at the heart

Meeting contractual service level targets is important, but on its own will not guarantee a satisfied citizen. Teams need to understand what it actually feels like for the person using the service and improve it wherever possible around that experience.

Be pragmatic and agile

Sometimes Government departments need more flexibility and speed than has been predicted. Instead of reaching for the contract, provider teams should focus on protecting the service, while at the same time being agile in design and delivery and ensuring that there is opportunity for creativity and challenge to explore what is possible.

Invest in partnership

Delivering strategic change is inherently complex and often difficult. Providers may need to invest resource, field new people, inject fresh ideas and do whatever it takes to make things work and go the extra mile.

Focus on value for money for the taxpayer

Better transparency helps our clients to be confident that they have secured a good deal for Government, efficiency and savings for Departments, better service for citizens and a reasonable return for the service provider.

Of course the most important element is knowing you can rely on these behaviours no matter where you are in the lifecycle of the contract. In a competitive market, Departments are frequently managing transitions from one model of supplier to another. Providers need to take the long view. Even when exiting from a contract, they should provide the same flexibility, commitment and support they would to newer clients.

"The impact of digital transformation on public services will be profound. We can use technology to build a new version of Government; one which gives citizens the power to take control of the way they interact with the state.

We have already seen how technology can make everyday tasks, such as renewing a driving licence or paying a tax bill, simpler and quicker. But the waves of digital innovation on the horizon will provide opportunities to go far beyond what has already been achieved to date.

By making the best possible use of digital advances, the public services of the future could deliver far more for less. In healthcare, it might mean that more power is given to the patient over improved, more affordable care. It might mean that the best educators from around the world can be accessible to everyone or that we can build better houses, faster.

We need to unite behind an ambitious digital vision which entrenches the UK as a global digital leader – a place where digital technologies transform day-to-day life, Government and the economy."

Rt Hon Ed Vaizey MP, Minister for Culture & Digital Economy 2010-16

Andreas Claudi, Vice President – Codex, Atos UK&I

Digital transformation of businesses

Société Genérale

Challenge

Société Genérale needed an innovative mobile banking solution for its end customers: a brand new communication channel that would present a bang-up-to-date image for the Bank and a practical, everyday service for users.

Change

Atos provided global support right through from definition of the new app to development, including functionalities, design and ergonomics. This was the first financial app on the App Store in 2012 – awarded the world's best Mobile Banking App in 2014, with over a million downloads and in the top ten of free applications in the App Store.

Transformation

The Bank's customers have a complete real-time ergonomic mobile banking app, including account-to-account transfers, consolidation of stock portfolios and financial information, geo-localisation of the Bank's ATMs, and many other features to make banking easier, faster and more convenient on the go.

British Airways

Challenge

When snow lay thick on the ground at Heathrow, hundreds of British Airways flights were delayed, with dozens more cancelled altogether. The airline had to pay compensation to customers, yet still could not stem the reputational damage. With winter approaching, disruption management needed a step change, but conventional approaches were too slow and costly.

Change

Atos brought together multiple information streams into a single, user-friendly dashboard for faster, more informed decision-making and disruption management, which led to more effective resource deployment around the airport. The initial solution was in place in just 16 weeks, enabling an entirely new level of actionable performance management, which delighted managers across the operation.

Transformation

Although targeted at reducing disruption from snow, the airline found the solution enhanced operational performance in all weathers – so passengers get a smoother experience with fewer unexpected delays whatever the weather.

McDonald's

Challenge

McDonald's ambitions were to deliver more value to customers, improve its knowledge about them, and differentiate their experience before, during and after the restaurant. A core challenge was to improve, industrialise and implement a remote order solution

Change

A widescale omni-channel transformation encompassed a website, three mobile apps and one tablet app and integrated an e-payment solution. In just three months, the national roll-out to 1,300 restaurants delivered a full digital experience for customers to make orders while giving McDonald's new customer intelligence.

Transformation

Customers' lives are easier. They can order and pay for a meal anytime anyplace, and find a restaurant near them. Once through the door, they do not need to get into the front-counter battle; they can activate their order at a digital interactive screen using a code on their mobile and receive personal offers. This digital transformation enables McDonalds to gain a greater insight in to their customers and their preference which allows them to provide more relevant and timely promotions.

Max Rahder, SME Harbour Programme Lead, Atos UK&I

SME Harbour

Opening up the digital marketplace

Over the course of this Government, we have seen a clear focus on stimulating economic growth through smaller and niche providers. And with the target to get 33% of Central Government spend with SMEs by 2019/20, new policies really are driving innovation.

But for decision-makers in Government, there are some risks and challenges associated with working with smaller players. New standards may be needed for procurement and contracting, together with the assurance of stability, risk management and governance. And for SMEs themselves there are challenges of scale and, perhaps, differences in approach when working with larger Government departments.

This is why in 2012, Atos created the SME Harbour to promote and enable wider and deeper engagement with the SME community. The driving force for Harbour is that it is mutually beneficial. Atos' clients benefit from the agile services, niche capabilities and innovation that many small players offer. SMEs get access to Atos' large and diverse client base. And it helps Atos to stay agile and focused on what our clients need – not on fixed solutions or ways of thinking.

Through the Harbour programme, Atos provides frameworks, mentoring, contracting, help and advice to help SMEs work with us to meet Government clients' needs. For our clients it means we can introduce new thinking and technologies – but do it safely and at scale without having to wait for long drawn-out procurement processes. Harbour offers speed and access to digital markets, chances to collaborate through knowledge-sharing and the ability to move at speed from initial concept on to a commercial offering through a wide network of potential partners, established SMES, agencies and the commercial sector.

Future vision

Since its inception, SME Harbour has evolved far beyond what was originally envisaged as more and more opportunities have emerged. This evolution continues. With the growing need for collaboration across public, private and third sectors, the digital eco-system will become even more important in helping to drive innovation.

In future, we see the initiative as a framework within which the idea of one individual or start-up organisation can be taken to market and, once an opportunity has been identified, scaled up as needed. Micro-SMEs are now starting to develop, which provide specialist knowledge and capability to our Harbour partners. This is a complementary extension of the core Harbour programme as the expertise they provide will be passed down the chain to ultimately benefit our clients. Digital start-ups can now work with established SMEs via the micro-SME networks, then gain funding and support to get their ideas from the drawing-board into something that can be rapidly shaped into a proof of concept, trialled, commercially wrapped and delivered to Government at pace. What is so powerful is that it gives Government a channel into a developing ecosystem of digital innovation through an established and trusted community.

Micro-SMEs are now starting to develop, which provide specialist knowledge and capability to our Harbour partners. This is a complementary extension of the core Harbour programme

Dreaming of a digital Government

Millennials' view on future of Government services in a digital age

Health

- In the future I will never struggle with A & E waiting times as advanced data analytics and trend analysis will allow for flexible, reactive and predictable resourcing
- I will not have to answer any lifestyle questions on arrival to my GP they will have a comprehensive set of data with which they can make a quicker and more accurate diagnosis
- My wearable will pre-empt any major health issues and give me advice and direction to mitigate this, calling ambulances, on my behalf, when needed.

Transport

- All public transport will be 'Uberized'. Buses will flex their routes and times based on demand analysis gathered through location data and transport apps
- Government will leave more short distance public transport to the private sector and we see the development of pool buses that surge in price and availability at particular times
- Public transport will reroute with greater fluidity to ease congestion.

Policing

- Police will used data from CCTV and Sound capture to respond to crimes quicker. Predicting where fights may be about to breakout by analysing peaks in activity
- Crowd control will be improved through a better understanding of where everyone in the crowd is and where they are going enabled by wearables and smart phone technology.

Digital citizen

- The Government of the future will have a 'Tell us Once' policy. A single profile for citizen when they interact with Government. Speeding up tax returns, moving house etc...
- Blockchain Technology will become the norm, enabling an improved link between citizens profiles such as Passports and Driving licences
- Government processes will be faster, more accurate and 24/7 through the introduction of robotic process automation
- The Democracy of the future will be more inclusive and more responsive through the use of mobile voting. This could lead to an increased number of voting opportunities and increase participation
- Government will be more accessible and more personal, sending me specific messages via push notifications
- Local Government will be improved through the hosting of third party applications that automate, speed up and facilitate previously onerous tasks
- The Government will create a fully connected country abolishing the digital divide.

* Jasper Thompson, Tom Mault, Isaac Swanton, Christopher Joynson, Sophie Brazell, Rachael Draper, Jessica Blake, Tom Dutton, Ben Wilkinson, Kevin Boughton, Kinjal Parekh

Daniele Principato, Consulting Partner, Head of Government and Defence, Atos UK&I

Digital transformation in defence

Defence as a platform

Over the last two years, the MOD supported by Atos and other industry technology leaders, have embarked on a radical transformation of their IT infrastructure and services. The aim is to deliver information services that are force multipliers for Defence, addressing issues of agility, user experience, end-to-end service management and value improvement whilst aligning to the Government ICT strategy and realising significant savings. With this first stage of their transformation reaching maturity, the MOD are now in a strong position to instigate further radical reforms in the digital transformation of Operational and support services. This will create an underpinning core platform that will provide the infrastructure and services to enable digital outcomes delivered faster and cost effectively.

This game changer facilitates a completely different relationship between the MOD Information Systems and Services (ISS) Department and its customers. As an exemplar of the art of the possible Atos are creating an end to end customer experience at this year's Defence Information Symposium to challenge and disrupt conventional IT thinking, allowing Front Line Commands to envisage and focus on digital outcomes rather than the supporting technology stack. This immersive and interactive approach is capable of delivering prototypes within days allowing agile development of requirements; deeper understanding of how these requirements can be delivered through Defence as a Platform (DaaP); and the reality of delivery at pace and cost.

Creating the digital pipeline

The proposed Atos approach will enable a digital pipeline of opportunities to radically improve frontline and support services, examples include:

- Simplifying and accelerating the recruitment process whilst engaging digital natives to understand and choose the most appropriate military career
- Providing accessibility to training from multiple sources and locations in real time allowing self-development and better prepared personnel whilst drastically reducing the cost and duplication of training services
- Integrating the Battlespace, joining Open Source Intelligence to improve mission planning and operational decision making. Allowing interoperability between services and allies and radically improving the medical supply chain to prepare, monitor and treat personnel more effectively
- Establishing access to services for Veterans and to prepare service personnel as they prepare to leave the military.

Delivering a digital marketplace

Through the establishment of the Future Hosting environment and an integrated DevOps process the MOD will be able to work with integrators like Atos to create a Digital Marketplace where the best of industry talent will be able to work collaboratively to deliver its outcomes.

Jack Perschke, Consulting, UK Government, Atos UK&I

Brexit: a force for transformation

Brexit for stability or Brexit for transformation

It can be argued that 'Brexit for stability' will constrain the UK in making meaningful technology-led public sector reform. In contrast, 'Brexit for transformation' will enable the UK to look again at its public services and re-imagine them for an automated digital age.

The traditional model

Government operates to a model that is over 160 years old; indeed elements of it trace themselves much further back.

This model is based on demanding information from citizens that is then validated by a bureaucracy. In the past, that bureaucracy was largely run on human power. Over the last 50 years, it has increasingly been run on computing power.

In this computerised model, departments are required to spend billions of pounds processing the information they receive because citizens cannot be trusted to accurately represent themselves or their need.

As this old model has become more entrenched, expensive and distant from the citizen, personal computing has caused an information revolution.

A revolution unnoticed

Processing power that 20 years ago was associated only with super computers is now in the pocket of almost every citizen. This has led to untold transformations in the way we live our lives, but has had almost no impact on our older computerised bureaucracy.

This has happened because the fundamental nature of the relationship between citizens, their information and Government departments has not been challenged. Departments still operate in silos, with ever more information provided through creaking channels from increasingly frustrated citizens.

The power of a trusted citizen

However, in a world where a person can bank, shop, travel, record and geo-locate from a single device, they should also be able to prove who they are and what their circumstances are through that same device.

In other words, they can transmit pre-validated information that is true to a degree of certainty that no remote bureaucracy could ever hope to emulate. Add automation to this and it is easy to imagine a frictionless relationship directly between the citizen and the full array of public services they are entitled to.

In this world, citizens self-integrate their services, departmental over-bureaucracy withers and the only thing departments are required to do is deliver high-quality front-line services.

Brexit for transformation

While the digital revolution has not materialised to date, Brexit will force every part of Government to ask itself fundamental questions about how it operates. These questions can either be framed as, "how can we get back to normal as quickly as possible?" or as, "if we have to change, why do we not take advantage of new technology as we do it?".

If Brexit is embraced as a catalyst for transformation, old systems can be over-turned using technology, and entrenched social problems can be challenged for the first time in decades. Brexit brings the urgency; the technology already exists: it simply requires imagination to exploit the possibilities.

Business Services Association: digital vision for Government

The decision by the British people to leave the European Union shows how much things will need to change. That includes the way public services are provided. Digital transformation has a central role to play in that change.

Any period of economic uncertainty renders the need for digital transformation more important than ever. In a period of constrained Government budgets, transformation offers the potential to improve at one and the same time the efficiency and quality of public services.

Above all the referendum result revealed a sense of remoteness between voters and those that govern them, be it in Westminster, Whitehall or Brussels. Digital transformation and better use of technology can offer citizens a simpler way to connect with their Government – and vice versa – just as it helps them as consumers of private sector goods and services.

So the process of Britain leaving the European Union can be a further catalyst for the fundamental rethink already taking place of how public services are delivered. It provides an opportunity for the public sector to place technology and digital capabilities at the heart of how Government operates and provides services.

The public expect from Government the same high quality of services that it receives from the best of the private sector. Businesses therefore have an important role to play supporting national and local Government initiatives to take services online, streamline back office operations and engage with citizens digitally.

The business services sector is expert at helping to scale and replicate change. It is already working closely with Government and the public sector to bring about the transformation required.

There is now potential to take this further. Through the reorganisation of departmental processes, services can be simplified and joined up with the focus on the needs of citizens and businesses. To enable this, service delivery models must evolve through the systematic analysis of data collected from customer interactions. The Government should take a more ambitious approach to using customer data and service transformation, creating an evidence-based strategy that acts as a road map for digital Government.

> Through the reorganisation of departmental processes, services can be simplified and joined up with the focus on the needs of citizens and businesses.

Underpinning any successful digital transformation is long-term investment, information and intelligent feedback. Investment, led by the Government, should focus on building a skilled workforce within Whitehall and beyond, able to deliver digital change. A broader, more systemic approach is needed that embeds digital into the workings of Government and identifies how capability will be built.

Digital services are an essential part of the wider business services industry, which today supports 3.3 million jobs and accounts for 8% of the UK's economic output. BSA members alone employ 17,000 apprentices, contributing towards a varied and well-trained workforce throughout the sector.

This is an industry with a central role to play in creating a dynamic and innovative post-Brexit economy that works for everyone. Business services can act as an engine of growth and prosperity and supporting the delivery of value, social value and innovation in public services.

BSA is a policy and research organisation. It brings together all those who are interested in delivering efficient, flexible and cost-effective service and infrastructure projects across the private and public sectors.

Policy Exchange

Jonathan Dupont, Economic & Social Policy Research Fellow, Policy Exchange

The rise of the robots and how it will change Government

For much of the second half of the twentieth century, the size of the Government stayed relatively static, fluctuating somewhere around 40% of GDP. Underneath this seeming calm however, there were dramatic shifts. What you might think of as the expanded welfare state – health, education, welfare and pensions – doubled from 12% to about 25% today, stopping only for a brief pause in growth under Thatcher and Major. So far, this has largely been offset by the peace dividend of lower defence spending and debt interest, but both trends now look to have run their course while there is little sign of a slowdown in the expansion of the welfare state. If health, education, welfare and pensions were to continue to grow over the next fifty years at the same rate as they have over the last fifty, the state would reach 50% of GDP. Even if you ignore the dynamic impact of higher taxes, this would still be enough to severely slow growth in disposable incomes.

Many people believe this is inevitable. An ageing population will increase demand for public services, while public sector productivity will always lag behind that in the private. To be more precise, many Government services can only be performed by skilled human workers operating locally, with little potential to automate, outsource or offshore. In the economists' term, Government services are 'non routine', meaning they cannot be described in an algorithm or a simple procedure that could either be handled by a computer or workers outside your immediate supervision. It is much harder to automate a nurse than a worker on the assembly line. Much of the core work of Government has simply been passed by the revolutionary changes we have seen from IT, the Internet and globalisation over the last decades.

What makes the next wave of technological change so significant is that it has the potential to fundamentally change this dynamic, giving many Government services the ability to match the productivity improvements seen out in the market. While it is difficult to get away from articles in the press worrying about the possibility of robots destroying jobs in the private sector, few have considered the equal possibility of improving productivity in the public sector. Monitoring, diagnosis and allocation of resources is much of what Government does. Unstructured learning algorithms can already match human perception of patterns in many cases, and this is only likely to improve. In effect, machine learning, big data and AI expand the range of tasks you can consider as 'routine', allowing them to be automated, and reducing the relative labour intensity of the public sector.

In practical terms, what could this mean? It is easy to come up with a tech utopia for the future. Machine learning could allow widespread triage across the public sector, from HMRC preventing fraud to identifying the hardest job seekers. Digital services can run constantly, in real time, taking account of individuals own data, allowing a new era of preventative and patient controlled medicine. Better analytical tools will act as part of a virtuous cycle with other innovative forms of public service delivery, allowing new types of outcomes based models like payment by results or social impact bonds. By taking over much of the admin and bureaucracy, the computers will allow the human teams that do remain to be smaller, more local and more personal.

On the other hand, as most people know all too well, Government is not very good at adopting technology. As late as 1999, only a dozen of the 75,000 HMRC staff even had the ability to access the Internet, let alone start matching the innovation that was being shown by the companies being formed at the time like Amazon (1994) or Google (1998). While Government IT is getting better, it is fair to say that that the consumer experience is still often not up to the level of your phone company or bank, let alone a Silicon Valley giant. Moving forward, there are a daunting number of challenges in implementation, from effective data security and maintaining public trust to building in house skills and doing the hard parallel work of service transformation.

In the past, Government's struggles with technologies have not mattered too much. The Internet transformed our leisure time, but it did little to change the fundamental work of what public sector workers do. This time is different. In order to really take advantage, the Government will have to gain the ability to disrupt itself, that spending is the same thing as outcomes, or that quality, productivity and innovation come automatically with enough cash.

That is not going to be easy — but given the spending pressures we will face otherwise there is, to steal a phrase, no alternative.

Policy Exchange is the UK's leading think tank. As an educational charity their mission is to develop and promote new policy ideas which deliver better public services, a stronger society and a more dynamic economy.

NLGN
NEW LOCAL GOVERNMENT NETWORK

Simon Parker, Director, New Local Government Network

Is digital our Trojan horse?

After at least a decade of shadow IT, it is now used as a matter of course across many councils and public sector departments. However, how is this old infrastructure with a layer of new personal IT going to operate in the future.? We asked Simon Parker of the New Local Government Network to give us his perspective on how digital transformation is being delivered, adopted and in some cases smuggled in to the public sector.

'Let's go and visit the Digital floor.' It was an August day in the north of England and I was visiting one of the New Local Government Network's members. We walked through silent rows of managers quietly and diligently sitting at their desks, typing away. Then my host opened the door into the room where his new website was being developed and I stepped into a different world. The space hummed with a low-level buzz of conversation, small groups of people were clustered around monitors testing web pages. All of a sudden, I was not in any place you would recognise as a council any more.

Digital has become a powerful buzzword in local Government. Councils across the country are redesigning their websites and automating their processes. A handful, in places like Manchester and Greenwich, are opening up their data and testing smart city innovations such as driverless cars. While all this is very exciting, I am not a techy. The real point for me about this digital transformation is not the shiny new equipment; it is about the ways in which 'digital' people work. Local authorities do not just need better kit: they also need a digital culture.

The first thing that became clear to me when I visited the Digital floor was that this Council's website was being designed and tested around the needs of service users. User journeys were clearly mapped out and prototyped with real people before the site was launched in beta. That means the Council's web presence will continue to evolve as its developers gather real data about how the public are interacting with it.

The second thing that became clear was the pace at which the work was happening. I was surrounded by Kanban walls (Kanban is an agile project management methodology), on which this gigantic project had been broken down into bite-sized chunks of work. Every day the team would meet to check which tasks had been completed, providing everyone with real-time feedback about their contribution to the website.

This is not a way of working that comes naturally to local authorities. Indeed, several councils I work with are trying to use their digital programmes to quietly smuggle new ways of working into their organisations. You could think of digital culture as a benign virus, transmitted by IT professionals into functional areas such as children's services.

The main impact of this, over time, will be to transform the way councils work. Top-down transformation projects can slowly be replaced by rapid exercises in design, prototyping and live testing. Rather than guessing at the answer to their policy challenges, municipalities will be able to experiment and find out what works, and do this in real time. In ten years' time, we might well discover that digital technology's key impact is not felt in new sensors, swarming buses or smart street lights, but in radically different ways of managing public bureaucracies.

“Digital transformation is all about thinking big: big savings, big ideas, big cultural changes. In the public sector, we are seeing a huge shift towards digital transformation, as central and local Governments embrace the cloud. Many councils and Government bodies that we are working with, like Northumberland County Council and Warwickshire County Council, are now working smarter and more collaboratively, and this is great news for employees, partners, and the people they serve.”

David Fitton, Head of Sales, UK Public Sector at Google

Google

UNIFY
atos collaboration solutions

Tom Bishop, Vice President, Global Corporate Marketing, Unify

Digital vision of the way we work

What is "work" according to public sector employees? Is it something they do, somewhere they go? Is what they do being dramatically influenced by technology? These are all big questions that need answering in the new digital economy where public sector knowledge workers*, like their private sector counterparts, are challenging the traditional systems of work in order to increase productivity while maintaining a work-life balance.

In order to more deeply understand what is going on in the public sector work environment, we decided to conduct a piece of landmark research – Unify's Way We Work study – to get under the skin of the jobs knowledge workers do, what they would like to do and the workplace of the future. Working with independent research partner, Censuswide, we surveyed 9,000 knowledge workers – of which 1,800 worked in the public sector. The results are fascinating and startling: Just take the example more than a quarter of public sector knowledge workers surveyed who believe the roles they fulfil today will not exist in five years' time. A further 65% also say that their roles will not look the same within that timeframe.

37% of public sector respondents believe that 'virtual' teams can be more effective than face-to-face teams

Advances in digital technologies are also reshaping the public sector work environment. As many as 72% of public sector knowledge workers agree that digital technology, the internet and social media has fundamentally changed the way they behave in the workplace. This may be down to the fact that these technologies deeply influence the way they work with colleagues, with at least one in ten (13%) public sector knowledge workers revealing they work in more virtual teams (distributed across offices and locations) than they have done in the past. This is very positive, as more than a third of public sector respondents (37%) also believe that 'virtual' teams can be more effective than face-to-face teams – as they bring the benefits of bringing different skills together (35%), creative thinking (31%), speed up decision making (26%).

69% of public sector knowledge workers say that having a single office as a physical workplace is less important than it was in the past

With more virtual workers in the public sector the traditional office setting is facing an uncertain future too. 69% of public sector knowledge workers say that having a single office as a physical workplace is less important than it was in the past, and a further third (36%) report that their organisations operate through technology and communication rather than through offices and locations – a far cry from the stale office space of the past, and all driven by digitisation and technology.

Conventional wisdom might suggest that being out of the office and more loosely connected to colleagues would mean that work-life balance would be adversely affected, but this does not appear to be the case. An overwhelming majority of public sector knowledge workers (93%) reveal that they currently have a good balance between their work and personal lives. And at least a quarter (26%) report that work-life balance has improved in the last five years. This improvement can likely be attributed to a multitude of elements – for example the improved ability to work from almost anywhere, workplaces being more flexible and accommodating and better technology that enables all of this. At the same time, interestingly, this is much lower than in the private sector where at least half (50%) of knowledge workers have seen an improvement in their work life balance. It is possible, it seems, to have a flexible and agile public sector workforce that is both effective and able to keep the demarcation between being "at work" and private time.

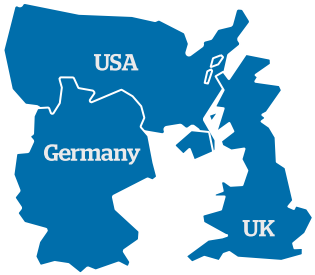
What is very clear from the results is that public sector knowledge workers are continuing to define the ways in which they work from the bottom up, constantly trying to find new more effective ways of doing their tasks. Public sector organisations have to help these professionals, through the implementation of the right collaborative communications tools, to fulfil their roles – or risk falling behind the competition and the private sector.

*Knowledge workers: Knowledge workers, as defined in this context, are employees whose main capital is knowledge – in other words they are those employees whose job is to "think for a living". For the Way We Work Study, the knowledge workers selected were also those that had engagement with technology in their day-to-day jobs.

Unify is one of the world's leading communications software and services firms, providing integrated communications solutions for approximately 75% of the Fortune Global 500.

Who we surveyed

9,000
knowledge workers



Will your job be around in five years' time

35% believe the roles they do now will not exist in five years time

65% suggest their roles will not look the same within that timeframe

There is an "I" in Virtual team

74% reveal that digital technology, the internet and social media has fundamentally changed the way we behave in the workplace

42% Two fifths of knowledge workers believe virtual teams can be more effective than face-to-face teams

36% A third of knowledge workers believe creative thinking to be one of the biggest benefits of working in virtual teams

Work is no longer a place you go to

20% On average knowledge workers spend a fifth of their time outside the office

69% of knowledge workers say that having a single office as a physical workplace is less important than it was in the past

27% Over a quarter of knowledge workers want to spend as much as 26-50% of their time outside of the office

7% But, only a mere 7% of knowledge workers want to spend (75-100%) of their time outside the traditional office environment – proving there's still a need for it

We are entering the Freelance Economy, where workers have ideals

53% of knowledge workers would consider changing to freelance/on demand model of work

Today knowledge workers describe their current workplace as

30% Successful
29% Multiple locations
28% Collaborative
26% Supportive
24% Creative
23% Hierarchical
22% Single location
20% Formal
17% Innovative
15% Exciting
14% Controlling
9% Boring
3% Failing

But they want to describe their ideal workplace as

51% Successful
50% Creative
46% Supportive
45% Exciting
41% Innovative
38% Collaborative
20% Multiple locations
16% Single location
10% Formal
6% Hierarchical
5% Controlling
1% Boring
0% Failing

Work-life balance is now a reality, not an aspiration

50% of knowledge workers say their work-life balance has got better in the last five years

95% of knowledge workers feel they do have a good balance between their work and personal lives

Acknowledgements

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Jeremy Welch	Business Development Director, NS&I Government Payment Services
Sandy Forest	Client Executive for Cyber Security, Atos
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Neil Carberry	Director of People and Skills, CBI
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Daniele Principato	Consulting Partner, Head of Government and Defence, Atos
Jack Perschke	Consulting, UK Government, Atos
Business Services Association	
Jonathan Dupont	Economic & Social Policy Research Fellow, Policy Exchange
Simon Parker	Director, New Local Government Network
David Fitton	Head of Sales, UK Public Sector, Google
Tom Bishop	Vice President, Global Corporate Marketing, Unify
Professor John Polak	Director of Urban Systems Laboratory, Imperial College

Digital Train: Start of a journey

Digital innovation has already transformed many aspects of urban life, such as the ways we move around, the ways we shop, the ways we search for property and the ways we socialise. Yet it is sobering to realise that we are really just at the start of the process of the digital transformation of our cities and the changes we will see in the years to come will dwarf those we see around us today", says Professor John Polak, Director of Imperial College's Urban Systems Laboratory and Principal Investigator for Imperial's Digital City Exchange project.

The aim of the £6m Digital Cities Exchange project, which is supported by the UK Research Councils, is to provide businesses, policy makers and citizens with new concepts, methods and analysis tools to enable them to understand, shape, accelerate and benefit from the potential of digital innovation in cities. The DCE project brings together a multi-disciplinary team of engineers, social scientists and business studies researchers to create new ways of managing and analysing the vast quantities of data generated in cities and to understand how to make best use of these data to drive the development of new products and services across a number of business sectors. The project team worked closely with public and private sector partners including Transport for London and Sainsbury's to apply their work in practice. Polak comments "I think we have achieved a lot over the past 5 years and we are keen to find ways of applying the tools we have developed more widely. We also have a much better understanding of what still needs to be done, which will be the focus of the next generation of our research."

Professor John Polak, Director of Urban Systems Laboratory, Imperial College

Imperial College London

Digital City Exchange

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