Revolutionising digital public service delivery: A UK government perspective

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Revolutionising digital public service delivery: A UK government perspective

by Alan W. Brown, Jerry Fishenden and Mark Thompson

Public sector organisations across the world must revolutionise service delivery to create solutions that better meet citizens’ needs, develop channels that offer efficiency and increase inclusion to all citizens being served, and re-invent supply chains to deliver services faster, cheaper, and more effectively.

But how do government organisations ensure investment in digital transformation delivers the intended outcomes after earlier “online government” and “e-government” initiatives produced little in terms of significant, sustainable benefits?

Here we focus on how the move to digital, built on open standards, is transforming the public sector’s relationship with its citizens. The paper provides a perspective of digital change efforts across the UK government as an illustration of the improvements taking place more broadly in the public sector. It provides a vision for the future of our digital world, revealing the symbiotic relationship between organisational change and digitisation, and offering insights into public service delivery in the digital economy.
1. Introduction

Public sector agencies across the world are attempting a transition from closed, top-down, bureaucratic, and paper-based transactional models towards online, integrated digital offerings that encourage a new kind of interaction between citizens and the state. This journey towards “digital public service delivery” appears to be reaching a critical point where the confluence of citizen demand for greater speed and more transparency in service delivery is being met with increased appetite within the public sector to deliver services in more innovative ways through the use of open technologies, diversity of delivery agents including increased involvement of smaller companies, and more agile delivery practices to demonstrate meaningful progress earlier in a project’s lifecycle [1].

The context within which this digital public services revolution is occurring is the much broader transformation taking place in our personal lives and how we conduct business – driven by a constant stream of digital technology changes, optimised production practices, and flexible global delivery models. There has been a sea change in the way consumers expect to use technology [2]: it has become cheap, easy to use, consumable like a utility, always on, mobile, and open (working seamlessly with everything else): we have become sophisticated consumers and users of such technologies, and of the flexibility and freedoms these enable. Consequently, there is an increasing demand to see these same benefits realised in public services as everywhere else.

One driver of this digital transformation has been the use of technology platforms, whether these are proprietary (like Apple’s iOS) or more open (like Google’s Android). Such platforms provide standardised environments that stimulate whole ecosystems of businesses to build products and services, attracted by the volume of demand that these platforms generate. Platforms can drive astonishing rates of innovation, investment, choice and competition. However, until recently very little of this platform-based thinking – and its associated benefits – have been taken up within our public services. The contrast between these emerging business models based on digital platforms and our public services is stark: the latter are underpinned by idiosyncratic processes, point solutions, top-down assumptions about users’ needs, and out-dated systems.

The challenge is to build an understanding amongst public officials of the radical impact that common service platforms might have on their operations and organisational models. There continues to be a general lack of awareness of how digital technology changes public service design to deliver agile, easy-to-use, consumerised services at lower cost and in a way that emulates our daily experiences in the private sector. This lack of understanding – and the missed opportunity for public services – crystallises the need to build a common view of what the transition to digital public service delivery actually involves. Most importantly, digital technology needs to impact and influence the design and operation of public services as they are being developed and evolved, rather than being applied merely as a means of automating an existing process.

In response, this paper first summarises the history of previous attempts to date to implement technology-based service transformation within UK government, since part of understanding “digital” lies in building a clear view of how it is different from these (the “why”). Second, the paper develops these insights into a discussion of the objectives of digital services, and of digital business models that enable achievement of these objectives (the “what”). Third, there is a discussion of the balance that needs to be achieved between the architectural rigour of open standards, and the flexibility of agile working practices (the “how”). We ground our analysis and observations on experiences with the UK government’s transformation efforts where the authors have had deep involvement over the past decades.
2. Toward digital government – what’s new?

Since the early 1990s, there have been multiple initiatives by several UK governments to use Information Technology (IT) to modernise public services. For example, in 1996 the UK government was focused on the:

“...new possibilities offered by information technology, and it will learn from the way that these are starting to be harnessed by other governments and the private sector. It will change fundamentally and for the better the way that government provides services to citizens and businesses. Services will be more accessible, more convenient, easier to use, quicker in response and less costly to the taxpayer. And they will be delivered electronically.”

Throughout the 1990s and early 2000s, various administrations viewed “e-Government” as an important way of improving public services, increasing the speed of carrying out transactions, and improving convenience, accessibility, flexibility, and hours of service.

These efforts to reform the use of technology in government, and to apply the lessons of the value of open standards as a means of breaking open the proprietary silos of technology (via initiatives such as the e-Government Interoperability Framework, or e-GIF), achieved very limited success. Some promising early progress – such as, for example, putting the income tax self-assessment process online, and the process around payment of the vehicle excise duty – remained as front-end, cosmetic one-off initiatives that failed to progress into any meaningful modernisation of the overall processes involved: they were on the web, but not of the web.

In retrospect, it is evident that the UK has historically suffered a recurrent mismatch between political aspiration and any meaningful and sustained technical delivery approach on the ground, despite being a pioneer in many policy areas – notably the adoption of open standards and the promotion of open source. Here we examine these two dimensions in relation to the UK’s digital public services delivery ambitions: political and socio-technical.

2.1 Political context

Throughout the 1990s and early 2000s, the design and delivery of public services remained in the hands of a small number of dominant external suppliers who used technology mainly to automate previously manual ways of operating public services rather than using it as a means to re-engineer and improve them around the needs of citizens. In part, this reflects the legacy of an exceedingly complex “software real estate” derived from a history of an inefficient government procurement practices. However, it also indicates an approach that used technology as a “sticking plaster” to make public services appear joined-up when in reality they remained fragmented across multiple administrative hierarchies, operational departments, and agencies. In short, there was a focus on technology at the front end, rather than the reform of the often poorly performing organisational structures and processes underlying this “shop window”.

Equally problematic was the progressive deskilling of the public sector and its outsourcing of in-house technological expertise to a handful of large external suppliers. These long-term, exclusive contracts meant that even where departments or local authorities had the desire and ability to drive a re-engineering of their services, they were often unable to do so due to a lack of in-house capabilities as well as restrictive contracts that impeded attempts at innovation and reform. Instead of becoming the means to deliver reform and improvement, technology became the biggest blocker: even where the same external supplier provided the solutions, every system was separately built and maintained, often using proprietary and closely-coupled technologies. This siloed architecture cut across the desire to redesign and optimise services around the needs of service users.
In 2011, a cross-party House of Commons Public Administration Select Committee published the results of their investigation into the state of the use of information technology in government and was highly critical of the approach, referring to it as a “recipe for rip-offs” [3]. In response, the current UK government has renewed its focus on digitally-enabled public services – but has been pursuing a very different architectural and commercial route for its achievement. The result is that although technology-based initiatives have been around for some time in public services, the current use of the term “digital” carries a more specific meaning than earlier “online” and “e-Government” programmes. We address this specific meaning in sections 3 and 4.

2.2 Socio-technical context

Our understanding and interpretation of the term “digital public service delivery” has evolved significantly in the past decade. Effectively, ‘digital’ is now considered an umbrella for organisational values and practices: whilst technology is typically the enabler for these opportunities, digital is not principally seen as limited to technology. Successful digital organisations have customer-centric operating models clustered around speed and adaptability, exemplified by maxims such as “show don’t tell” and “good enough is better than perfect”.

Digital organisations also seek to address the use of mobile devices as the new norm for staying connected across every aspect of our lives. Through the likes of smartphones and tablets, a growing number of people interact with friends, review various news feeds, check availability of local business services, collaborate with colleagues, communicate with vendors and suppliers, and much more. Successful organisations embrace this mobile-first world, and the expectations of an increasingly digitally literate population.

The UK government has tapped into this mind-set with its new strategy for bringing services online, characterised by the phrase “digital-by-default”. It aims to make public services more accessible, while also encouraging users to view the government’s online environment as a platform for wider public debate and collaboration, aiming to develop Government-as-a-Platform (GaaP) [4]. This move toward digital public services delivery was re-invigorated in the UK with the publication in 2012 of the Government Digital Strategy (GDS), which set out the principles and pathway toward realisation of the UK government’s vision of “digital-by-default” service delivery. It aims to develop government’s ability to respond swiftly to changing policy imperatives and user needs, achieve lower costs for the taxpayer, deliver major programmes more quickly, and stay ‘ahead of the curve’ by exploiting new technology.

To support this strategy, one of the most significant changes under the current government has been the creation of the Government Digital Service, bringing highly skilled technology and digital skills back inside government. This service team has implemented guidance and a vision for how programmes must be developed in future, with a relentless focus on the user. Aligned with the Government Digital Strategy, the service team ensures all new or redesigned public services meet the digital design standard – mandatory from April 2014. Departments and agencies must demonstrate that they have met the criteria set out for the full life of their service or the service will be rejected.

This move to place the user at the centre of new service designs requires a fundamental shift in the relationships, processes and data control mechanisms that exist between organisations and users, not just the technology. Delivery approaches in the commercial world have moved towards a networked approach to solution assembly from a variety of pre-existing components and services. Businesses are at the centre of a network of suppliers, consumers, employees, partners, analysts, competitors and various other stakeholders. The most envied and discussed organisations in the world are increasingly founded on open platforms, encouraging others to interact and innovate around them.

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and form collaborative communities: their ability to build and grow these ecosystems is fundamental to their success.

This private sector experience raises a key question: can public sector organisations reinvent themselves as inter-connected communities based on a common platform of open services?

3. Exploring new business models for digital public service delivery

Many public sector organisations appear overwhelmed by the breadth and depth of the changes in public service delivery that they face. Their challenge is to develop a high-level framework against which they can focus their activities and investments across the organisation. We have found it helpful to consider digital public service delivery across four layers:

1. People, communities, and clients
2. Organisation and delivery
3. Platforms and interfaces
4. Infrastructure and technology

The first layer of this framework concerns end customers: people, communities, and clients – those setting the expectations for digitally-enabled services. The transformation required for digital service delivery at the People level is a transition from managing people to managing the things that help or hinder them in delivering results. The most important output of people management ceases to be the direction and micro-measurement of subordinates and becomes instead the fostering of an environment and culture of healthy self-directed achievement: one where experts are empowered to put their knowledge into practice, as demonstrated by many of today’s successful digital companies – 37Signals, Atlassian, Github, Valve and Google to name just a few. The negative correlation between industrial management thinking and the productivity of knowledge workers is one of the most robust findings in current social science, demonstrated by recent interest in more radical management techniques [5].

The ‘communities’ part of the first layer refers to the opening of public data for public use, whilst simultaneously becoming much smarter about the unique custodianship that government has of highly personal data (such as medical records) that need high standards of protection. Government needs to develop a data management model that recognises this distinction and applies appropriate (and different) risk and information management processes to public and private data, rather than confusing the two – or trying rigidly to retain control of what is clearly public data best released into the public domain. The more valuable data is to users and developers, the more likely it is that a community will form and more active engagement will follow as more value is derived from the data: one notable example in the UK has been the release and multiple re-use of real-time public travel information, from trains to buses. Public datasets are becoming more widely available in machine-readable formats, often in real-time, directly sourced from live systems, or, if not, exported and refreshed frequently when new data become available. Metadata, such as the information presented, collection method, timeliness, quality and other contextual information is crucial to allowing data consumers to not only understand available data, but to put them to appropriate use.

The ‘Client’ elements refer to the need for digital organisations to be driven by the needs and feedback of their customers and users (not their own internal needs). It is therefore imperative to redesign the organisation around these needs and to be prepared to challenge the status quo. Customer needs and expectations will continue to evolve throughout the life of a service, driving enduring change in the services, capabilities and architecture needed to serve users and customers.
Simply implementing digital technology over traditional legacy processes and structures will not work: this is largely why earlier “e-Government” programmes stalled and failed. At the organisation and delivery layer of this framework, new, lighter-touch governance and assurance arrangements, a change to budgeting practices and flatter structures must be designed and implemented. These are a pre-requisite for organisations moving quickly in their execution, responding flexibly to changed circumstances and pushing decision making and solutions further down the organisation.

The third layer in this framework – Platforms and Interfaces – is about creating an ecosystem comprising reusable technology components as well as a marketplace of open integration and innovative suppliers expert within that platform environment. Whilst digital organisations will still deploy some custom components and applications, the significant majority of basic functionality can adapt and reuse capabilities which are already available – either within the digital organisation or elsewhere. This encourages the organisation to think in terms of capabilities, business rules and components so that appropriate pre-built solutions can be used to accelerate delivery, allowing development effort to be prioritised and focused on business-specific needs. Part of the role of a architecture for digital solutions is to ensure that services are clearly mapped to capabilities and so ensure that each capability is implemented once, rather than being duplicated in multiple silos.

Finally, the fourth layer in the framework – Infrastructure and Technology – enables the others by providing the computing power and networking capability to support appropriately flexible, scalable and elastic solutions to fulfil organisational needs. Creation of an ecosystem through customer, partner and application developer engagement is significantly more difficult with on-premise technology. As demand scales up and down, it is advantageous to be able to scale up and down resource allocation, with cost determined by usage rather than fixed specifications under long-term inflexible contracts. Traditional, in-house hardware configurations are sized to handle peak loads which mean that capacity is likely to be underutilised during the majority of a system lifetime. The UK government has recognised this with its G-Cloud programme (realised through the Cloudstore), providing a range of competitive hosting options from multiple potential suppliers and which has already been used for some of the core platform services being developed (notably gov.uk).

4. Balancing agility and efficiency: open architecture and platforms

The drive for public sector organisations to become more citizen-centred with increased flexibility in delivery models must be balanced with the architectural discipline to re-use, share, and consume common components wherever possible [6]. We refer to this as an “open architecture” approach. The application of open, platform-based thinking to the public sector provides a powerful means of underpinning the technological aspects of a modern, digital public service. Service providers’ adoption of open architectures – standardised ways of doing things – enables them to take greater advantage of consumption models of downstream service delivery. Such models are usually both cheaper and more flexible, and involve the assembly of user-centred services from increasingly standard components across a common platform based on commonly shared open standards:

A platform is a set of common components, assembly methods or technologies that serve as building blocks for a portfolio of products or services. Platform innovation involves exploiting the “power of commonality” — using modularity to create a diverse set of derivative offerings more quickly and cheaply than if they were stand-alone items [7].

In [8], Gawer and Cussamano point out that platforms exist in a variety of industries and that the notion of a ‘platform’ has been used in a range of
contexts. In response, they propose a typology of platforms. First, ‘Internal platforms’, conceived as a set of subsystems and interfaces internal to the organisation that have been intentionally planned and developed to form a common structure from which a stream of derivative products can be efficiently developed and produced (e.g. Sony’s Walkman, Hewlett-Packard’s modular printer components, Rolls-Royce’s family of engines), saving fixed costs, benefiting from component re-use, and enabling flexibility. Second, ‘supply chain platforms’ that seek to replicate these benefits across interfaces amongst different organisations within a supply chain – most notably, the automotive industry: for example, the Renault-Nissan alliance that developed a common platform for the Renault Clio and the Nissan Micra. Third, ‘industry platforms’, products, services or technologies that are developed by one or several firms, and which serve as foundations upon which other firms can build complementary products, services or technologies, such as Apple’s iPod and iPhone, the internet, payment cards, fuel cell automotive technology, and some genomic technologies.

Encouraging new thinking and overcoming entrenched cultural barriers to the emergence and adoption of open platforms within the UK public sector remains a significant challenge. As an illustration of how difficult this can be, consider the differences between the two depictions (Figures 1A and 1B) of the ‘open stack’, developed by one of the authors in 2011 to explain the architectural and cultural change needed to bring about the open platform dynamic. It shows that there are various interrelated aspects that the public sector needs to address simultaneously:

Figure 1A shows the original concept that encapsulates the way in which open platforms are a dynamic comprising both technology and market behaviour. Moving down the stack from the apex, in order to achieve the aims of ‘open government’, the public sector needs to change the way in which it organises itself. This form of organisation needs to be established upon a set of firm architectural principles across the public sector that enshrine citizen-driven, standardised utility service delivery models. In turn, to achieve this, the public sector needs to stop developing and delivering everything internally, and focus more on the commissioning and consumption of service outcomes (‘culture change from delivery to commissioning’). To do this, it needs to think much more about these end services, and worry less about the inputs (‘service-driven procurement models and practices’). However, it won’t be able to do this unless it is able to compare and contrast competing alternatives (‘increasing transparency’) – otherwise it will be comparing apples with pears. Moving downwards towards the ‘technology’ base of the stack, increased transparency requires, in turn, commonly specified components; but these only work together if they are supported with standards of interoperability and shared data. Finally, in order for such interoperability to have credibility, it must be secure.

The way the open stack appears in UK Cabinet Office’s Strategic Implementation Plan of 2011, shown in Figure 1B, illustrates how difficult it needs to be to achieve culture change even within organisations that have embraced open principles. In Figure 1B, ‘Culture change from delivery to commissioning’ has been muted to ‘innovative ways of working and strengthened governance’, and ‘service-driven procurement models and practices’ have become ‘commercial models and practices’ – not at all the same thing. The hard fact is that achievement of open architecture and platforms within the UK’s public services will require proper culture change, not an adjustment to business-as-usual.

5. A practical framework for digital public service delivery

The earlier discussion highlighted the tension between governments’ need to become more flexible and agile around the needs of the citizen, and the need to exercise the discipline required to consume interoperable ‘building blocks’
of outcomes, from standard platforms, within an open architecture. In the UK Government Digital Service there is a focus on developing bespoke in-house open source software within agile teams, in which the broader architectural emphasis on standardising and consuming technology appears to have become marginalised. A short-term pre-occupation with the large-scale bespoking of open source point solutions appears to have supplanted a longer-term focus on progressive consumption of open standards.

Such a strategic slippage risks replacing the previously distorted market involving private sector bespoking of proprietary technology, with a new, potentially equally distorted market involving public sector bespoking of open source technology. Both outcomes decouple government from the evolving open standards of a global marketplace, consigning it to ownership of a legacy bespoke infrastructure with escalating maintenance costs and upgrades.

In response, we propose the ‘Innovate-Transition-Commoditise’ (ITC) curve shown in Figure 2. Unlike current outsourcing and procurement models, which conflate both niche and commodity requirements, an open architecture approach allows a continual distinction between innovative activities that fulfil bespoke needs on the one hand, and the use of utility, commercial specifications wherever possible for standardised, plurally delivered activities on the other.

Figure 2 shows that as more organisations adopt common standards, business logic, and resulting platforms, they can expect to see costs decrease. Services become commoditised and procured via ‘utility’ commercial models – moving from bottom left to top right of the innovation curve, as governments stop paying over and over again for multiple, customised versions of the same thing. The dotted lines in Figure 2 also remind us that such platforms are not needed merely to reduce cost, they are also required to incentivise and enable innovation.

Figure 2: Innovate-Transition-Commoditise (ITC): A framework achieving open architecture
The middle column of Figure 2 recognises that the most successful organisations to develop ecosystems around core platforms and standards (e.g., Google, Facebook, SalesForce.com) continually monitor new innovations and user uptake, incorporating those that are successful into their core offerings. In this process, new applications (innovation) are developed into the platform and made available to other users (transitioned) – which in turn can often lead to wholesale integration and development of the underlying platform (commoditised).

In this open business model, organisations need to build capability in the skills and approaches required to leverage successful innovations, and standardise these so that they can be delivered cheaply and efficiently at volume. Finally, the right hand column of Figure 2 shows a focus on the commercial management of central, core platforms and services as commodities – a very different set of skills from those in the previous two columns.

A recent application of this ITC thinking within government is the ‘Wardley map’ (after its originator, Simon Wardley), in which organisations map out their existing and planned technology infrastructure and services to reveal the different ways in which they should be treating their different components. Illustrated in Figure 3 is a recent example by James Findlay, Chief Information Officer for the UK Department of Transport’s High-Speed 2 (HS2) project.

In this example, some of the obvious components (power, computer processing, standard HR, website, etc.) are treated as commodity/utilities to be either consumed on demand like electricity or purchased in standard units.

Figure 3: Practical application of ITC framework: mapping HS2’s infrastructure
(like pencils). Some of the ‘ERP’ type functions (finance, customer relationship management, risk management) are not yet widespread enough in the market to be consumable as utilities – but these are things that should nonetheless be consumed in a standard way wherever possible (and the UK government has recently established shared service centres to support this aim). Next, the ‘custom built’ column contains those elements that remain reasonably unique to our organisation or one or two others. Finally, the ‘genesis’ column shows ‘known unknowns’ where it will be necessary to work iteratively in an agile manner to discover and evolve what is required, and to build this capability uniquely within the organisation.

Having separated out the technology, which would previously have been treated as a vertical ‘stack’, into its discrete components and distinguished carefully between them to generate a digital profile using the ITC principle, it becomes possible to develop a procurement strategy that underpins these principles, to allow the sourcing of every component in the optimum way possible. Thus HS2 is using the UK government’s electronic property and information mapping service (PIMS), which it is consuming as a commodity; a single ERP platform, consumed from one of the government’s shared service organisations, to cover finance, HR, and customer relationship management – but within individual functions supported via the new standard service catalogue ‘G-Cloud’. Several functions (risk management, ERPM, WISE) are purchased through specific suppliers, either consumed via a bespoke contract or purchased on an individual basis. This is the model that most closely represents the traditional ‘systems integrator’ way of doing things, with little or no commonality across government. Finally, HS2 is building several functions in-house – interactions with Land Registry, 3D visualisation for customers, geographic information interfaces for customers, and the customer website. Note that, as the stakeholder at the top of the value chain, the ‘customer’ is receiving the bespoke attention (recalling layer 1 of our framework) – whilst the infrastructure (ERP platform, data centre, power, compute) is consumed as a common service wherever possible. In the middle, we have some specific line-of-business technology (Land Registry interface), as well as more shareable technology (PIMS, standardised ERP applications such as finance, HR, etc) – which HS2 can do in the same way as other government organisations simply by applying this methodology, and exercising a little self-control.

6. Summary

The UK has a renewed focus on making digital part of the culture of the public sector at both central and local government. This will entail a revolution in the design and operation of public services that can capitalise upon developments in technology and the emergence of digital organisations to create services that better meet citizens’ needs, develop channels that offer efficiency and increase inclusion to all citizens, and re-invent service supply chains to deliver faster, cheaper, and more effectively.

A variety of “online” approaches have been tried before and yet have largely failed. This time, delivery and execution must be on a much broader front than technology alone. There are proven models that the public sector needs to adopt – most fundamentally, the move to a digital, twenty-first century organisation. This will require cultural, capability and leadership improvements across people, communities, and clients; organisation and delivery; platforms and interfaces; infrastructure and technology.

This digitisation of public services needs to be built on the application of open technical standards and platform-based architectural principles. Sustainable and meaningful reform and improvement will only be achieved when there is an equal relationship between internal organisational and digital services transformation – significantly improving our public services in the digital economy.
7. References


About the authors

Alan W. Brown is Professor of Entrepreneurship and Innovation in the Surrey Business School at the University of Surrey, UK. He previously worked in strategic roles in industry across Europe and the United States, including Chief Technology Officer for IBM Rational in Europe, head of business development at a Silicon Valley Start-up, and senior researcher at the Software Engineering Institute (SEI) at Carnegie Mellon University. Alan has worked on several government activities in the UK, EU and USA providing guidance on policy and practices in software delivery. He has published more than seventy papers, and authored and edited numerous books.

Jerry Fishenden has over 25 years’ experience of technology leadership, most recently as interim deputy Chief Technology Officer (CTO(5,6),(997,989)) for the UK government. He provides independent guidance and expertise to various organisations, from start-ups to big business, and is a frequent keynote speaker and writer on technology. Jerry has previously been CTO for Microsoft UK, the City of London financial regulator, the UK Parliament and the National Health Service. He is a Senior Research Fellow at Bath Spa University and a former Visiting Senior Fellow at the London School of Economics. The former Senior Policy Advisor to the UK Prime Minister credits Jerry as a key influence on the current government programme of technology modernisation and reform.

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