INSTITUTE FOR GOVERNMENT

Improving the management of digital government

Daniel Thornton | Lucy Campbell

About this report

Our previous report, *Making a Success of Digital Government*, explored the development of digital government in several organisations, showing how working practices need to change so that service improvements can be catalysed by digital technology.

This report draws on 30 interviews with senior digital and policy officials across Whitehall and the public sector, and vendors to government. It focuses on the role of the Government Digital Service (GDS) in creating a framework for digital government that is successful, and assesses how GDS is performing in that role.

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Summary

On 12 May 2017, hospitals, doctors' surgeries and ambulance services across England and Scotland were hit by a cyberattack, leading to patients being turned away, and appointments and operations being cancelled. It was one of the most significant cyberattacks to have affected the public sector in the UK.

Since 2010, the UK has gained an international reputation as a leader in using digital technology and ways of working to improve government. Other countries have adopted the Government's standards and code for the GOV.UK website. The UK came top of a United Nations e-government survey in 2016.[1] The Conservative Party's 2017 manifesto commits the new Government to being 'at the forefront of using digital technology in all its systems so that it can deliver better public services' and adopts ambitious targets to improve citizens' experience and to reduce duplication of citizens' data.[2]

But the cyberattack showed the fragility of some of the systems being used in the public sector – in this case, a failure to update Windows operating systems. In Whitehall, the role of the Government Digital Service (GDS), which is tasked with leading the digital transformation of government, is contested, and its achievements questioned. The spread of new digital services for the public has been slower than planned. And departments resent interference and resist new ways of working. Much remains to be done if the manifesto commitments are to be met and the opportunities of the digital age seized.

People have got used to rapid improvements in how they search for information, shop and bank on the internet. Behind these improvements lie new digital business models that depend on the characteristics of the internet, which now connects half of the people on the planet. The reach of the internet creates economies of scale, so a service can be run by few and used by many and the networks created by those services become more valuable the more people use them. In this environment, where new services and companies can rapidly evolve.

These changes are relevant to the Government because it should mimic the way services are provided to citizens and how citizens interact with each other and with government, because it should learn from the innovation that the digital age has brought to organisations, and because it needs to understand and manage the market for digital services and products. To do these things effectively and securely, the existing patchwork of standards across government and the public sector will need to be replaced by clearer and more extensive standards, applied more decisively.

The Government published the *Government Transformation Strategy*[3] in February, which sets a sensible course for digital government and improving services. But it lacks specifics on how progress will be made, and does not prioritise services, including those that are vital to managing Brexit.[4] Without specifics, accountability is not clear.

Our previous report, *Making a Success of Digital Government*,[5] explored the development of digital government in several organisations, showing how working practices need to change so that service improvements can be catalysed by digital technology.

This report draws on 30 interviews with senior digital and policy officials across Whitehall and the public sector, and with vendors to government. It focuses on the role of GDS in creating a successful framework for digital government that is successful, and assesses how it is performing in that role. We do not argue that 'digital' provides all the answers. Policy and services start with citizens' needs. But technology and new ways of working and running organisations provide powerful ways of meeting these needs.

Recommendations

1. GDS's standards should be:

    a. clarified so that they are tiered, and they distinguish between standards and guidance

    b. applied more deeply in departments and more widely in the public sector.

2. GDS should create a store for Application Programming Interfaces (APIs)* for the public sector that encourages reuse and supports the development of API standards.

3. The Government should urgently clarify the roles of GOV.UK Verify and the Government Gateway, to spread the benefits of secure identity verification.

4. GDS needs to manage the market for digital services more actively, by:

    a. configuring the Digital Marketplace for different users

    b. ensuring that standards are enforced with vendors, including on shared services, to save money and provide a better service for users.

5. GDS should work with the Treasury to review practices around charging for sharing data within government and the public sector, and establish principles so that incentives to share data adequately reflect the public interest.

6. The Treasury should work with GDS to consider which life events, such as registering a birth or selling a house, could benefit from new services, and fund their development.

* An API is a set of instructions that provides access to a system's processes and data, and an interface between computers or between computers and users.

7. As part of a wider review of capacity and processes, the new Government needs to prioritise the digitisation of key services to manage Brexit, to avoid burdening residents and businesses with paperwork and imposing costs on the economy as a result of bureaucratic delays.

8. The Government should publish an implementation plan for digital government to clarify and strengthen accountability. This plan will need support and engagement from senior ministers, and the Head and Chief Executive of the civil service.

9. The Prime Minister should appoint a Minister for Digital Government to lead improvements in digital government.

1. New digital business models

The word 'digital' is now frequently used in government, although it is sometimes used interchangeably with 'IT' (information technology). However, the two represent different underlying concepts.

Digital necessarily involves the internet or other networks, and new ways of working. IT, which refers to the hardware (computers, cables) and the software (operating systems, and programs or apps), might or might not be connected to the internet or be part of a large network. It has steadily become more useful as computers have got cheaper and faster. On its own this contributes to higher productivity, but does not capture the benefits of the internet.

The growth in computing power supported the growth of the internet. But at the heart of the internet is a set of standards for how computers communicate with each other. Networks become more valuable the more people use them (which economists call the 'network effect'), and the adoption of common standards has allowed the creation of a network – the internet – used by half of the world's population. This has reduced the costs ('transaction costs') of sharing information, which in turn has allowed waves of innovation in searching, shopping, social networks and asset sharing.

Data can now be collected as a by-product of sharing news or buying something, and software to analyse that data is more powerful than before, providing new tools for targeting resources and adapting products and services.

Large digital companies such as Apple, Facebook, Google and Microsoft build core services (also known as 'platforms'), which are surrounded by a range of services provided by other companies – the App Store and Google Play are prominent examples. The large companies do not have to predict what these services will be – they can let users decide. They provide access to the platform under certain conditions using open Application Programming Interfaces (APIs), which provide publicly available standard connections. The platforms compete partly through the ecosystem of services provided by other companies, recognising that it is hard to innovate in a large hierarchical organisation. The large suppliers to businesses have started to follow the platform model adopted by consumer companies. Rival API standards and other support to software developers are among the instruments of this competition, and help to give the platforms powerful market positions.

Building a platform on the internet can be expensive, but once it is built, the cost of each additional user is low. This has allowed WhatsApp, for example, to have 900 million users while employing only 50 engineers.[6] This cost structure and the availability of services in 'the cloud' (renting access to other people's computers) makes infrastructure and software a variable rather than fixed cost, reducing the risk of procuring new systems.

Inside organisations, information, which previously travelled mainly up and down management chains, can be shared more widely using new collaboration tools. Services previously provided inside companies can now be contracted out, and procurement that previously relied on a small group of known suppliers can now use a marketplace that brings together millions of suppliers and customers. The internal units of large organisations can communicate with each other in standard ways, using private APIs (which, in contrast to open APIs, are only used inside the organisation) to bring the benefits of the internet to internal processes. Amazon started this early: in 2002 its Chief Executive, Jeff Bezos, is reported to have told employees to work in this way, or they would be fired.[7]

What can government learn from digital business models?

These new digital business models are relevant for government and the wider public sector for two reasons.

First, the public sector can learn from and mimic some aspects of the models, benefiting from economies of scale in supply and demand (i.e. the network effect), easier interoperability, service innovation and new ways of using data. There have already been some good examples of government using open APIs. HM Revenue & Customs (HMRC) has used them for many years so third-party software providers can help people manage their tax. More recently, anyone worried about flooding can see a map of the UK or get alerts about particular rivers, courtesy of open APIs provided by the Department for Environment, Food & Rural Affairs (Defra).[8] In terms of the wider public sector, it has become easier to get around London because Transport for London has created open APIs for some of its data, allowing services that combine public transport information with maps and geolocation.[9] The Conservative Party's 2017 manifesto commits to creating 'a comprehensive geospatial data body within government, the largest repository of open land data in the world. This new body will set the standards to digitise the planning process and help create the most comprehensive digital map of Britain to date.'[10] Opening up services and data – in a controlled way, so that privacy and security are protected – can provide benefits for citizens at low cost, and stimulate the growth of companies that provide new services.

There has been less progress in using private APIs inside government and the public sector. If they were used more widely, government would operate more effectively and flexibly, so new services could be built and adapted rapidly. In these systems, management information could be provided automatically in dashboards that update in real time rather than – as is often the case at present – downloaded onto a spreadsheet, turned into charts and a slide pack, and shared by email.

GDS's cross-government components – such as GOV.UK Notify, which alerts people on the progress of an application for a government service,[11] and GOV.UK Pay, which takes payments from users of government services[12] – do use APIs to connect with existing services. But there are only limited examples. Given the scale of its operations, the change in government's internal processes is at least as important

as opening services and data to citizens. Government has not set standards for private or open APIs, and there is no systematic way of sharing APIs across the public sector. This wastes resources and reduces interoperability.

The new digital business models are also relevant because, second, the public sector needs to understand and manage the new market to buy services from it. This means looking across government as a whole to balance the potential benefits of economies of scale against the risks of lock-in, and stimulating the creation of markets where there is a requirement but no provider.

Of course, GDS understands these changes.[13] It has seen itself as in the vanguard of a digital revolution against old-style IT thinking in Whitehall. Francis Maude, who provided political leadership for GDS until 2015, recalled how an IT leader in Whitehall told the-then Head of GDS, Mike Bracken: "You're just tinsel, we are the people making the thing work." Maude argued that soon the IT people "had all gone and digital was the way of doing it".[14]

the change in government's internal processes is at least as important as opening services and data to citizens

While the revolution has not got everything right, and many experienced people (including people that manage IT infrastructure, who are still needed)* were lost along the way, in general the revolution has pointed in the right direction. But despite Maude's optimism about the revolution's consolidation, we have found that while there are now digital teams in every government department, many senior civil servants still confuse IT and digital, and departments have only started to adapt to new ways of working. Many services and the datasets that support them operate in glorious isolation, running old software on old IT, with bespoke data exchanges.

In the wider public sector, progress is even more patchy. The recent cyberattack that affected the NHS shows the risks associated with out-of-date operating systems. Even the new services built in the past few years highlight what remains to be done. For example, of the almost three million people who registered to vote in the June 2017 General Election, 96.5% of these registrations used the digital service.[15]** But behind the helpful website sits several hundred processes run by local authorities, most of which still use paper – and for postal voting there is no sign of a digital application process.

* The recent IT failure at British Airways appears to have been caused by IT infrastructure problems (see Cellan-Jones, R., 'What went wrong at BA?', BBC News, 29 May 2017, retrieved 2 June 2017, www.bbc.co.uk/news/business-40082631).

** Data from 18 April to 22 May 2017. Many of those who used the service will already have been registered, so the electoral register will have grown by less than three million.

2. Accountability for digital government

In government, as elsewhere, things are more likely to be done well if there is an effective accountability system. This requires:

- **clear accountability**, avoiding confusion as to who is responsible for what and to whom
- **sufficient control**, meaning that the person being held to account can control the factors for which they are held to account
- **sufficient information**, so that those holding the person to account can do so based on relevant performance information
- **clarity of consequences**, with a consistent and widely understood link between performance and the rewards and sanctions that flow from it.*

The starting point for accountability in Whitehall is with secretaries of state, who have overall accountability for their departments. Permanent secretaries have responsibility for day-to-day management, and in practice it is their responsibility to make sure that a department has the right people, including in the various functions that operate across government such as digital, to achieve policy outcomes.

At the centre of central government, the Head of the civil service, Sir Jeremy Heywood, has responsibility both for the system as a whole and for the role that the centre plays in managing the functions. He is supported in this by the Chief Executive of the civil service, John Manzoni. In the case of digital government, the functional responsibilities are delegated to the Head of GDS, Kevin Cunnington. He is accountable to the Head and Chief Executive of the civil service for running the digital function across government.

This report looks at some key elements of the framework created by GDS and considers how the accountability system is working. The expectation here is not that there is a perfect system of control and measurement, which is neither achievable nor desirable, particularly where innovation is necessary. Just as successful digital companies have relinquished some control to enable the growth of an ecosystem of services around their main platforms, so GDS needs to play an enabling role and work in partnership to achieve some of its objectives.

* This framework is drawn from Paun, A. and Harris, J., *Accountability at the Top: Supporting effective leadership in Whitehall*, Institute for Government, London, 2014, retrieved 2 June 2017, www.instituteforgovernment.org.uk/our-work/parliament-and-political-process/accountability-central-government

3. Managing standards

The internet is enabled by standards, and the network of digital government should be enabled by standards across government and the wider public sector. These standards support a variety of objectives: interoperability, protecting security and citizens' rights to privacy, and enabling effective services.
A standard sets a minimum requirement. It also needs needs to be measurable, in contrast to guidance (on the role of standards, see the Appendix).

To be effective, a standard for government (that is, applying to government, rather than the wider economy) needs to be:

- **Clear, understandable and measurable.**
- **Managed according to its level of maturity.** A standard should start in draft form, which is applied voluntarily and tested and improved. It should then become a mature standard, which has been tested, has implementation guidance, is widely used and may become compulsory. Finally, the standard should become obsolete as the market moves on or another standard supersedes it (as was the case with Betamax videotapes, for example[16]).
- **Credible.** A standard needs to draw on recognised authorities, including international standard-setting bodies. Government often chooses standards from existing ones rather than setting them. Where a standard is made compulsory, the body that sets the standard needs to have authority and the means to enforce it.

How effective are GDS's standards?

The main GDS standards are the Digital Service Standard[17] and the Technology Code of Practice,[18] which were introduced in 2013. The *Government Transformation Strategy* notes that they 'will continue as cross-government standards and will continue to be improved'.[19]

In general, the standards have been highly successful. Suggestions for improvements given here should be seen in this context.

Clear, understandable and measurable

GDS's standards are written in plain English and can easily be understood. There are two areas where improvements could be made.

First, some parts of the standards are in fact guidance. Some elements of the standards are measurable: for example, web-based services can only use Hyper Text Transfer Protocol Secure (HTTPS) – a communications protocol that makes websites and browsing more secure; and a service 'must look like GOV.UK' if it is on the GOV.UK website. Others are not: for example, 'understand user needs' and 'have a multi-disciplinary team' are both important practices, rather than measurable standards.

Second, there is an overlap between the Technology Code of Practice and the Digital Service Standard. Both focus on user needs. The former requires designers, builders or buyers of technology to 'make things interoperable'. The latter encourages practices that support interoperability, but does not specifically refer to it. The *Service Manual*,[20] which aims to help government teams to create and run digital services that meet the Digital Service Standard, includes various statements about technology, but the relationship with the Technology Code of Practice is not clear.

The standards would be clearer if they:

- were tiered, so that the requirements for all digital initiatives were at the highest level (for example, user needs, interoperability), with the particular requirements for services and technology specified separately
- drew a clearer distinction between measurable elements of the standards and guidance.

These changes would allow a clearer definition of the processes for setting, enforcing and supporting implementation of the standards.

Managed according to its level of maturity

GDS is characteristically open about how its standards are set and updated. In particular, there is a transparent governance process around the open standards that allows proposals for change to be made and reviewed.[21] More generally, guidance is usually issued in 'Beta' (test form), and comments are sought. However, it could be useful for GDS to adopt a more explicit maturity framework for its standard-setting role. For example, the Open Standards Board does not appear to have a process for retiring outdated standards.[22]

Credible

The standards are widely understood and have been widely adopted. Digital teams around government have posted the standards on their walls, and refer to them frequently: the standards and the digital community in government reinforce each other. They have even been adopted in Australia.[23]

A standard needs to draw on recognised authorities, including international standard-setting bodies

We found in our research that the standards are generally well applied on new projects in central government, as these need to pass through GDS spending controls, have Digital Service Standard assessments and, if they are web services, meet GOV.UK standards before being allowed to use the website.

However, there remains a great deal of legacy IT in government. As one interviewee put it, applying the standards to legacy systems is a matter of "pragmatism, not perfection".

There are also signs that GDS has not had the authority to see its standards implemented in some areas. This is discussed further below.

Applying standards in the wider public sector

Providing joined-up services to citizens and avoiding duplication requires different parts of the public sector to work together. This means using open standards. However, there is no system for standards to be spread across the sector.

While there are examples of impressive services provided by local government,[24] there is great variation. A group of 19 local authorities have created their own version of the GDS Digital Service Standard.[25] This is a welcome development but they represent around 5% of English local authorities. English city deals have included various digital commitments but have not been used to promote interoperability. One English regional digital lead told us that persuasion was the only way they had of getting local authorities to adopt the standards. Things look more promising in Scotland, where most local authorities have signed up to a partnership with each other that aligns them with Scottish central government standards.[26]

Most hospital trusts report that other local health care providers cannot access the patient information held by the trust

NHS England's standards[27] have some similarities to GDS's, but focus on interoperability rather than service design, and are less well known and less accessible. There are pockets of interoperability in some regions, but most hospital trusts report that other local health care providers cannot access the patient information held by the trust.[28] This is despite efforts by the NHS for many years to set data standards.[29] We also heard that, although the main suppliers of software to general practitioners (GPs) and trusts have started to provide open APIs, at least initially, the APIs were not compatible with each other or with others in use across the NHS. The upshot is that it is difficult to get different services to operate together.

Recommendation 1: GDS's standards should be:

- clarified so that they are tiered, and they distinguish between standards and guidance
- applied more deeply in departments and more widely in the public sector.

Extending the scope of the standards

The first recommendation of Martha Lane Fox's 2010 report, which heralded a new phase in digital government, was that government should 'create cross-government standards on APIs'.[30] The-then Minister for the Cabinet Office, Francis Maude, replied that the Cabinet Office would be '[w]orking with departments on a timetable for the

opening up of Application Programme Interfaces (APIs) as part of finalising the departmental spending settlement process'.[31] This did not happen.

Currently, the use of APIs is suggested, not required.[32] The *Government Transformation Strategy* states that 'we will introduce guidance and standards for APIs for both internal and external services'.[33]

As noted above, government has started to use open APIs. There is less use of private APIs to allow better interchange between different parts of government. The *Government Transformation Strategy* contains the following statement: 'Inside government, this means moving away from monolithic systems that are intended to perform a large number of tasks to individual components that communicate with each other through APIs and which are shared across government, rather than bound to organisational silos.'[34]

This is important. Producing standards for APIs will help to make it a reality. Given the lack of widely accepted standards outside government, GDS should at this stage curate rather than impose standards. It should begin by creating a catalogue of APIs currently in use, with owners and interested communities identified. Some quality control by GDS would be needed – for example if an API did not meet security requirements.

This first step alone would reduce duplication and lead to improvements in the APIs that are deployed. Over time, GDS should identify successful APIs that are generally useful across government and start to require their use by government and vendors.

Recommendation 2: GDS should create a store for Application Programming Interfaces (APIs) for the public sector that encourages reuse and supports the development of API standards.

4. Managing securely

The benefits of interconnectivity come with an inevitable increase in vulnerability to cyberattacks and unwitting data losses. The recent cyberattack that affected the NHS shows the risk of a security chain with weak links, as computers with out-of-date Windows operating systems spread the 'ransomware' across the network.[35]

The *Government Transformation Strategy* notes that 'cyber-attacks are growing more frequent, sophisticated and damaging when they succeed'.[36] In February the Defence Secretary, Sir Michael Fallon, noted that there had been Russian state-sponsored attacks on Bulgaria, France, Germany, Montenegro, the Netherlands and the United States.[37] Since then, the electoral campaign of French President Emmanuel Macron has been attacked. Even though there does not appear to have been a cyberattack on the UK General Election on 8 June, the Chief Executive of the National Cyber Security Centre (NCSC), Ciaran Martin, has said that the UK needs to be prepared for Russian attacks.[38]

The Prime Minister has ultimate responsibility for protecting against these threats. In this she is supported by the Official Committee on Security (which meets at permanent secretary level), and the National Security Council's Cyber and Resiliency subgroups (ministers and officials). The post of Government Chief Security Officer, responsible for all aspects of government protective security, was created in 2016.[39] However, there is no public information about whether this post has been filled, and by whom.

The *Government Transformation Strategy* notes that 'cyber-attacks are growing more frequent, sophisticated and damaging when they succeed'

The NCSC was set up in 2016 to bring together several bodies that worked with the public sector, businesses and citizens to address cyber security issues. It is an agency of Government Communications Headquarters (GCHQ), for which the Foreign Secretary has day-to-day ministerial responsibility.

GDS's role in security includes setting standards (such as the requirement to use HTTPS) and flagging security issues in Digital Service Standard assessments. GDS has also started to monitor the vulnerability of departments' email systems.[40]

In 2016, the National Audit Office found that 'too many bodies with overlapping responsibilities operate in the centre of government, confusing departments about where to go for advice'.[41] While the creation of the NCSC has done something to reduce the number of bodies, it is not clear whether the new system is robust enough to meet the growing threat. The WannaCry cyberattack has highlighted the difficulty for the NHS of having 10,000 GPs who have responsibility for their own digital security but who are connected in a network that allows viruses to spread. Connection to a government or public sector network needs to come with rigorously enforced conditions – or WannaCry will be the first of many major cyberattacks to disrupt public services.

Verifying identity

To use a public service, it is often necessary for a citizen or other user to identify themselves, whether that service is provided in person, over the phone or digitally. Government departments and public services more generally use a range of processes to verify identity. The development of a standard digital process for identity verification has the potential to reduce costs, improve security for government and for users, and make it easier to access a range of services.

Government has been concerned with verifying identity digitally since the early days of digital services; it is not a straightforward matter.[42] In 2011, GDS started to develop GOV.UK Verify, which provides a platform for users to confirm their identity. The Coalition Government had abolished identity cards and the National Identity Register. Verify side-stepped the need for a register by using a selection of third-party providers to check users' identity. It is the only verification service that meets NCSC and Cabinet Office security standards. However, the roll-out of Verify has been slower than anticipated, and some users have difficulties in getting their identity verified. One interviewee told us that verification was particularly challenging for people who are most in need of government support.

The Government should urgently clarify the roles of GOV.UK Verify and the Government Gateway

The longstanding Government Gateway, which is used by individuals, tax agents and organisations for authentication and other functions and is managed by HMRC, continues to be used for 138 public services. A range of services use other means of identification[43] and Scotland uses 'myaccount'.[44] Meanwhile, New Zealand uses 'RealMe', an opt-in digital identity service with two levels (a simple login to basic services and then an identity verification tool for transactions), which has been used to develop predictive services such as 'SmartSmart' for new parents, which provides step-by-step information and support to help them access the services they need.[45]

The Conservative Party's 2017 manifesto reaffirms the commitment in the *Government Transformation Strategy* to have 25 million Verify users by 2020. The manifesto goes on to confirm that people will use 'their own secure data that is not held by government'.[46] In other words, Verify's design principle will not change. The ambition that Verify will spread to private sector services such as banking is also reiterated.

Meeting these commitments will require government to step up its efforts to spread Verify. This will need to include clarifying the role of the Government Gateway: the logic of the manifesto commitments is that the Government Gateway should no longer be used to check the identity of individuals. This is not an area where competition is helpful. However, there is still a need to check the identity of companies and agents, and the Government Gateway or its successor could continue to perform this function.

Recommendation 3: The Government should urgently clarify the roles of GOV.UK Verify and the Government Gateway, to spread the benefits of secure identity verification.

5. Managing the market

Our view is that the Government should manage key markets[47] rather than seeing itself as a passive participant – for example, it should manage the risk of lock-in by large suppliers able to charge above-market rates.* Professionalising procurement is a necessary but not sufficient step towards this: coordination across government is also required so that the whole market can be understood and managed.

The market for digital products is dynamic: more and more powerful services and components can be bought (or rented), increasingly as commodities. If an organisation has the right internal architecture and is applying open standards, these components can be plugged into existing systems, and updated as services improve. The *Government Transformation Strategy* is in line with this, setting the following ambition: 'Building on the Digital Marketplace's approach, we will embed user-centred, design-led, data-driven and open approaches in procurement and contracting across government by 2020.'[48]

Digital Marketplace

The purpose of the Digital Marketplace is to help the public sector find technology suppliers and services. GDS standards require central government to use it, and this requirement is reinforced by spending controls. It is a popular model, which has recently been adopted by Australia as well.[49] Launched in 2014, the Digital Marketplace has two frameworks:

- G-Cloud provides off-the-shelf cloud services. Suppliers list information about their services in a catalogue, which buyers choose from. It is responsible for 95% of Digital Marketplace sales.
- Digital Outcomes and Specialists (DOS) allows buyers to publish their service requirements. Suppliers apply for work, and buyers select their preference.

Over £1.8 billion has been spent through the Digital Marketplace over only a couple of years.[50] At the close of 2016, it had nearly 3,300 suppliers: of these, 91% were small- and medium-sized enterprises and 72% were located outside London.[51] There is evidence that GDS is willing to be responsive – after user feedback about over-elaborate contracts, GDS worked with the Crown Commercial Service and the Government Legal Department to streamline contracts by reducing the number of words by 40%.[52]

The Digital Marketplace has not been taken up as widely outside central government, where there is no requirement to use it, and there is limited clarity on how it works.[53] Improving awareness takes time – for example, South Korea has been developing the

* Some of the risks are set out in the following paper: Competition & Markets Authority, *UK Competition and Markets Authority Response to the European Commission's Consultation on the Regulatory Environment for Platforms, Online Intermediaries, Data and Cloud Computing and the Collaborative Economy*, GOV.UK, London, undated, retrieved 5 June 2017, http://ec.europa.eu/information_society/newsroom/image/document/2016-7/uk_cma_14046.pdf

Korea Online E-Procurement System (KONEPS) since 1997, and it is now used by over 50,000 public institutions in the country for more than half of all its public procurement.[54]

We found that for those who are familiar with the Digital Marketplace, its rigidity is frustrating. It is not run like a service and there is little calibration for different uses (for example, repeated procurement, focused contracts). It has not yet developed features such as one-click purchasing, which KONEPS has.

We also heard concerns about the Digital Marketplace's quality control. One vendor told us that when it started, the Digital Marketplace felt like a catalogue of assured products; as it has grown, it has lost this element of quality assurance. There has been uncertainty about the purpose of the DOS framework, with people 'gaming the system' to get around its requirements, or lacking understanding of how to use it. There are also examples of inappropriate criteria for tender, such as passing Digital Service Standard requirements to vendors – the Service Standard needs to be owned by the department or public body – or requiring a vendor to have worked with the tendering organisation for three years, thereby excluding new market entrants.

We also heard concerns from vendors that government is set up to pay fixed amounts for software, rather than paying a variable amount based on the number of people who use it, because procurement and finance teams prefer to know in advance how much a service will cost. One vendor suggested that this means government is "paying for the cost of failure, not success".

The Digital Marketplace has been a largely successful project by GDS, which has both expanded the market for digital services and reduced transaction costs for government and suppliers. But there are areas that can be improved, helping to spread standards and use in the wider public sector. In particular, GDS standards need to be applied consistently in tenders, and user needs could be met better through a more proactive helpdesk that both monitors and supports the quality of tenders for inexperienced users, and one-click ordering and payment for experienced users.

Large contracts

One of GDS's early ambitions was to break up the large contracts for hardware, software and services, which it saw as offering poor value for money (including as IT costs fell) and as preventing departments from benefiting from the digital age. As we explored in a previous report, the Driver & Vehicle Licensing Agency (DVLA) has been an example of an organisation that has ended its large outsourcing contracts.[55] But they remain in place elsewhere. One interviewee noted that "it would take a crowbar" to get some departments to end their contracts. Although HMRC has decided to phase out its long-term contract with Aspire (which had average annual costs of £813 million between 2004 and 2014), the termination date has been pushed into the future.[56] Another example is the recent Home Office decision to extend its long-term IT outsourcing contract with Fujitsu, which is supplying hardware and support to

24,000 users until April 2018.[57] In 2015–16, 94% of government digital and technology spending was with large companies, a fall of less than one percentage point since 2012–13.[58]

While breaking up contracts represents one way forward, where a large contractor genuinely adopts open standards and provides valuable products, there is every reason that they should continue to be part of the procurement mix. Where they do not, government should not contract with them.

In 2015–16, 94% of government digital and technology spending was with large companies

There is also a question about which open standards should be used – and potentially required in contracts. Until government has clear views, for example about which API standards it requires, vendors can use their standards, rather than standards being applied in the interest of interoperability across government and the public sector.

Shared services

In government, shared services refer to efforts to centralise provision of high-volume transactional services (often known as 'back-office') for finance, human resources and procurement. Part of the problems that shared services have faced relates to the complexity of government. Different parts of government handle processes differently, and staff in different parts have different contracts. This makes it harder to run commodity services until and unless processes and contracts are standardised. The National Audit Office has found that shared services have had mixed success, partly because standardisation did not happen before they were introduced into departments.[59]

After several service disruptions, it seems that shared services have now stabilised. However, we found that users are unhappy with the services, and digital leads in departments did not see shared services as falling within their remit. Although shared services are a centrally run programme with a large technology component, it does not fall under GDS's remit. As currently operated, shared services do not meet GDS standards and are not connected with other departmental systems through APIs.

The *Government Transformation Strategy* does not refer directly to the shared services programme but does note that:

> '[Start-ups use] internet-based shared service platforms ('in the cloud') to support their internal processes – such as customer service, payments, HR [human resources], payroll and finance. These components and back-end functions are shared by millions of users all over the world and thus attract significant investment, but can be tailored to meet specific user needs. A small company can now have a better HR system than a big enterprise and at a fraction of the cost per user.'[60]

The *Government Transformation Strategy* has a point. Shared services could be much better for users, and provide much better tools for managers to understand how departments are working. Describing these services as 'back-office' is part of the problem – managing staff, money and procurement are core activities for government and should be a priority. Government should take two steps. First, it should exert pressure on the shared services providers to adopt GDS standards. Second, GDS should work with one department or agency to introduce internet-based shared service platforms. Subject to what is learnt from these steps, government should consider changing the way shared services are provided across government. Bringing shared services under GDS's remit might help this process.

Overall, benefiting from the dynamism of the digital market is not therefore simply a matter of buying the right products; it also requires changes in the way departments work. For GDS, creating the Digital Marketplace has been relatively straightforward, and relatively successful. Getting departments to renegotiate contracts and to reorganise internally is harder, but just as important.

Recommendation 4: GDS needs to manage the market for digital services more actively, by:

- configuring the Digital Marketplace for different users
- ensuring that standards are enforced with vendors, including on shared services, to save money and provide a better service for users.

6. Managing data

Making better use of data is both a requirement and a driver of digital transformation. As noted above, the creation of API standards was part of the vision in 2010 that has not been realised. And doing so will be vital to manage data better.

Data exchange in Whitehall is like pre-container shipping, when goods travelled around the world in boxes of all shapes and sizes. Standardisation allows quality control and protection of citizens' rights, as well as reducing transaction costs. At present, exchanges of data between departments are bespoke – they are the result of bilateral deals between departments, and use code developed for the purpose, or are sometimes as basic as emailing spreadsheets.

The *Government Transformation Strategy* highlights data as a priority. It proposes the appointment of a new Chief Data Officer, and the creation of 44 potential new registers.[61] Yet at the time of writing (June 2017) the new Data Officer has not yet been appointed, almost a year after GDS's Director of Open Data stood down.

Data law

The Digital Economy Act 2017 provides broad powers to share data between public authorities where possible under the Data Protection Act 1998 and the Information Commissioner's Code of Practice on data sharing.[62] The General Data Protection Regulation (GDPR) will come into force in all member states of the European Union (EU) in May 2018. It imposes stricter obligations on holders of data and strengthens people's rights to access their data. Although the UK is due to leave the EU in 2019, the Government has said that it wants UK companies to continue to be able to exchange data with the EU after Brexit, which means that the UK will need to continue to comply with the GDPR.[63] This will require separate legislation to incorporate the GDPR into UK law.

For any organisation that uses personal data, the GDPR will require them to make changes to the way they do things, and failure to comply with it could lead to fines of up to 20 million Euros or 4% of annual worldwide turnover.[64]

The Digital Economy Act and the prospect of the GDPR provide two reasons that the Government's approach to data needs to become more purposeful and more considered. Incorporating the GDPR also provides an opportunity to establish mechanisms to spread open standards across the public sector.

Control of GOV.UK has given GDS the ability to set and maintain standards for web services that it lacks in relation to data.

The Conservative Party's 2017 manifesto commits to 'a strategy to rationalise the use of personal data within government, reducing data duplication across all systems, so that we automatically comply with the "Once-Only" principle in central government

services by 2022 and wider public services by 2025'.[65] This promises to reduce one of the major hassles for citizens in using digital public services – the need to repeatedly inform various parts of the state of their details in order to get access to services – as well as reducing inefficiency in the public sector caused by holding different versions of an individual's data in different places.

In Estonia, a law requires departments to look for data across government instead of asking citizens to provide it repeatedly.[66] Singapore has also made steps in this direction, with its MyInfo platform.[67] The UK has a more limited system that allows relatives to inform several parts of the state at once about a bereavement.[68] However, this system works by sending a message to the relevant agencies, rather than being an automatic consequence of reduced duplication. Duplication is currently widespread, so an individual's data will be held by local government (possibly different versions for Council Tax, residents' parking and electoral registration), and many other public bodies. Reducing duplication and allowing an individual's data to be drawn together at key points will be challenging, requiring a wide range of legacy systems across central and local government, the NHS and other bodies to be able to exchange data securely and in a way that complies with the stronger protection of individuals' data rights that will come into force in 2018. Government holds a great deal of personal data, and practices will need to change. For example, where at present one agency checking an individual's eligibility to receive a service might be given all that individual's details from another agency, it will be better to create a querying service to check eligibility without sharing personal data.[69]

Some countries, such as Estonia and Singapore, have achieved this using national identity registers. Others have relied on local registers: Australia's 'Tell Us Once' initiative uses state photographic identity cards and 'myGov' accounts,[70] while Tel Aviv in Israel has digitised city identity cards (DigiTel Resident Cards) to allow access to services through smartphone apps.[71] The UK Government should learn from these examples.

Charging for data

In some cases, departments and public bodies charge each other for sharing data, including where it is necessary to develop and maintain an API. This practice could be seen as a barrier to data sharing, and therefore potentially problematic. Against this, querying other organisations' servers uses their capacity, meaning that servers need to be supported and updated, and APIs take resources to create and maintain. As when one public body shares another's property, it is therefore reasonable to charge, and encourages a more efficient use of resources by discouraging nugatory sharing. However, practices are inconsistent and there are no principles in place to govern them. Such principles would need to consider, for example, whether charging should be based on the marginal or average cost of sharing.

Recommendation 5: GDS should work with the Treasury to review practices around charging for sharing data within government and the public sector, and establish principles so that incentives to share data adequately reflect the public interest.

7. Enforcing, encouraging and growing

GDS has three enforcement mechanisms – spending controls, Digital Service Standard assessments and, for web content and services, control of GOV.UK.

These controls have been an important part of the shift from IT to digital. As capacity in departments and the extent to which they have internalised GDS standards have increased, so controls have become more based on overall plans rather than on individual projects. As the *Government Transformation Strategy* puts it: 'Departments will continue to create forward views of their planned spend on digital and technology which will [be] scrutinised by the Government Digital Service. We will seek to bring earlier engagement on spending plans between departments and GDS, so that support can be provided at the most useful point.'[72]

The controls support the Digital Service Standard assessments, in the sense that the assessments would not be taken seriously without the link to spending controls. Publication of the assessments has in the past also provided an incentive for departments to take them seriously, and an opportunity for interested users to scrutinise the process. However, publication appears to have now stopped.[73]

In Norway, all the equivalent assessments are published, which provides incentives to agencies to improve their performance.[74] In Australia, the new Digital Transformation Agency's Digital Service Standard has got off to a transparent start with publication of the rationale for a service not meeting the standard.[75]

But controls and assessments – even public ones – can only stop things happening. They cannot make things happen. For this, the standards need to be owned across government.

As noted above, the standards should be clarified, which would make them easier to grasp and measure. But only so much can be done in abstract. One interviewee stressed the importance of "showing by doing" and this is clearly important for ownership to develop. We agree, but support and understanding do not extend far enough beyond digital teams. If the non-digital parts of departments, including senior teams, do not support the standards, changes will be limited.

More generally, spreading standards across the public sector will require a judicious mixture of working adaptively and stronger incentives. GDS can be an influential node in the network by virtue of its ability to speak on digital issues for central government as a whole. It can both work with those who are open to change, such as the network of 19 local authorities that have developed a local version of the GDS Digital Government Standard, and also explore ways to spread standards through regulation, including by learning from other sectors, such as retail banking.

Learning from banking

In 2016, the Competition & Markets Authority (CMA) concluded an investigation into retail banking. The CMA was concerned that it was too difficult for the banks' customers to understand the costs of products, such as current accounts, and this meant that customers did not readily switch bank accounts, reducing competition in the sector. As a remedy, the CMA required retail banks to agree and use a standard open API.[76] This will allow customers to compare the prices of banks' products, such as current accounts, and new services to be built by third parties.

Services that meet citizens' needs

Digital technology is not an end in itself, but rather provides tools that help services to better meet citizens' needs. It is these needs, rather than technology, which need to be the starting point in thinking about services.[77]

Even while policy is likely to continue to be organised mainly in domains such as 'education', 'health' and 'justice', there are many issues, such as mental health, that cross departmental boundaries, and many life events, such as registering a new baby, that are not fully addressed by one organisation. Even if the GDS Digital Service Standard is applied, within the constraints of one department or public body, user research will tend to be limited by the services that that department or public body can provide.

The *Government Transformation Strategy* recognises that existing departmental boundaries do not correspond with people's needs. It argues that the Transforming Together network (a group of leaders across the civil service working to transform government so that it works better for citizens and businesses) and the Transformation Peer Group (a group of senior transformation leaders from around government that has oversight of the major transformation programmes) could support more joint work.[78] We agree that these help, but more is needed.

At present, it is very difficult for business cases for spending, which require Treasury approval, to be developed across more than one Whitehall department. Our interviewees identified this as a major barrier.

Recommendation 6: The Treasury should work with GDS to consider which life events, such as registering a birth or selling a house, could benefit from new services, and fund their development.

8. Priorities

Brexit will put serious strain on government. The Conservative Party's 2017 manifesto adds some ambitious digital commitments. Prioritisation is essential. Yet as the National Audit Office reports, 'there continues to be a risk that GDS is trying to cover too broad a remit with unclear accountabilities'.[79]

The *Government Transformation Strategy* does not establish clear priorities. It highlights 17 services that government 'will make digitally accessible by 2020',[80] which can be interpreted as priorities. Each of these is at a very different scale and level of complexity. The Carer's Allowance was one of the original exemplars, and is already digital. And while the 'I want to fish' service will be important for some, it is not a vital service for most people.

The new Government needs to prioritise the digitisation of key services to manage Brexit

In contrast, 'Check if someone can work in the UK' and 'Come to live or work in the UK' will be a vital part of Brexit preparations. More generally, the implementation of a new immigration system is a serious administrative challenge.[81] While not explicitly recognised as a priority in the *Government Transformation Strategy*, the HMRC Customs Declaration Services programme has been identified as critical for Brexit, but it has been flagged as 'needing urgent action to make it effective'.[82]

The *Government Transformation Strategy* does not refer to trade-offs between priorities. Brexit makes it even more important that prioritisation of improvements to digital services is done properly.

Recommendation 7: As part of a wider review of capacity and processes, the new Government needs to prioritise the digitisation of key services to manage Brexit, to avoid burdening residents and businesses with paperwork and imposing costs on the economy as a result of bureaucratic delays.

9. Accountability for digital government

An effective accountability system requires clarity of accountability and consequences, and sufficient control and information.

This report has looked at some key elements of the framework for managing digital government created by GDS. We now consider how far these elements meet the criteria for an effective accountability system:

- If GDS clarified its standards, it would be easier for it to hold departments to account for meeting them. GDS's role as a standard setter has been clear, but needs to be extended, in particular to create an API store. GDS has not had the mandate or the budget to spread its standards across the wider public sector.
- On identity verification, GDS has not been able to force a decision on the role of the Government Gateway – it has not had sufficient control.
- The Digital Marketplace has been successful, although it could be improved by being better configured for users. However, almost all digital and technology spending is outside the Digital Marketplace, in large contracts with large companies. If these companies are adopting GDS standards – and GDS's standards are clear enough to require it – interoperability is still potentially achievable, but is not a given.
- On data sharing, a Chief Data Officer has not been appointed. New legislation will come into force in May 2018, and requires a government-wide response. In general, this is an area where government has not yet created the conditions for success.
- On prioritisation, it is not clear whether GDS considers that it is part of its role to ensure that the most important programmes with a significant digital component are prioritised for resources. As no other part of government has the expertise to do this, GDS should play this role.

More generally, although the *Government Transformation Strategy* has been quoted approvingly throughout this report, it makes few measurable commitments, making it difficult to hold GDS to account, and for GDS to hold others to account.

Recommendation 8: The Government should publish an implementation plan for digital government to clarify and strengthen accountability. This plan will need support and engagement from senior ministers, and the Head and Chief Executive of the civil service.

While GDS should be held primarily accountable for creating and managing the framework for digital government, it cannot be successful on its own. To create services around key life events, GDS needs Treasury support. Working with departments on their large contracts to end them or ensuring that they meet GDS standards requires joint working between GDS and the Crown Commercial Service. In the same way, the Head of GDS needs to work in partnership with the Cabinet Office and the Head of the NCSC to reduce the risk of cyberattacks. In cases where GDS lacks sufficient control – as on identity verification – it needs the support of the Head and the Chief Executive of the civil service.

To create services around key life events, GDS needs Treasury support

In the last period, there has been limited visible political leadership for digital government. However, the Conservative Party's 2017 manifesto sets out some clear aspirations. It is more likely that they will be achieved if there is sustained attention from at least one minister. If the past year is a reliable guide, the newly appointed First Secretary of State and Minister for the Cabinet Office, Damian Green, will be preoccupied with Brexit.

Recommendation 9: The Prime Minister should appoint a Minister for Digital Government to lead improvements in digital government.

10. Conclusion

This report has focused on the role of GDS. But most of the changes required to benefit from the digital age need to be made in departments. Digital teams across Whitehall share GDS's perspectives and ambitions. The picture is less clear outside digital teams. One permanent secretary told us that "digital natives think differently to non-natives" and there is currently a "language gulf" between policy and digital thinkers, just as there was once a lack of financial literacy. The gulf needs to be bridged if digital government is to be successful.

This is not for the gratification of GDS but to meet the needs of citizens and of government. Web services have got a lot better since 2010 – although they need constant attention and maintenance, and need to be extended. Creating an ecosystem of services around government has only just begun, and has mainly been driven by departments – open data in Defra, and relationships with the third-party tax advisers and software providers in HMRC – rather than by GDS.

The operational needs of departments are poorly served by existing systems. For example, to get information about how public services are performing or even basic data about how many staff work in a department will often currently require intensive manual work, and the information will often be inaccurate and out of date. Permanent secretaries should want and expect real-time dashboards with accurate information. These dashboards are possible when there are well-designed internal and external digital services, and very difficult to create otherwise.

Permanent secretaries should want and expect real-time dashboards with accurate information

Improving the management of digital government involves improving the management of government in general. The changes that are required in departments are not just a matter for digital teams, but also require the engagement of whole leadership teams, starting with permanent secretaries. Making these changes should be an urgent priority for the new Government.

Appendix: the role of standards

Standards for an item or service can set a minimum quality requirement (which reduces evaluation costs for users and for authorities, which can check whether standards are being applied), and requirements for interoperability, which allow a product to be included in a wider system. Both can apply to one product – for example, the standard for petrol in a car reduces a driver's evaluation costs in buying petrol, and ensures that the petrol is compatible with the car engine. In the case of digital government, interoperability is most important: if it is widely applied, a network can be created.

Another sort of standard covers standard practice, which is a set of instructions for performing operations or functions – in other words, they are about how humans, rather than machines or products, behave.

Standards can be distinguished from guidance, which provides advice and sets principles at a higher level of abstraction than a standard. A decision about whether something is in line with guidance or not is likely to be a matter of judgement – it will be less measurable than a standard, but should otherwise have similar characteristics to be useful.

In companies that can create uniform operating environments, such as the warehouses of logistics companies like UPS, it is possible for standard practice to be specific and detailed, and supported by audit and other control regimes. For government standards, which need to apply across a wide range of circumstances, standard practice set by the centre of Whitehall is likely to be at the level of guidance, rather than standards.

A standard is useful if it is a solution to a coordination problem: it emerges from situations in which all parties realise mutual gains, but only by making mutually consistent decisions. Not all standards are useful and benefit all sides of a transaction – where a standard is not helpful, it can seem more like a control. For example, a standard reporting format can benefit the recipient of the report but not its author. Standard-setting therefore needs to take into account the costs of implementation.

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About the authors

Daniel Thornton has been a programme director at the Institute for Government since 2015. He leads on the Institute's work on ministerial development and its civil service-facing work, including on digital government. Daniel began his career in the Foreign Office, and subsequently worked in Parliament, HM Treasury, the Cabinet Office, 10 Downing Street and as a director in the Department for Communities and Local Government. From 2009 until 2015, he worked in Switzerland for Gavi, a public–private partnership that funds immunisation in developing countries.

Lucy Campbell is a researcher at the Institute for Government, which she joined after working as a management graduate in local government. She has also worked on the Institute's Performance Tracker public services project.

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enquiries@instituteforgovernment.org.uk

+44 (0) 20 7747 0400 +44 (0) 20 7766 0700

@instituteforgov

Institute for Government, 2 Carlton Gardens
London SW1Y 5AA, United Kingdom