INSTITUTE FOR GOVERNMENT

Making a success of digital government

Emily Andrews, Daniel Thornton, Joseph Owen, Alex Bleasdale, Gavin Freeguard and Ines Stelk

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Summary

When a baby is born, their parents go on a bureaucratic Odyssey. It starts at the Register Office: the parents make an appointment by telephone, and then meet the registrar with a paper form of identification to prove who they are. They then receive a paper birth certificate for their baby. A succession of long paper forms follow, to get a passport, Child Benefit and tax credits, moving on to appointments made over the telephone to see doctors and health visitors. It is technologically entirely possible to make each of these exchanges simpler, faster and cheaper to administer. But it is organisationally hard. This report is about the organisational challenges that government must tackle to make a success of digital government, and what all government leaders – not just digital leaders – should do to address them.

While four out of five adults in Great Britain use the internet every day,[1] only two-thirds have ever transacted online with government.[2] Making a success of digital government means getting more people to do their business with government online, which means more and better online services – for example, providing a single, joined-up online service to register a new baby, rather than asking parents to navigate the boundaries of local and central government and the National Health Service (NHS). It also means improving the services that run behind the scenes so that manual processing becomes a thing of the past – so Child Benefit claims, for example, do not take up to 12 weeks to process. These types of changes could lead to big savings – we estimate between **£1.3 and £2 billion (bn) by 2020**.

> “While four out of five adults in Great Britain use the internet every day, only two-thirds have ever transacted online with government.”

In 2011, government promised us a leap into the digital future, with ‘world class digital products that meet people’s needs and offer better value for taxpayers’ money’.[3] Government is not a start-up – it is liable to inch forward rather than leap – but progress has been made. In May 2016, 1.3 million people registered to vote online.[4] Paper tax discs in windscreens are a thing of the past; so, one day, might be tax returns. But, given a history of faltering or failed information technology (IT) projects – from e-borders, to electronic patient records, to the first phase of Universal Credit – government cannot take for granted that it will be able to realise these benefits. Since the year 2000, **over £10bn has been spent on government IT projects that did not provide their intended benefits.**[5]

Taking digital government to the next level will require sustained attention. This is not currently in evidence. Ministers are distracted by preparing for Brexit and the leadership of government departments often do not understand what needs to be done to implement digital changes.

For this report, we looked at five public sector organisations at different stages of digital development. We found many dedicated staff doing good work, and encouraging signs for the future. We also identified five challenges that need to be addressed across departments to make digital government a success, and these are set out below.

Moving from small changes to transformation

In 2010, the new Coalition Government made a break with the past. It brought new people in to set up the Government Digital Service (GDS) in the Cabinet Office. Government websites were brought together into GOV.UK and large IT outsourcing contracts became subject to strict controls. This started the process of bringing more people with digital skills into government, who were sent across government to help introduce new digital services.

There was a lot of conflict and resistance to change, some failure and some success. Departments started to build their own digital capability. The challenge now is to move from relatively small changes to start to make the big changes – often called 'transformation' – that will really improve services and save money. These changes will extend far beyond the remit of the chief information or digital officers. Making it happen requires a big increase in the capability of the leadership of departments and agencies.

Recommendation

Understanding digital transformation needs to be part of the preparation of civil servants for leadership roles. The expansion of the Department for Work and Pensions (DWP) Digital Academy is a welcome first step towards equipping government leaders. The following further steps are necessary:

- The head of the Civil Service should ensure that leaders of departments take time to learn from experienced public and private sector peers about how to lead digital transformation.
- The Major Projects Leadership Academy should prepare officials for managing transformation programmes, most of which will include a significant digital component.

Bringing policy and implementation together

Whitehall has a long tradition of making policy without sufficient attention being given to the practicalities of implementation. Digital projects have been no exception. New digital approaches can help to address the policy–implementation gap, by bringing user research and constant adaptation to the fore. But digital and policy specialists need to work together, not in relay.

Recommendation

The Whitehall heads of profession for policy, and for digital, data and technology, should publish guidance on making policy that uses digital technology and methods.

Tackling IT legacies

Some big public services run on computers from the 1980s. These legacy systems are slow, keep data fragmented and prevent services from being joined up. New IT is more flexible and can work as an ecosystem, rather than as a series of silos, creating economies of scale and joined-up services. Bringing IT in-house by ending large contracts is often necessary to make these changes. As Iain Patterson – former chief technology officer of the Driver & Vehicle Licensing Agency (DVLA) – put it, 'you can't transform what you don't control'.[6] There are risks in changing systems but it is a necessary step towards digital government.

Adapting traditional governance to digital projects

Whitehall's traditional approach to the control and assurance of projects (governance) was to lock down requirements at the start of a project, set a timetable, and then progress in a linear fashion from design to implementation (in a 'waterfall'). But the digital world has found that people do not know what they want until they see it, and that locking down requirements early on leads to software that people do not want to use. So they develop prototypes, testing them frequently with users, and adapting them quickly (hence 'agile').

The arrival of digital technology has not removed the competing objectives and complex accountabilities of government, and teams must often recognise that they are part of a big programme with numerous interconnections. But governance of agile projects requires a specialist understanding of how they work.

Recommendation

Learning how to best control and check the progress of digital projects (their governance) should be a core part of professional development for senior roles across the Civil Service, so that standards in this area are lifted.

Building a digitally capable workforce, and keeping it

Decades of outsourcing left government without the staff with the technical skills needed to make transformative change. This is compounded by a highly competitive labour market – particularly in and around London – and a 'Whitehall merry-go-round', which sees departments poaching each other's staff. As one of our interviewees put it, 'literally everyone is begging for people'.

Recommendation

Government should promptly conclude its review of reward structures and career paths for digital specialists and commit to implementing its recommendations. The head of digital, data and technology professions and the chief people officer should press ahead with developing the digital profession. The Cabinet Office (including GDS) and departments should accelerate building centres of digital expertise outside London.

The role of the centre

We found that GDS has played an important role in bringing new digital capability into government. But, in the absence of a new digital strategy, its role is unclear. GDS needs to re-equip itself to support a government that now has rapidly developing digital capability, and high ambitions for change.

Recommendation

The government digital strategy should define the roles of departments, agencies and GDS in addressing the challenges outlined in this report. In addition:

- GDS should continue to set, support and enforce central standards for user experience and to ensure interoperability. Given the increasing risk of cyber-attacks, setting, supporting and enforcing security standards is a high priority for the centre of government.

- The head of function for digital, data and technology should continue to oversee the appointment of digital leaders, sitting on appointment panels for key appointments.

- GDS should use its expertise and strategic overview of government to identify priority work and capability gaps, and deploy teams into departments to support their work where necessary.

- GDS should place less emphasis on developing applications for cross-government use, only doing so where the market does not provide good options.

- Departments and agencies, supported by GDS, need to work together more closely to develop joined-up services and identify large savings.

This report is for anyone who is interested in learning how government can make this transformation happen.

1. Context

The changing face of computing

The digital changes that started in 2010 with the Coalition Government were the latest in a long series of efforts to make government more effective through IT – there have been computers in government for as long as there have been computers.

But the internet has changed things. As we wrote in our 2011 report, *System Error:*

> *Computing is currently undergoing a fourth wave of change. The first wave (1956–1976) saw the introduction of centralised mainframe computers, the second (1976–1992) saw the rise of personal computers, which evolved into a third wave of networked computing (1992–2008).*[7]

Online (or 'e-') government appeared in the third wave, allowing citizens to interact with government via the internet, accessing information or filling out forms. Now, more robust and ubiquitous computer networks have opened up even greater possibilities. They have ushered in a fourth wave, which government describes as 'digital'.

It is no longer necessary for IT systems to operate in isolation – a single system, for a single process. It is now possible to create ecosystems, where data and processes are shared.[8] Within such ecosystems, formerly discrete systems and processes can be joined up, creating economies of scale, and more holistic, person-centred services (like the hypothetical 'my new baby' online service). New services can be built or changed rapidly.

Organisations that are structured to make the most of these technological advances are similarly designed to allow working across boundaries and swift decision making. Prototypes and testing replace detailed planning, producing usable outputs rapidly.

Government cannot make the most of these technologies and working practices by doing the same things slightly differently – it must make fundamental changes. 'Digital transformation' implies transformation at several levels:

- **services:** from paper passport applications, to an online application which citizens must print, sign and post, to an online service which allows citizens to take their passport photo with their phone
- **processes:** changing the way departments operate and manage a service internally
- **working practices:** introducing 'agile' project management and governance (see pp. 20–22), learning by doing, and making policies with prototypes as well as documents
- **technology:** updating the ageing computer systems that underpin government operations (see p. 19)
- **organisations:** introducing new operating models, which facilitate work that crosses organisational boundaries and lines of accountability.

As a recent review of IT in the NHS found, these changes are both technical – involving changes in computer hardware and software – and adaptive – requiring 'substantial and long-lasting engagement between those implementing the changes and the individuals tasked with making them work'.[9] This represents a profound challenge to the way government operates. But there are compelling drivers for change.

Drivers of change

Saving money

Between 2010 and 2015, most departments' day-to-day spending was cut by more than 15% (many by more than 20%).[10] In this Parliament, they have been set a similar challenge: the 2015 Spending Review set out plans to reduce day-to-day spending by £10bn by 2019/20.[11]

But the Civil Service is now 18% smaller than it was in 2010,[12] and any large organisational changes must be made with an already reduced workforce. The task of preparing for Brexit is putting further pressures on government resources. Cabinet Secretary Jeremy Heywood has described 'digital' as the answer to this challenge, offering the means to make 'the big savings that are needed without damaging public services'.[13]

There is some evidence to support this claim. For example, in 2012, a report by GDS claimed that digitising transactional (public-facing) government services could save £1.3bn a year, primarily through reducing staff numbers.[14]

These savings would depend on shifting citizens towards digital 'channels' in their interaction with government: the report estimated that an online transaction costs 20 times less than a telephone transaction; 30 times less than a postal transaction; and 50 times less than a face-to-face transaction.[15] These figures do not take into account potential savings from renegotiating large IT contracts, or better working across departments.

For this report, we carried out case studies of the following five public sector organisations (further detail on the research methods and organisations can be found in Chapter 2 and the Appendix):

- Her Majesty's Revenue & Customs (HMRC)
- Driver & Vehicle Licensing Agency (DVLA)
- UK Trade & Investment (UKTI)
- Department for Environment, Food and Rural Affairs (Defra)
- Parliament.

These organisations made savings through digital changes in different ways:

- **Staff reductions.** HMRC reduced its salary costs by 10% from 2010 to 2014, in anticipation of savings from moving more customers online.[16] The initial reductions were made too quickly – in advance of large-scale digital change – leading to a "collapse" in service quality in 2014/15.[17] However, service levels have now recovered, and HMRC is aiming to become a 'diamond-shaped' department, substantially shrinking its administrative staff numbers.[18]

- **Insourcing and re-procurement.** A DVLA interviewee told us that they were quoted £26 million (m) by a supplier for two services, which they then built in-house (along with two more) for less than £5m.[19] Meanwhile, HMRC claims that its programme to replace the £10bn 'Aspire' IT contract – through which supplier Capgemini has managed almost all of its IT since 2004 – will cut its IT spending by £200m (24%) a year by 2020/21.[20]

- **Printing and publishing costs.** By producing official papers electronically, spending on printing and publishing by the House of Commons fell from £11.8m in 2011/12 to £7.7m in 2014/15.[21]

- **Reducing duplication.** The GOV.UK publishing platform, which brought hundreds of central government websites into one, reduced central government spending on websites by £61m in 2014/15.[22]

These are mostly small changes. They are a long way from the savings that are needed. Making larger savings will require government organisations to achieve the wider transformation outlined above.

DVLA, which has made good progress towards this transformational change, reported a £78m (19%) reduction in its net operating expenditure between 2013/14 and 2015/16.[23] Meanwhile, HMRC reported efficiency savings of £420m (11.5% of its day-to-day spending) in the same period.[24]

Our analysis suggests that if those kinds of savings are replicated by the other large transactional parts of government, **they could realise efficiency savings in the order of between £1.3bn and £2bn by 2020.**[25] However, 'efficiency savings' are not the same as spending reductions. Digital transformation requires investment. When DVLA's 'operating expenditure' fell by £78m, its staff costs actually went up.[26] HMRC's underlying efficiency savings took place in the context of an overall increase in spending, with a cash injection given in the 2015 Spending Review to make its 'Making Tax Digital' plans a reality.[27] It estimates that £700m of investment will be required to realise the £200m-a-year spending reductions promised by its Aspire contract replacement.[28]

This means that while digital change offers a cheaper way of running government in the long term, it will not be an immediate source of vast savings to government in the short term.

But there are other reasons for embracing digital change.

Improving services

As many as 82% of adults in Great Britain use the internet every day.[29] At the most basic level, digitisation allows citizens to interact with government in the same way they do with banks, retailers and other service providers. Survey data from the regulator Ofcom suggests that this is increasingly a reality: 66% of its respondents had completed government processes online, compared to 66% who had used online banking and 82% who had shopped online.[30]

However, many of these interactions are not fully digitised. The online passport application process, for example, requires a citizen to print out a declaration, sign it and post it back to the Passport Office. To claim tax credits, a citizen can fill out an online form – to get sent a paper form in the post. These processes are not only inconvenient: they also cost money for citizens, businesses and government. A truly digital service allows all parts of an interaction – from 'end to end' – to be carried out automatically – like the new passport renewal service, which allows a citizen to take a new photo with their phone.

Furthermore, creating interoperable IT and data infrastructure offers opportunities to rethink the way services are provided. At a small scale, this means, for example, that citizens do not have to take a separate photograph for their driving licence; their passport photograph appears automatically. A more system-wide example is Universal Credit, which seeks to bring multiple benefit and tax credit regimes into one. In the long term, the multiple bureaucratic interactions required after a baby is born, for example, could be merged into a single online service.

It is not just the technological elements of digital reform that offer the potential to improve public services. So too do the *working practices* that have grown up around these technologies: face-to-face research with users, frequent prototyping and testing, ongoing collection of performance data and extensive data analysis. A relentless focus on how people *actually* use and respond to government services is vital to the digital reform agenda.

These changes benefit government as well as users. Making it easier for people to pay the correct amount of tax "is not just fluffy stuff", as one of our interviewees put it; it will increase the amount of money that government collects.[31] The narrative of improving services for citizens can also motivate staff experiencing otherwise disruptive change in their organisations.[32]

Mitigating the risk of failure

The record of introducing new IT in government is often one of failure, sometimes catastrophic. This is not unique to government – a study of over 1,000 private- and public-sector IT change projects in Europe and the United States found average cost overruns of 20%, with one in six projects overspending by an average of 200%.[33]

Of course, most government IT services and systems in the UK work well most of the time – without the National Audit Office and Public Accounts Committee post-mortems and press reports, we do not hear about them. However, a 2006 comparative study found the UK to be 'a world leader in ineffective IT schemes for government'.[34] Over the past 30 years, successive outsourced IT projects have been announced with the promise of revolutionising public services – such as the £6bn NHS National Programme for IT in 2002, and the £513m national offender database in 2004 – only to end with overspending and under-achieving. Since the year 2000, over £10bn has been spent on government IT projects that did not provide their intended benefits.[35]

This level of waste is simply not sustainable. Our 2011 report, *System Error*, suggested adopting an 'agile' approach to IT development – 'modular and iterative development based on user involvement and feedback'.[36] This would allow IT systems to evolve, as the complex problems they were designed to tackle changed or became clearer. This approach does not prevent failure, but it mitigates risk: starting small means that the impact of failure is minimised, while the constant feedback highlights problems earlier.

We have seen examples of successful agile projects in government – DVLA's service management teams, HMRC's tax credits service and Parliament's Q&A project – but taking an agile approach does not remove the risk of failure, particularly if it is poorly used. The experience of the Common Agricultural Policy Delivery Programme[37] and the first phase of Universal Credit[38] demonstrates the dangers of attempting to use agile approaches at scale and within a tight timescale without sufficient capability or experience. Projects need appropriate governance to stay on track (see pp. 20–22).

In the meantime, failure to change government IT also involves great risks. Parts of the IT infrastructure that run our core public services – from pensions to prescriptions – are decades old and together hold large amounts of personal data on citizens. They are vulnerable to

new security threats, difficult to adapt, and the skills required to run and update them are increasingly scarce in the workforce.[39] Updating these systems is not optional (see p. 19).

Making a success of digital government

When we first wrote about agile approaches and a more ecosystem-like IT 'platform' in 2011,[40] some parts of government – such as DWP – were beginning to try to put them into practice. Since then, active steps have been taken to introduce these ways of working to the whole of government, driven by (but by no means confined to) GDS.

GDS's 2012 government digital strategy[41] set out the vision for digital government that is now being pursued. Its IT spending controls (see Box 3 on pp. 27–28) have effectively ended the age of large, outsourced IT contracts, making a government IT ecosystem possible. Its Digital Service Standard assessment process – which new public-facing online services have to go through – has made agile development and user-centred design mandatory.[42]

Since then, digital approaches have spread well beyond GDS. Every government department and many agencies now have their own digital capabilities, building new, online services in an agile way. We now have the opportunity to identify what is working – and what is not – as government steps up its digital ambitions.

However, we have found that the success of this agenda is far from assured. Government is not a start-up. To make the most of what digital has to offer, it must contend with deep legacies – technological, organisational and cultural – which run counter to the collaborative and iterative processes that digital working demands.

These legacies cannot be simply removed or ignored – they need to be carefully managed and, over time, transformed. Overcoming them is a challenge that the whole of government faces, not just its IT departments.

We have identified five challenges that government leaders must tackle in order to implement digital reforms successfully:

- moving from small changes to transformation
- bringing policy and implementation together
- tackling IT legacies
- adapting project governance
- building a digitally capable workforce, and keeping it.

This is not an exhaustive list. Other challenges involved in fully implementing digital reform include updating and co-ordinating government's approach to data, and updating contracting and procurement processes to allow government to work more effectively with small- and medium-sized enterprises. All of these elements are important, but they cannot be tackled unless the fundamental issues we describe above are addressed.

2. Five digital programmes

As noted in Chapter 1, the findings of this report are based on five public sector case study organisations:

- Her Majesty's Revenue & Customs (HMRC)
- Driver & Vehicle Licensing Agency (DVLA)
- UK Trade & Investment (UKTI)
- Department for Environment, Food and Rural Affairs (Defra)
- Parliament.

We wanted our case studies to reflect the different role that digital change is playing across the public sector, and the varied levels of maturity. Each organisation performs very different tasks and has a very different history of IT-enabled change. HMRC and DVLA, for example, are transaction-focused departments, while UKTI, Defra and Parliament have been less digitally driven but are looking to change the way they work.

For each of the case study organisations, Table 1 sets out what they do, their scale, the aims they have for digital changes in their organisation, digital activity already under way and key challenges. Further detail on the five organisations can be found in the Appendix.

As part of our research we undertook 35 research interviews, and had many other conversations, with people involved in digital reform across and outside government. We took a full cross-section of people involved in transformation, from directors general and chief executives, to user researchers and developers, and spoke to people from outside digital teams as well as those directly involved in implementing digital change.

Table 1: The five case study organisations

Organisation	What it does	Scale	Aim of digital changes	Digital activity under way	Key challenges
HMRC	■ Collects and protects tax revenues ■ Administers benefit and tax credit payments	■ There are over 30 million individuals liable for Income Tax in the UK, and over 2 million traders registered for Value Added Tax (VAT)[43] ■ In 2013, 98% of Corporation Tax returns and 99% of VAT returns were filed online[44]	■ To redesign online digital services to improve customer experience, boost compliance and increase take-up of digital channel ■ To automate back-office processes and reduce staff headcount ■ To save money and improve resilience by reconfiguring IT infrastructure	■ Exit from Aspire (the largest IT outsourcing contract in government history) has been negotiated for 2017 – expected to reduce IT spending by 24% (£200m) a year by 2021[45] ■ Building an in-house digital capability (from six to 800 people between 2012 and 2016)[46]	■ Scale of ambition: achieving £717m cost savings a year by 2019/20[47] ■ Moving from a large IT contract with one prime supplier, to multiple contracts (potentially hundreds)[48]
DVLA	■ Maintains records for vehicles and drivers in the UK ■ Administers Vehicle Excise Duty	■ DVLA currently holds 47 million driver records and 39 million vehicle records ■ 33 million people tax their vehicles online, 70% apply for their first licence online and digital take-up across all services is now over 90%[49]	■ To provide online services for key transactions to reduce costs and improve customer experience ■ To increase automation to make processes faster and less expensive ■ To reconfigure IT through a gradual transition from legacy estate and exit of outsource contract	■ Organisational redesign to focus on service managers with multidisciplinary teams ■ Exit of a longstanding outsourcing contract, with expected savings of £200m ■ Reduction of 19% in operating expenditure from 2013/14 baseline[50]	■ Tackling the complex legacy systems that sit behind many of its digital services

Organisation	What it does	Scale	Aim of digital changes	Digital activity under way	Key challenges
UKTI	■ A non-ministerial department, it focuses on increasing the number of exporters and inward investors ■ Now part of the Department for International Trade	■ In 2014/15, 50,000 UK companies exported and UKTI was involved in 1,610 inward investment projects[51]	■ Promotion and information sharing, using new channels to reach businesses and investors ■ To be an early pioneer of social media in government, but until recently digital did not go much beyond this	■ Spring 2015 saw the arrival of Francis Maude as Minister of State for Trade and Investment and the appointment of a new digital director ■ An 'Ideas Lab' has been established – an internal unit providing evidence-based research, using an agile approach	■ Clarity on the role and ambition for digital ■ Establishing a team with the capabilities required to implement digital change ■ A continued sense that face-to-face interaction is critical to the UKTI's business
Defra	■ Safeguards our natural environment ■ Supports food and farming industries ■ Sustains the rural economy	■ Defra is supported by 34 arm's-length bodies ■ Each year, it (currently) administers over £2bn of European Union payments to support farmers and the rural economy, issues 67,000 animal and 12,000 plant export certificates, and contributes to decisions on 30,000 planning applications[52]	■ Between now and 2020, the Digital Transformation Programme will be driven by business leads from Defra Group to transform services – enabled by digital technology ■ The focus is now on 'One Defra', bringing all the department's agencies closer together and sharing where possible ■ Digital is a big component, with data acting as a catalyst for collaboration between organisations	■ Two GDS exemplar programmes: waste carrier registration and rural payments. The former went relatively smoothly; the latter encountered big challenges and 40% cost increases[53] ■ Successful record on data, releasing a record 11,000 open datasets in 2015/16[54] ■ During this Parliament, Defra will spend £66m in capital on digital and data projects to realise forecasted benefits of around £100m	■ Current autonomy of agencies with different ways of working, different datasets, multiplicity of systems and services, and processes that are not easily centralised

Organisation	What it does	Scale	Aim of digital changes	Digital activity under way	Key challenges
Parliament	■ Comprised of the House of Lords and House of Commons ■ Includes multiple autonomous departments and offices to support the House of Lords and House of Commons (e.g. Scrutiny Unit, Private Bill Offices)	■ Parliament hosts 650 MPs and 800 Lords and their staff ■ Produces 80 million printed pages a year ■ In 2014/15, Parliament's website had 70.9 million visits[55]	■ To automate internal business processes, channelling information between members, staff and the public	■ Process for answering Parliamentary Questions was digitised in 2014 ■ Following this, the Parliamentary Digital Service was established, and to date its most visible task has been a refresh of the Parliament website	■ A siloed organisational culture, with resistance to change

3. Challenges

Moving from small changes to transformation

GDS, the Government Digital Service, was set up in 2011 under Francis Maude, then Minister for the Cabinet Office. When he asked Mike Bracken, his new executive director for digital, for a strategy, he was told: 'The strategy is we're just going to get on and do it ... the strategy is delivery.'[56] Bracken's belief was that digital teams should be allowed to get on and make digital services that worked for users. If the first thing they make does not achieve the right outcomes, the adaptive nature of digital technologies allows them to make quick changes, and iterate towards a better outcome.

The GDS 'exemplar' programme was an expression of this principle: GDS supported the departments with the highest number of 'transactions' with citizens and businesses to quickly develop digital services to demonstrate the value of their methods and principles. Of the original 25 exemplars, 16 are now live, fully operational online services, which collectively processed over 22 million transactions in the past year.[57] In spite of some high-profile failures – such as the withdrawal of online applications in the rural payments exemplar at a crucial moment, and the temporary collapse of the voter registration system prior to the European Union referendum – most have achieved high levels of user satisfaction.[58] Even where the projects did not go live within the original timeframe, the programme catalysed digital activity – for example at the Land Registry, which won an award for its MapSearch service, which grew out of its exemplar project.

This was the real value of this initial activity: bringing new capabilities into an organisation, and allowing them to learn by doing. It also helped to turn the concept of a digital service into something tangible for everyone else. As Lord Freud, the minister responsible for Universal Credit, put it: 'Most organisations find it extraordinarily hard to work with something which is a concept, which doesn't exist ... Get something out quick, because then the organisation can see what it's dealing with.'[59]

However, if digital teams remain stuck within this initial phase, bolted on to an organisation's core activities, they risk becoming an internal consultancy – responding to requests from individual project teams, digitising existing processes in isolation. To create joined-up, consistent services, which benefit from economies of scale, digital activity must be empowered to transcend these organisational boundaries.

New operating models are needed – to ensure that decisions about citizen- and business-facing services are made in a consistent way, with digitally enabled, system-wide change in mind. The responsibility to make this happen extends far beyond the remit of chief information officers and digital leaders – it is a task that the whole leadership of an organisation must undertake.

The organisations we have looked at have approached this task in different ways. For example, HMRC convened a multidisciplinary team of directors from across the organisation – from digital, policy and operations – to create and own the department's 'blueprint'.[60] This ensured that all parts of the organisation understood their relationship to one another, and were signed up to making it work.

Similarly, at the DWP, the responsible minister Lord Freud convened a multidisciplinary team, including special advisers and legal and technical professionals, to collectively make key decisions regarding Universal Credit.[61]

This is not just a matter of enabling lateral working. In 2015, DVLA brought in four 'service managers' to join its senior team. These managers had overall accountability for DVLA's services, but crucially had a remit to focus on customer needs.[62]

For smaller departments, this operating model may extend across organisational boundaries. For example, Defra is currently taking a cross-organisational ('One Defra') view, bringing all the department's agencies together to work more closely and share where possible. Digital is a big component, with data acting as a catalyst for collaboration between organisations.

This is a new approach to organisational management, requiring knowledge of what all disciplines – including digital – can offer. Making it happen therefore requires the entire leadership of an organisation to be aware of, and engaged with, the possibilities that digital change has to offer. Government leaders need to understand digital; and digital leaders need to understand government.

Bringing policy and implementation together

There is a longstanding gap between policy and (IT) implementation

The disconnect between policy and implementation is a deep-rooted problem in Whitehall. In our previous research, we found that a 'lack of dialogue' between policy designers and the people who implement policies seriously increased the risk of failure, leading to 'designs that are based on unrealistic predictions about how people will behave'. 'Innovation' in policymaking is encouraged, but emphasis is often placed on 'coming up with ingenious solutions' rather than 'prototyping and innovation'.[63]

In the 'old world' of outsourced government IT, these problems have been exacerbated by the customer–supplier relationship: "The business came up [to the supplier] and said: 'I've written this requirement in a darkened room with four of my [higher executive officers] ... Deliver that for us. Just deliver it. We'll see it when it's done'."[64]

Contract-management practices have made it difficult for policymakers to test or make changes to IT systems during development, even if they wanted to. For example, according to the National Audit Office, the Home Office had 'no rights to further elaborate requirements' once the contract for its new e-borders system with American firm Raytheon had been signed.[65] Another study found that changes to UK government IT contracts brought about by changes in policy could increase their cost by four to six times their original value.[66]

In-house digital teams can bridge this gap – but only if they are brought into the process early enough

In-house development teams can make changes to IT systems without incurring these costs, allowing the systems to evolve as the policy does. Moreover, the key elements of digital working practices – building quick prototypes, testing them with citizens and iterating until they achieve the desired outcome – can provide an antidote to the perennial implementation problems described above. Advanced data analytics can provide new insights to old policy issues. The digital reform agenda clearly has a lot to offer the policymaking process, if digital and policy teams work well together.

However, if iterative methods and data analytics are brought in too late in the policymaking process, their benefits cannot be realised. As one of our interviewees, who previously worked in the private sector, put it:

> *In a commercial organisation … I could pick up the phone and say 'there's a business rule here that isn't really going to work, I'm going to build it slightly differently…. Can you change the Ts and Cs [terms and conditions] slightly?' … That would be a five-minute conversation. In order to change business rules here, even if people accept it as an acceptable conversation to have (which they don't always), it's got to go through Parliament.*[67]

At HMRC, we heard several examples of legislation that was getting in the way of providing simple, joined-up services: different tax schemes have different definitions of a household, an address and income written into the law.[68] Similarly, the Carer's Allowance service at DWP was hampered by the need for a signature on paper. In its previous form, the online service had required applicants to print off a final declaration, sign it and send it in. It took a collaborative effort between policy, legal, security and digital teams – bolstered by evidence of the problems that this signature process caused for claimants – to change the policy rules and allow an online declaration.[69]

Sometimes, these barriers are about customs rather than legislation, but it takes knowledge and understanding of the policy process to unpick this. For instance, DVLA had long assumed that its automatic number plate recognition technology had to be approved by the Home Office, when a new policy director arrived who began asking why this was. After six months of persistent questioning, it became clear that this assumption had no legislative basis, which has opened up many new possibilities for all of DVLA's enforcement activities.[70]

> "People with a good understanding of technology can generate policy ideas that may not have been otherwise apparent."

People with a good understanding of technology can generate policy ideas that may not have been otherwise apparent. For example, the Greater London Authority uses a toll (the Congestion Charge) to reduce congestion and raise revenue. Thirty years ago, this policy would not have been appropriate: queues at toll booths around inner London would have contributed to congestion as much as diminished it. Technological change – allowing licence plate recognition, electronic payments and data-matching – has made toll booths and paper tickets unnecessary.[71] Knowledge of the technological possibilities was the key to good policy design.

This means embracing a new kind of policymaking

A new kind of policymaking is required, where multidisciplinary teams – including policy managers, user researchers, developers and designers – work together to develop policy solutions at the same time. This is being tentatively tested in some parts of government (see Box 1), and has been hailed as a key factor in setting DWP's Universal Credit project on the road to recovery.[72]

This multidisciplinary working is about more than just bringing digital skills into policymaking. While digital methods may make a big contribution to policy design, the skills involved in getting policies

agreed – working with ministers, understanding the needs and interests of the administrative machinery and external stakeholders, and working with Parliament – are essential. It is vital that digital teams understand policy and the workings of government, otherwise there is a danger that they "just run head-first into [perceived policy barriers], get really irritable and leave".[73]

The arguments for change are compelling. But the barriers to bridging the policy–implementation gap, which we identified in 2011 – short timelines, political momentum and the higher status of policy expertise – have not disappeared, and make the new kind of policy development challenging.[74] Not only does it require a new operating model, as described above – it also requires a new relationship with ministers. Ministers need to embrace a new kind of conversation about policy, based on prototypes as well as submissions.

BOX 1: MEETING THE CHALLENGE: CONNECTING POLICY AND DIGITAL

UK Trade & Investment Ideas Lab

The UKTI Ideas Lab worked to introduce digital methods – intensive customer research, prototyping and testing – into the policy cycle. Now the Trade Design Lab in the Department for International Trade, the team in UKTI acted as an internal consultancy, like the Research & Development (R&D) division of a private company, testing and researching ideas from different parts of the organisation. This included policy, and they were able to successfully push back on requests, where their evidence suggested it was not the right move.

Making Tax Digital programme

The Making Tax Digital programme at HMRC is currently attempting to "iterate the policy and the [business] rules, and the solution, and the customer experience, all at the same time".[75] This is a joint policy–technical project, designed to increase compliance (that is, ensure that people pay the right amount of tax) by reducing the administrative burden on business taxpayers (including self-employed people) and by allowing a real-time exchange of information between businesses and HMRC. In practice, this means building application program interfaces (APIs) and working with third-party software developers to create record-keeping software that automatically creates and sends quarterly accounts updates to HMRC. The policy side of this will take a long time to develop, with consultations under way this year.[76] However, technical work is already well under way, feeding into the business case, and informing the policy conversation.

Out-of-court pathway discovery

In 2015, the Ministry of Justice convened a multidisciplinary team – including policy managers, user researchers and designers – to investigate how government could usefully intervene to help separating parents make arrangements for their children outside of court. With strong ministerial interest, they used a mixture of traditional policy research methods (such as extensive desk research) and digital techniques of prototyping, creating personas and intensive testing with users. Armed with new insights and a set of principles, they are beginning to develop some services in this area.

Tackling IT legacies

Technological change is a key component of digital change

Organisational change is necessary for digital reform, but updating and reforming the technological infrastructure that underpins many services – often known as the IT 'legacy' – is an indispensable element of it.

We have seen new government services limited by the underlying systems: some were unable to run 24/7 due to reliance on batch processing (done overnight rather than in real time) and new websites crashed in their first few days because servers could not handle the traffic surge.[77] Some of these systems have been around for so long that the skills required to manage them no longer exist in the workforce.[78]

These systems are often designed and built for specific tasks. They are often located in a particular place rather than provided through the 'cloud', which means that government (like many banks) is littered with them; in 2010, there were 220 data centres across central government, each using an average of just 7% of available capacity.[79]

Some organisations have adopted workarounds

Legacy systems are problematic. But replacing them requires skills and resources that many departments lack.

It is possible to build digital services on top of legacy systems. Many of the 'quick wins' of digital government have done just this, focusing on the 'front end' of customer interaction. For example, the second of GDS's digital exemplars to go live – voter registration – was not in fact a voter registration system: it collected citizens' details, packaged the information and sent it off to local authorities to be processed. For the most part, local authorities treated these applications in much the same way as they did the paper ones: only once this was done was a person registered to vote.

Of course, these 'front-end' projects often cannot be implemented without working with the legacy IT. The voter registration service, for example, had to interact with existing DWP systems. Making these interactions possible often involves building more functionality and 'middleware' on top of them. Rather than replacing an old, complicated and heavily customised system, a new layer is created between it and the online service, which pulls data out of the legacy system but leaves it otherwise unchanged.

The issue with this is that if "you build and build and build, it becomes a bigger job" to eventually replace the legacy technology.[80] Moreover, it means that government is only able to realise a small part – better online customer interaction for existing services – of what digital has to offer.

Capturing the potential benefits of digital transformation requires a new kind of flexible IT architecture. This means taking a modular – or 'platform' – approach, prioritising interoperability and sharing. As one of our interviewees described it: "You've got all these jigsaw pieces. 'I need one of them, one of them, one of them.' And you just plug [them] in as and when you need them."[81]

This will save money – by increasing automation, reducing duplication and allowing government to buy certain standard elements of their IT systems off the shelf – and create more flexible systems that can be reconfigured to respond quickly to changing policies. This is something that legacy IT systems cannot do.

For large transactional departments in particular, bringing control of their IT infrastructure in-house is a necessary first step to bring about this change. As Iain Patterson – former chief technology officer of DVLA – put it: 'You can't transform what you don't control.'[82] Under the GDS spending controls (see Box 3 on pp. 27–28), departments and agencies are no longer able to hand over control of their IT to a single supplier; they must directly engage with a range of suppliers, or build and maintain systems themselves.[83]

Now, starting to take charge of their own IT destiny, government organisations are taking a platform approach to their IT infrastructure. For example, HMRC, in the process of exiting from its £10bn Aspire IT contract (see p. 38), is attempting to integrate the disparate parts of its IT infrastructure into a single system. This will have functionality that can be shared between different HMRC processes (dealing with different tax regimes) – and potentially with other organisations.[84] We also found that Adur and Worthing Councils were developing their own platform to replace their legacy systems.

Meanwhile, GDS is working on cross-government platforms, and there are commercially available products that development teams can plug into their services. This kind of sharing between departments is clearly an important part of the evolution of government's IT infrastructure. However, as we discuss in Chapter 5, implementing this kind of cross-departmental change is as much an organisational challenge as a technical one.

Adapting traditional governance to digital projects

Digital projects must fit in with long-established processes

The term 'governance' refers to the management and reporting systems used to guide programmes and projects, and to check (or 'assure') that they are progressing as they should. In government, these systems have to give Parliament, leaders and citizens the confidence that policy is being implemented, money is not being wasted and multiple – sometimes competing – objectives are being managed.

Governance of programmes and projects is supplemented by cross-government rules and processes. For example:

- the Treasury sets principles and rules governing public expenditure and appraising spending
- the Cabinet Office has further spending controls
- the Infrastructure and Projects Authority has its own assurance process for major projects.

For the centre of government, these governance mechanisms provide oversight and assurance for policies and projects across government.

For digital teams, however, they can be sources of regular frustration,[85] as they find themselves in a complicated web of established governance. Digital development is based around an agile methodology. It is successful when it has responsive and decisive governance; but we heard that in government, that is often not the case.

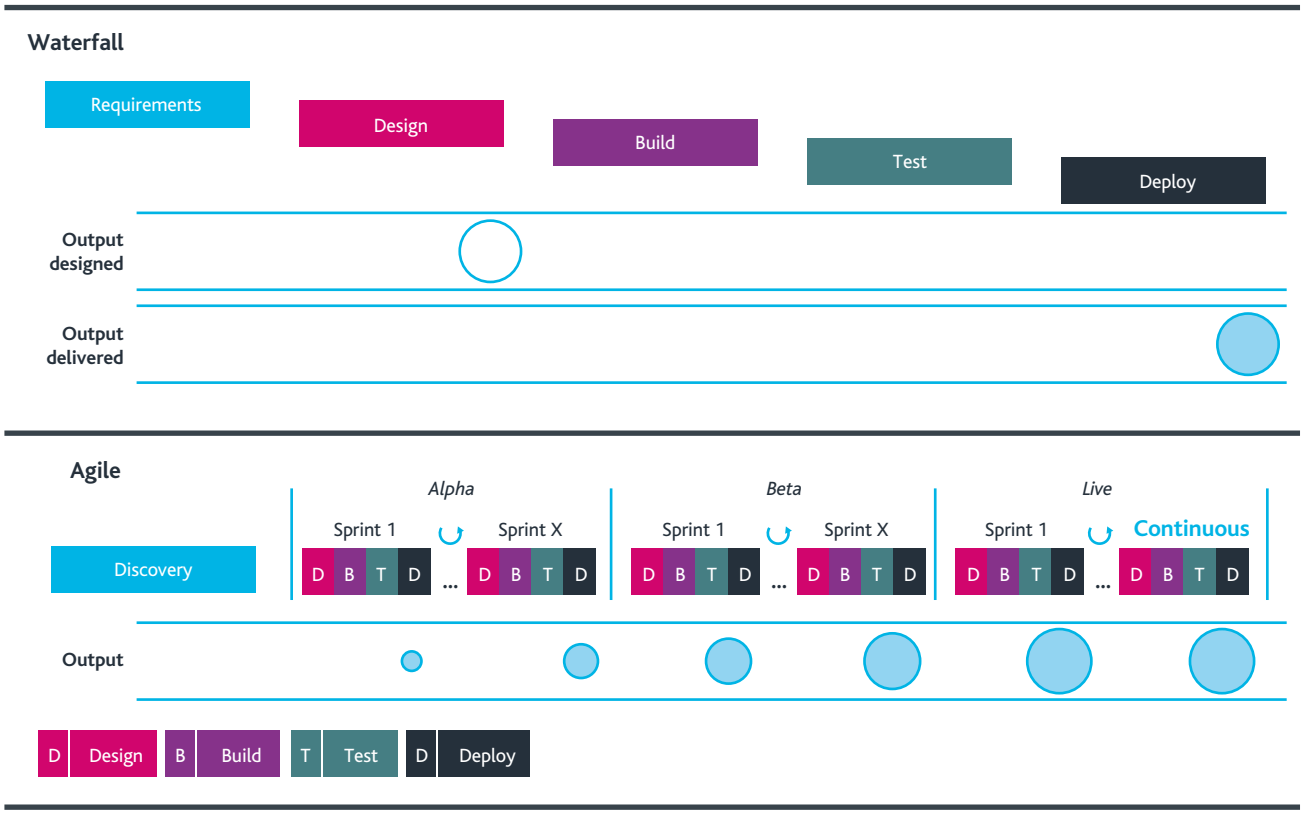
Agile approaches have changed the way IT is developed and implemented in government

In our 2011 report, *System Error*, we recognised the positive impact that agile approaches could have on government IT and the implementation of IT-enabled change.[86]

Government's previous approach to governing IT projects (often referred to as a 'waterfall' approach) was to lock down the requirements at the outset, set a timetable and progress in a linear fashion from design to implementation. Although a waterfall approach provides a clear project specification, in reality it often produced systems that had low user satisfaction and were implemented late or failed to realise benefits. In addition, there were high costs for even simple changes – ones that were necessary as technology rapidly advanced.[87]

Agile approaches offer an alternative. They recognise inherent uncertainty; the upfront design is minimised and there are frequent iterations of emerging products with customers. Multidisciplinary teams are given the autonomy to manage this uncertainty and adapt as they progress (see Figure 1).

Figure 1: 'Waterfall' vs 'agile' project management approaches



Waterfall approaches aim to lock down the product, timelines and costs upfront (even if they end up changing dramatically), while agile project teams are driven by customer research, iteration and flexibility – reducing the risk that is taken in each part of the project. Agile approaches are not, however, a substitute or replacement for core project and programme management disciplines – managing risk, engaging stakeholders and monitoring dependencies are still critical.

We identified in our 2011 report that, to be successful, agile project management needs effective governance.[88] Five years later, our work has reinforced this point – we have heard from digital teams that governance is one of the key challenges they face.[89]

Governance needs to balance flexibility with certainty

When digital teams sit within wider transformation programmes, as they often do in government, there is a tension between agile approaches and the specificity required for interconnected programmes.

Agile development requires iteration and flexible timelines; yet big programmes have interdependencies and often firm deadlines, particularly if they are aiming to achieve savings. As one director general told us: "However agile we want to be, we've got to work towards a date."[90] If a new service is being built, teams need to know, for example, what training to design, who will need it and when. Elastic dates and evolving designs make planning things like this almost impossible. The House of Commons Public Accounts Committee and the National Audit Office have cited this lack of certainty as a cause of the failure of the Common Agricultural Policy Delivery Programme.[91]

Our interviewees all recognised the tension between agile implementation and government's responsibility to provide assurance for taxpayers' money. The challenge is not getting people to implement agile projects, but creating the environment in which it is possible to do it successfully.

Traditional governance in Whitehall does not work for digital projects

There is no shortage in government of supporters for agile approaches, and the GDS's Digital Service Standards require them to be used, but most of the other established governance mechanisms are designed to operate in a waterfall manner. Recognising the value of agile approaches, government has attempted to adapt and outline how agile relates to *The Green Book* (the Treasury's guidance on appraising business plans for proposed projects)[92] and the processes through which the Infrastructure and Projects Authority assures major projects.[93]

But digital teams used to a much purer version of agile approaches still see "great machines [of governance] built on top of them".[94] They see it as extensive reporting; having to satisfy the centre of government as well as departments, with long lead times as decisions go up the chain and then back down. The result is frustrated digital teams and almost invariably delays.[95] We heard of some governance decisions taking almost as long as their first (Alpha) phase of development and one department told us that, at one point, all of its projects that were behind schedule were waiting for approvals from the Cabinet Office.[96]

Digital teams have also tried to adapt. Some have individuals with the explicit remit of managing the upward and outward governance requirements and reporting.[97] This might keep the processes moving, but it does not address the wider issues caused by the multitude of interested parties. A complicated governance landscape, unaccustomed to agile principles and practices, layered over agile teams with reduced autonomy, has caused lines of accountability and responsibility to become distorted and confused. These two elements are, as we have previously reported, critical to successful agile implementation.[98]

Digital teams are unsure of where accountability sits, who is leading things, where decisions are made or even if they are made explicitly.[99] Relationships between teams, their senior responsible

owner and internal organisational governance are not clear[100] so submissions are being signed off four or five times.[101] In this environment, agile approaches, which depend on flexibility and responsiveness, become difficult.

Scrutiny and assurance are critical in government, so digital transformation is unlikely to do away with the complex lines of accountability, and competing interests are sometimes unavoidable. Teams must recognise that, when they are part of big traditional change programmes, with numerous interdependencies, there will be trade-offs to be made. The challenge, then, is finding a governance model that can match the best elements of established governance with the benefits of an agile methodology.

Building a digitally capable workforce, and keeping it

Building capability is a huge task

Departments have had to start from close to scratch in building digital capability. The policy of long-term outsourced IT contracts meant that there was previously little need to have civil servants trained in digital skills. Government has had to focus on building core technical skills – from software developers to systems architects – at the same time as establishing new capabilities such as user researchers, digital product managers and digitally literate strategists/analysts.

Capability is, in many ways, a legacy issue similar to the complex IT systems referred to above. But it is one that is compounded by a highly competitive external market – these skills are so sought after that people in digital roles can expect to earn an average of over £15,000 a year more than those in non-digital ones.[102]

It was suggested to us that there are around 10,000 staff in the Civil Service who are in digital roles – a large figure but still less than 3% of the total workforce. Significant gaps remain. Over a third of leaders surveyed by the National Audit Office said that they did not have the capacity to implement their digital transformation plans.[103] The frustration of trying to recruit digital staff was evident in almost every interview we conducted. As one interviewee put it: "literally everyone is begging for people".[104]

Getting the right applicants is very difficult

Our interviewees, in fierce agreement with the National Audit Office survey referred to above, cited external labour market conditions as the biggest barrier to securing staff. The level of pay required to attract digital people has seen departments go through several rounds of recruiting to produce very few applicants.[105] Interviewees felt that the only option, in a market that puts them in competition with the likes of Google and IBM, would be to break pay structures.[106] This is a barrier to attracting and retaining people at all levels of seniority.

Attraction and recruitment aside, there are challenges in getting internal approval for digital resources – particularly in a departmental context of headcount reduction and spending cuts: "If you come into a meeting and there are five new people being proposed – three digital, one marketing, one corporate centre – if marketing and corporate centre are dismissed for any valid reason, you then can't expect others in the room to just say yes to three new digital staff."[107]

Departments are finding capability workarounds

The need for people with digital skills is so great that we have seen departments find their own workarounds to some of these challenges. One option is to create a government-owned company, or GovCo – a limited company under the Companies Act 2006, but owned by government. Through a GovCo, a department has greater freedom in relation to the terms for employing staff. HMRC's GovCo has allowed it to retain knowledgeable staff as it moved its IT activity from the private sector in-house.[108] Another workaround we have seen is the introduction of additional governance structures for digital recruitment, removing decision making from forums where the context is of cuts and staff reduction.[109]

Even with these workarounds, challenges remain. The longer-term solution, in which departments are already investing, is to develop digital talent internally. There are examples of these initiatives, such as the Digital and Technology Fast Stream (which fast-tracks high-calibre new entrants towards digital roles in the Civil Service), in Box 2.

It is too early to judge the success of these schemes. Demand for staff continues to outstrip supply. As one leader said to us about the next generation of government digital talent: "Where do you think they will all go once they've got a bit of experience? They're not going to stick around on a [Civil Service] salary."[110]

BOX 2: MEETING THE CHALLENGE: TACKLING THE CAPABILITY GAP

DWP Digital Academy

The DWP Digital Academy runs an eight-week foundation course covering basic building blocks around digital, from agile methodology and user-centred design to GDS's Digital Service Standards and basic web coding. It also offers a condensed three-week course for those in the DWP Digital Service, as well as general digital awareness courses for leaders and teams both in and outside of the Digital Service. Academy graduates are buddied up with experienced practitioners and encouraged to build communities of practice. The academy has recently been brought into GDS and turned into a cross-government academy.

DVLA: TechHub Swansea

TechHub Swansea is a not-for-profit organisation supported by grants from the Welsh Assembly, Swansea University, BT and other organisations. DVLA has established a partnership with it to help support, foster and grow a vibrant, local digital community. Through it, DVLA will engage with universities, offering placements and projects to graduates, mentor start-ups, and use the skills of the businesses and start-ups using TechHub to improve its own services.[111]

Digital and Technology Fast Stream

There is now a Digital and Technology Fast Stream within the Civil Service – a four-year programme offered to new entrants. It provides the chance to work in one of the departments involved in technology or digital transformation, with roles ranging from content designer, to user researcher, to agile delivery manager.

But recruiting and retaining technical talent is a more difficult problem

While departments often too narrowly equate digital skills with IT rather than the much broader set of skills that supports business transformation, courses such as those outlined in Box 2 do not address the very real technical capability gap. Rather, they focus predominately on the more generalist digital skills such as customer insight, user experience and agile approaches. Developers and system architects are still in short supply.

We were told that in the broader technical areas, government gets the third or fourth choice from the talent pool: "If someone is worth their salt, they're probably already with one of the big suppliers."[112]

It is a different story for those not recruiting in the competitive London market. DVLA, in Swansea, is confident that, for almost all roles, it can get the right people on the right terms, with a good local pool of talent it is willing to invest in. There is, we were told, never any shortage of applications.[113] DVLA's close ties with Swansea University means that it is able to attract some of the best in the region, although it is important that pay rates remain competitive to the local market. Other departments have also set up digital delivery centres outside London, and benefit from concentration of talent: HMRC's and DWP's Newcastle-based digital teams are located in the same office complex.

The market for good digital people makes it hard to keep them

Regardless of where an office is located, government's internal market makes retaining digital talent difficult. The 'Whitehall merry-go-round' has seen teams brought in wholesale from different departments[114] or individuals offered promotions for the same role in another department or agency.[115] Interviewees spoke of their frustration that departments were outbidding one another in order to get the best people,[116] with pay differentials between departments and agencies leaving some consistently at the back of the pack.

> "Digital talent can get frustrated at the lack of clear progression, or a 'digital profession', within government."

Digital talent can get frustrated at the lack of clear progression, or a 'digital profession', within government. This is an issue that has been identified for some time, and there are efforts across Whitehall, including specific schemes by GDS, that have tried to address it. Communities of practice, such as the technical architecture community, have been established to try to bring specialists together, but they are voluntary and do not replicate the established professions in other areas of government. The process of career development can seem patchy, with clear career paths non-existent, and when this is combined with the day-to-day challenges we have described in other sections of this report, people look elsewhere – especially if they already have experience of other industries. The digital Senior Civil Service follows the pattern in the rest of the Senior Civil Service, where external hires more generally make up just under a quarter of the total, and yet account for nearly half of the resignations.[117]

While temporary staff and consultants have been a big part of successes, they are also part of the problem

The Public Accounts Committee has said that departments must strengthen the specialist skills of permanent staff,[118] but during the course of this research we found that teams are still too often turning to contractors (a short-term answer to some of the recruitment challenges) – despite all of the efforts described above. Teams rely on them heavily to fill the gaps in their teams, using procurement framework agreements with small- and medium-sized digital enterprises.[119]

Contractors have played a crucial role in building in-house capability, helping civil servants who are new to digital work to learn from their experience.[120] But departments still face a considerable challenge to get the support required, with inappropriate framework agreements with organisations and agencies providing contingent labour. We were told of numerous candidates, some even with oral commitments from a department to a job, dropping out because the recruitment process took too long.[121] Agencies and suppliers are known to miss the deadlines that are part of their service-level agreements with departments, and the departments then end up waiting for weeks only to find that unsuitable candidates are offered up.[122] These rigid, lengthy and bureaucratic processes can put digital people off, as they see it as an indicator of how life is in the public sector.

The main difficulty, however, with these short-term fixes is the way they can undermine the long-term capability building designed to remove the dependency on non-permanent staff. Contractors are, by their nature, temporary. Furthermore, it is very difficult to build an internal team, we were told, when they realise what the contractors they are working with are earning.[123]

4. The role of the centre of government

In 2010 when the Coalition Government was formed, the centre of government played a relatively small role in cross-government IT (as it was then known). Francis Maude, as Minister for the Cabinet Office, asked entrepreneur Martha Lane Fox to conduct a review. She called for 'revolution not evolution', recommending centralising and simplifying government's web presence, with the aim of improving user experience.[124] Mike Bracken was brought in to lead GDS. He was replaced in 2015 by Stephen Foreshew-Cain, who was then replaced by Kevin Cunnington in September 2016. Cunnington both runs GDS and is the cross-Whitehall head of function for digital, data and technology. Previously he was director general of digital transformation at DWP, global head of online for Vodafone Group and began his career in programming and IT consultancy.

The role of the centre of government has to be to help departments do their jobs better. Historically, reform has too often concentrated on the centralisation or decentralisation of particular powers and activities, presenting this as a zero-sum game, which either departments or the centre must lose. There is now a growing recognition that this debate is pointless. The aim is to support departments in their digital transformation programmes, for which the departments' own leadership remain responsible.

The Institute for Government identifies several roles for the centre of government,[125] a number of which are performed by the centre of digital government:

- The first role involves checking progress and assuring performance. The GDS's Digital Service Standards contribute to this function. All large transactional services must be assessed before they can be hosted on GOV.UK, ensuring that the principles and practices of digital development – user research, agile development, simplicity and interoperability – are followed. The services are assessed at several stages of development. As departments' digital capability has developed, GDS has devolved responsibility to some of them. The GDS assurance process is underpinned by spending controls (see Box 3).

BOX 3: GDS SPENDING CONTROLS

The Cabinet Office's programme of IT spending controls was introduced in 2011, as part of a wider suite of Cabinet Office spending controls. Liam Maxwell – already a Cabinet Office adviser following his co-authorship of the influential *Better for Less* report[126] – was put in charge. His team moved over to GDS in 2012, with Maxwell becoming government chief technology officer until his move to the Department for Culture, Media and Sport in 2016.[127]

Spending controls apply to any government IT spending over certain thresholds, such as technology spending over £5m. This includes all spending on the types of front-end digital projects that GDS was beginning to bring back in-house, such as identity assurance and 'any external-facing digital transaction'. In 2014, additional 'red line' IT procurement restrictions were brought in, including a ban on IT contracts over £100m.[128]

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The spending controls have several aims: not only reducing government IT spending by breaking up large contracts, but also bringing about changes in the way government thinks about IT. For example, when submitting a business case to the GDS spending control team, departments must outline the 'user need' that will be met through this additional spending, and show that due consideration has been given to open-source and cloud-based solutions.[129]

The Cabinet Office has declared the IT spending controls a success, citing savings of £391m by 2014/15.[130] The National Audit Office has questioned the accuracy of GDS's spending controls savings claims in the past, but has nevertheless suggested that – although a 'blunt instrument' – they have resulted in 'large spending reductions' for departments.[131]

Extra layers of control can prevent innovation and add transaction costs. But the spending controls have been an important tool for getting departments into a new way of thinking and working. It is right that, as departments have enhanced their capacity, the controls are now being reviewed to ensure that departments' varied needs are met.[132]

- The second role involves supporting permanent secretaries and other leaders to ensure that they have people with the right digital skills working on the departments' digital transformation programmes. Through the exemplar programme, GDS teams moved temporarily into other departments and agencies. Cunnington (as head of function for digital, data and technology) and his team are also involved in the recruitment of digital leaders across government, for example by sitting on panels that assess candidates.[133]

- The third role involves the centre bringing innovative ways of working into government. As well as the exemplar programme, and the new approaches to project management, GOV.UK also represents a more ambitious and centralised approach to the government's web presence (see Box 4).

BOX 4: GOV.UK

The idea of a single government website has been around for a long time. Open.gov.uk was launched in 1994, and there have been a number of attempts to improve it with UKonline.gov.uk (2000), BusinessLink.gov.uk (2003) and Direct.gov.uk (2004).

When the Coalition Government came to power in 2010, government was publishing millions of pages on hundreds of different websites, many of which were out of date and unused, with no consistency in presentation.[134] Government's response was GOV.UK.

There was a significant reduction in the number of web pages. While GDS and the cross-government group that drove GOV.UK felt that they were removing the superfluous, there were departments and some users who felt that critical information was being lost. We heard of crucial pages disappearing, to the point where some departments were continuing to use the old sites well after the switch to GOV.UK – taking advantage of the ability to access the dormant pages.[135]

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There was a new, consistent design, which has won design awards.[136] GDS worked hard to ensure that there was 'consistency but not uniformity', with a clear structure and different templates for different user needs. However, a focus on consistency and the needs of the general public left many people who needed to access specific government documents – particularly those relating to the operation of government itself – worse off.

GDS has come closest to the longstanding vision of a single interface for government. It is working to address the problems. However, it has a hard task ahead, earning back the trust of those whose work was impeded by the change.

GDS also performs other functions where it makes sense for the activity to happen once, rather than many times across departments and agencies.

For example, government has created a digital marketplace – three framework agreements with suppliers to help departments and agencies find resources to support their digital work:

- the Digital Outcomes and Specialists framework, which is used to find approved providers of technology or expertise, such as software developers or user researchers
- cloud services (for example, web hosting or IT health checks) through the G-Cloud framework
- physical datacentre space for services that need high levels of security or rely on legacy systems, through the Crown Hosting Data Centres framework.

There are more than 1,000 suppliers in the marketplace; GDS says that more than half of them are new suppliers to government, and 92% of them are small- and medium-sized enterprises.[137] The development of the marketplace supports the move away from giving long contracts to large suppliers, with the aim that small- and medium-sized enterprises take more of the market.

GDS is also tackling government's technology infrastructure problems. In 2010, central government had 220 data centres, using on average only 7% of capacity.[138] Now, new services are developed in the commercially provided cloud or through the Crown Hosting Data Centres framework, and the existing data centres are gradually being moved over to the new framework. The digital marketplace can be seen as reducing the transaction costs of finding the right supplier; however, it does not remove the necessity for civil servants to understand their needs and the sort of supplier and software that might be able to help.

Another essential central role is protecting digital systems against cyber-attack (see Box 5).

BOX 5: CYBER-SECURITY

As more services become digital and government shares more data internally, the risks of unauthorised access increase. There were 200 national cyber-security incidents in the UK in 2015, compared to 100 in 2014.[139] In the past, according to one interviewee, cyber-security consisted of "information assurance" – people in departments saying what they were going to do with data and digital and being told "no, you won't".[140] But there is now a cyber-presence within the government security profession.[141] And some departments are operating on a scale that requires their own cyber-security capacity. For example, HMRC has a 'director, cyber-security and information risks' position.

GDS has a role in cyber-security, through Verify, which checks individuals' identify, and security is part of the Digital Service Standard assessments. In performing this role, it is supported by Communications-Electronics Security Group (CESG), the information security arm of the Government Communications Headquarters (GCHQ). For example, CESG had concerns about the security of Universal Credit in its first phase, and based on CESG advice, GDS withheld spending approval until the concerns were addressed.

Cyber-security is an important and growing requirement for successful digital government. The centre of government needs to set and enforce clear standards, and capacity in departments and agencies will need to continue to be developed so that the standards are understood and implemented.

An additional role has been building applications at the centre that can be used across government, such as Verify (to check identity), Pay (to collect payments) and Notify (to send text messages and emails). This is driven by the desire to reduce duplication and allow development teams to focus on the elements of their services that really are unique.

Support for this programme in departments has been mixed. For example, it has been reported that HMRC – which is responsible for a large proportion of government transactions – is not planning to use Verify.[142] This risks duplication, which will be expensive for government and bad for users. But reticence to use centrally built applications is understandable. If departments' online services are still largely bound up with their legacy systems (as they mostly are), then integrating new, untested elements that they do not own increases risk.[143] In other places, departments are forging ahead with their own digital transformation at a pace that outstrips GDS. As one interviewee put it: "Departments have massive services, with millions of customers that they have to serve now. We can't wait, we can't afford to wait."[144]

The alternative is for GDS to focus exclusively on ensuring that development teams adhere to open standards, so that the things they build can interact with, and make use of, applications built elsewhere in government, or by private providers. In some cases, it may be cheaper and more effective for departments to use commercially provided applications – for activities such as sending text messages – rather than a centrally built government one. Equally, they may share applications that have been built in other departments.

Government Digital Service: the next phase

As GDS's new leadership settles in, which direction should GDS take?

While GDS and digital government do not have a record of unalloyed success, no significant change ever did. Overall, the changes in digital government since 2010 have improved services. But, as argued in this report, many challenges remain.

Cunnington has said that, in the future, GDS work will be 'about transformation – not just digital'.[145] We welcome this. Just as we argue that in departments, digital change cannot be isolated in a techy corner, so GDS needs to support the most ambitious changes that departments are making in how they work.

From the beginning, GDS has sent teams into departments and agencies to help with the change process. This needs to continue and be stepped up, engaging with the largest departments and agencies. Resistance to central intervention is natural, although it will be reduced if GDS can demonstrate a clear rationale for its involvement, and the 'rules of the game' are clear to all involved, with departments and agencies remaining responsible and accountable for their projects.

There needs to be a particular focus where services for citizens and businesses cross organisational boundaries. For example, there is a cross-government team currently trying to integrate the work of the many government departments and agencies that operate at the border. They face a huge challenge: aligning disparate policies and legislation, designing new processes, reconfiguring systems and datasets, and creating a shared architecture.

All of this will involve the organisations working more closely together than ever before, and potentially using their resources on projects that do not immediately help them. Departments do not have incentives to work on other departments' priorities, even if doing so might produce a net benefit. We would like to see GDS putting its weight behind projects of this sort – offering expertise and capacity to overcome the resource challenge, and using spending controls to incentivise joint working.

Extending its reach and impact will also require working with the other parts of government, including the following:

- **The policy profession.**[146] The policy profession aims to lift the standards of policymaking in Whitehall. Making policy using digital methods involves many of the same approaches that the policy profession has been encouraging, and it is important that GDS and the 17,000 people in the Civil Service who identify themselves as working in policy roles have complementary approaches.

- **The Infrastructure and Projects Authority (IPA).** The IPA oversees the portfolio of government's largest and riskiest projects. GDS and the IPA need to work together so that they complement rather than duplicate each other on the IPA projects that have a large digital component.

- **The Treasury.** The Treasury operates spending controls on large projects. Those involved in managing projects report having to leap through different and differently scheduled Treasury and GDS hoops, which needs to be addressed. Furthermore, the Treasury's bilateral operation of spending controls needs to form part of an overall strategy for managing risk and opportunity in digital programmes.

GDS has a vital role in building digital capability across government. This starts at the top: Kevin Cunnington, as head of function for digital, data and technology, needs to work with the head of the Civil Service to ensure that permanent secretaries and heads of agencies are equipped to oversee the changes in their organisations. The Major Projects Leadership Academy needs to strengthen its focus on digital capacity. The expansion of the DWP Digital Academy and move into GDS is a welcome step towards creating more general understanding across the Civil Service.

Cunnington should work with the Government's chief people officer to implement the recommendations of the recently published workforce strategy,[147] developing a convincing case for revised terms and conditions for technical staff. As we noted in Chapter 3, employing and retaining people with digital skills is particularly difficult in and around London. The Cabinet Office Government Property Unit is co-ordinating the creation of regional hubs of civil servants;[148] GDS should co-ordinate the creation of hubs of digital expertise within these. Finally, government should set out how it will make progress in these areas in the new, long-awaited digital strategy.

5. Conclusion

The first phase of digital transformation is over. But the promised revolution of digital government is not complete.

- Easy-to-use online services are appearing in disparate areas of civic life, allowing people to apply for a fishing licence on their phone, or plead guilty to speeding from their sofa – but they are not the norm.

- The ways of working that brought these services into being – concerted investment in online services, engaging with the people who use them early and often, starting with a prototype and constantly updating it, and bringing people with different skills together – have been introduced across government. But they are not widely understood.

- Under the spending controls process, no new large, single-supplier IT contracts will be signed, but as yet few of the existing contracts have been replaced.

Some heavily transactional parts of government – HMRC, DVLA and DWP – now have sizeable digital teams working to implement their online services. They are beginning to move into a new phase in which digital technologies and working methods will be integral to a much wider effort to change how their organisations operate.

However, moving into this new phase, and ensuring that those changes are spread across many organisations, will require government to face up to the challenges outlined in this report. It will require it to tackle some of the fundamental issues that hamper civil service reforms of all types:

- working across organisational boundaries
- bridging the gap between designing and implementing policies
- bringing expensive skills sets into the Civil Service.

The leadership of these changes will have to come from the very top of government, not the top of IT departments.

At present, that leadership is not in place. GDS is under new management, and it will take some time to solidify their approach to cross-government digital change. Government itself is under new management, with a new set of ministers (including at the Cabinet Office) busy getting to grips with their new policy agendas. Everyone – politicians and officials – is distracted by the challenge of preparing for Brexit.

We have reached a tipping point. If the leadership does not emerge to drive the changes, there is a risk that digital teams will continue to be viewed as website designers, brought in only at the very end of policy design processes. There is a risk that new governance models will not be generated, leading to the rejection or mishandling of agile project management. There is a risk that insufficient investment will be made in the capabilities needed to build new services, leading to poor quality; or to manage the newly in-house IT infrastructure, leading to failure.

Losing the momentum behind digital reform would mean more than losing the opportunity to make public services significantly better, or make savings of billions of pounds. The digital reform movement has created a community of civil servants who are vocally invested in changing government for the better. Their frequent blogging on GOV.UK goes a step beyond corporate communications exercises; their conviction spills out into passionate Twitter conversations, posts on personal blogs, and gatherings that involve mostly civil servants talking about public service, but take place outside of work and work hours.

This is the kind of employee engagement that most change programmes – inside and outside government – could only dream of. This passionate advocacy may create tension as well as enthusiasm, but if government misses the opportunity to harness it, it is unlikely to be able to generate it again.

6. Key findings and recommendations

This chapter draws together the key findings from the research we carried out for this report and sets out our recommendations for making a success of digital government.

1. Digital transformation cannot be led by digital specialists alone. But there is insufficient understanding of digital transformation among other government leaders.

Recommendation

Understanding digital transformation needs to be part of the preparation of civil servants for leadership roles. The expansion of the DWP Digital Academy is a welcome first step towards equipping government leaders. The following further steps are necessary:

- The head of the Civil Service should ensure that leaders of departments take time to learn from experienced public and private sector peers about how to lead digital transformation.
- The Major Projects Leadership Academy should prepare officials for managing transformation programmes, most of which will include a significant digital component.

2. The policy profession has not gripped the opportunities offered by digital technologies and methods. Making joined-up, simple, effective digital services has to start during policy design, not implementation.

Recommendation

The heads of profession for policy, and for digital, data and technology, should publish guidance on making policy that uses digital technology and methods.

3. The traditional processes for controlling and checking government projects are unsuitable for digital development, which causes frustration on all sides, slows development and undermines accountability.

Recommendation

Learning how to best control and check the progress (aka governance) of digital projects should be a core part of professional development for senior roles across the Civil Service, so that standards in this area are lifted.

4. Government will not be able to achieve its digital ambitions, unless the Civil Service is made a more attractive employer for people with highly sought-after digital skills.

Recommendation

Government should promptly conclude its review of reward structures and career paths for digital specialists and commit to implementing its recommendations. The head of digital, data and technology professions and the chief people officer should press ahead with developing the digital profession. The Cabinet Office (including GDS) and departments should accelerate building centres of digital expertise outside London.

5. Now that many departments have their own established digital teams, GDS's role must evolve. In the absence of an updated digital strategy, its role in the current Parliament has been unclear.

Recommendation

The government digital strategy should define the roles of departments, agencies and GDS in addressing the challenges outlined in this report. In addition:

- GDS should continue to set, support and enforce central standards for user experience and to ensure interoperability. Given the increasing risk of cyber-attacks, setting, supporting and enforcing security standards is a high priority for the centre of government.
- The head of function for digital, data and technology should continue to oversee the appointment of digital leaders, sitting on appointment panels for key appointments.
- GDS should use its expertise and strategic overview of government to identify priority work and capability gaps, and deploy teams into departments to support their work where necessary.
- GDS should place less emphasis on developing applications for cross-government use, only doing so where the market does not provide good options.
- Departments and agencies, supported by GDS, need to work together more closely to develop joined-up services and identify large savings.

Appendix: The five case study organisations

HMRC (research conducted February to May 2016)

HMRC's digital ambitions can be traced back at least as far as the 2006 Carter Review, which recommended a wholesale move from paper-based compliance activity to digital channels.[149] By 2012, 85% of HMRC's transactions were already taking place online.[150] In this context, digital transformation is about much more than putting existing processes online – it is about changing the way the organisation works to improve services and bear down on costs. For HMRC, this involves the process of bringing long-outsourced IT capabilities in-house.

In 2012, 'HMRC digital' was a team of just six employees in the personal tax directorate, whose main focus was building a business case for further change. It began life in a 'customer-centric' part of the organisation (personal tax), not with the rest of IT. Those six people faced cultural challenges – risk-aversion and control – but also technical challenges; even getting broadband into the building was difficult.[151]

The significance of the digital agenda to the whole organisation was signalled in 2013, when 'digital' was added to the role of chief [digital] information officer. The 2015 Making Tax Digital strategy placed digital change at the centre of the department's overall transformation plans.[152]

'HMRC digital' now has over 800 staff spread across six locations around the UK, from Newcastle to Worthing (the latter of which opened most recently).[153] They work in 'digital delivery centres', which – in layout and in organisational structure – are designed to facilitate the iterative and collaborative development of user-focused services.

'Channel shift' is a crucial step in ensuring that the department meets its targets for both efficiency and customer satisfaction. The expansion of 'HMRC digital' followed the announcement of the closures of HMRC face-to-face enquiry centres. The number of HMRC offices had gone from 539 in 2005 to 170 by 2014/15, with plans to close another 137 offices over the next five years up to 2020/21.[154] Between 2013/14 and 2015/16, the department made £420m in efficiency savings.[155]

The number of digitised services at HMRC is increasing rapidly. At the centre are the single tax accounts for individuals and businesses, which aim to make the process of dealing with taxes more akin to online banking: allowing people to see all their tax affairs in one place and deal with them together. The Personal Tax Account, launched in December 2015, currently has about 15 services that sit on its 'platform' – including informing HMRC of a change of address, claiming a tax refund and filing a personal tax return – with plans to add up to 200 services over the next few years.[156]

Plans for businesses' tax accounts are even more ambitious. HMRC has put forward proposals to essentially abolish the annual tax return, and replace it with a much more frequent interchange of information between the department and businesses. Digital technology makes this possible: businesses' own accounting software can feed the relevant information directly into HMRC's systems, via an application program interface (API). Business owners will need to make sure that their accounts are up to date, but should not need to fill out any separate forms. HMRC's digital

teams have made great strides with the technology. The challenge is to make sure that digital account-keeping is widely accepted by business owners.

Underpinning all of this is the exit from the Aspire contract – the largest government IT contract ever, with a total cost of around £10bn.[157] Exit from the contract requires a significant shift in HMRC's commercial activity: from dealing with one prime contractor to around 400 subcontractors.[158] In late 2015, HMRC established a new unit – Columbus – to lead these renegotiations. As part of this, a new government company was set up, with some of Capgemini's staff transferred under Transfer of Undertakings (Protection of Employment) Regulations 1981 (TUPE). This allowed HMRC to bring that capability in-house, without having to bring those employees' pay into line with civil service pay scales.

HMRC's new IT architecture is being described as a 'tax platform'. HMRC will hold the overall architectural vision, with a variety of suppliers contributing different elements. It will integrate some of the legacy systems, rationalising, integrating, future-proofing and updating different parts. Building all of its services within this single architecture will allow different services in HMRC to share technical components as well as data. This will save time and money by reducing duplication. The infrastructure could also be made available to other parts of government, allowing organisations with minimal digital capability to assemble new services quickly.

DVLA (research conducted June to July 2016)

As DVLA moves towards the difficult task of unpicking its legacy IT systems, it sees itself approaching a third wave of digital transformation.

But to look back, from the launch of Direct.gov.uk in 2004, it was quick to recognise the impact that online services could have on the way it operates. For an organisation required to keep and maintain over 80 million records, such services could help to avoid human errors, inaccuracies and the lengthy postal process. And so DVLA began developing and promoting online transactions.[159] Its first big online services were applications for tax discs and provisional driving licences.[160]

This first phase at DVLA was focused primarily on a handful of services, improving accuracy and offering customers improved services; the second began around about five years ago – a response to the agency's new efficiency targets.

Road Minister Mike Penning announced wide-ranging reforms, where 39 regional offices would close, services would centralise and more transactions would be put online.[161] This mandate, new leadership and the influence of GDS prompted a more ambitious phase of digital transformation. DVLA wanted to become a centre of excellence for digital within government.

With the help of GDS, three digital exemplars were established: view driving licence, vehicle management and personalised registration. In 2013, Iain Patterson was seconded to DVLA from GDS as chief technology officer. Oliver Morley, the fourth chief executive in 12 months, joined soon afterwards and together they quickly ended the IT outsourcing model that DVLA had used for decades, which had recently become problematic. The ambitious programme of bringing IT in-house began, and it was this decision that helped to shift GDS policy away from traditional IT outsourcing models. DVLA, a leader told us, no longer spent "six months writing requirements and chucking it over the fence", only to find the wrong thing was built – it was now able to take full control of its services and reshape the organisation in the process.[162]

The organisation structure shifted its focus to services, with four service managers leading areas such as 'drivers' and 'vehicles'. They were responsible for the end-to-end services, blending technology with an operational and customer focus. There was one person with oversight of the change and business-as-usual activity, keeping services and strategy aligned.

Agile approaches were gradually adopted for developing the exemplars and managing existing services, with blended teams of testers, customer insight people, engineers and developers working closely with operations in two-week sprints. This new approach needed new skills and capabilities. The foundations of these capabilities were people transferred from the incumbent IT supplier, but this was supplemented by training for existing staff, contractors brought on and jobs for small specialist suppliers.

The three exemplars were implemented, winning industry awards and achieving the savings, and are now part of a wider digital platform. DVLA's systems now serve GOV.UK, Verify, insurance companies and a number of other external partners through the use of APIs, while its services interact with the Passport Office, the Driver & Vehicle Standards Agency and DWP.[163] DVLA sees itself as a future 'motoring hub' within government, expanding its digital offering to be a genuine digital platform.

This digital transformation has not been without challenges. One public criticism of DVLA has related to the apparent revenue loss as a result of its scrapping of paper tax discs in favour of a digital register. The Roadside Survey on vehicle tax evasion in November 2015 estimated that non-compliance had more than doubled (from 0.6% to 1.4%) since 2013, the period in which the tax discs were phased out.[164] Critics suggested that the end of the paper discs removed a visible reminder to motorists and enforcement, and the agency's digital approach was counterproductive – with claims that evasion led to a revenue loss of between £200m and £400m.[165]

DVLA itself estimates that its revenue loss as a result of evasion is around £80m, a fraction of the more than £6bn that DVLA collects.[166] It also argues that the increase in evasion from the removal of the tax disc is the smallest element of recent revenue reduction – others include more fuel-efficient and environmentally friendly vehicles being on the road, for which lower vehicle tax rates apply.

The take-up of digital services has been rapid. But the complicated and challenging legacy systems, which sit behind these front-end services, remain largely untouched. Some date back to 1990, but are still critical to the business.[167] The systems set some of the parameters for what services can do, and a number of external organisations are dependent on them. Their criticality and complexity mean that the next – third – phase will be challenging.

UKTI (research conducted March to June 2016)

Until July 2016, UKTI was an agency of the Foreign and Commonwealth Office and the Department for Business, Innovation and Skills, which helped British businesses to export and encouraged foreign companies to invest in the UK. It is now part of the Department for International Trade. UKTI undertook a wide range of activities – providing information and advice to companies at home and abroad, organising and attending events, and arranging trade missions. It carried out this work in partnership with departments and with private providers.

Although UKTI's two fundamental functions – brokering relationships and providing information – could be supported by digital technology, the pace of digital transformation at UKTI was relatively slow. It had long operated on the assumption that personal relationships (or "putting a human in the way") are the key to encouraging businesses of all sizes to export and invest.[168]

However, UKTI had made progress with social media. By the time GDS was founded, it was already 'one of the leading users of social media in government'.[169] The UKTI blog began in 2009, and by 2011 the department was using Twitter, LinkedIn and YouTube extensively to advise businesses and promote its services.[170] By 2012–13, UKTI's corporate website received 1.6 million visits annually, and had 80,000 registered users.[171] Migrating that highly curated content onto GOV.UK proved challenging.[172] The role of the digital team at this stage was not to transform UKTI's services, but to exploit new channels to promote its existing services.

In 2014, an internal innovation unit was set up, called the Ideas Lab. Its role was to incubate new ideas and encourage change throughout UKTI, exposing its staff to the 'culture, practices and processes' of the internet age, if not the technologies. In its first year, the Ideas Lab did a range of things:

- research into issues such as the sharing economy
- small-scale outreach projects for targeted groups (such as women in business)
- building awareness of the customer-centric approach across UKTI.[173]

In May 2015, Francis Maude was appointed Minister of State for Trade and Investment. Fresh from championing digital government in the Cabinet Office, Maude encouraged a more explicit shift to digital service design. He appointed a director of digital, who brought a complete digital team – with experienced developers, user researchers and service managers – from the Ministry of Justice. Their initial minimum viable product was a service to help food and drink producers export to the European Union.

The Ideas Lab stopped work on its ongoing projects, to focus on one: gathering customer insights from exporters.[174] It produced a robust, evidence-based picture of the exporter's journey, which can now feed into multiple teams' work across the organisation.

The 2015 Spending Review brought a new set of changes to the department. UKTI was largely protected from the previous round of spending cuts, chasing the Chancellor's target of doubling UK exports to £1 trillion a year by 2020. This target has been abandoned and, following the 2015 Spending Review, UKTI was set to reduce its annual spending by £22m (14%) by 2019/20.[175]

To achieve this, UKTI began to undertake a "complete efficiency review of everything [it] offer[ed]", under a new change director appointed in January 2016.[176] Following her appointment, the organisation announced 'a single digital platform to help businesses find the export information, support, and advice they need, be it from government or private sector providers'.[177] During this period, its focus was therefore not on building full-scale, end-to-end digital services, but rather "ways of accessing services digitally or through a digital mechanism".[178]

Our research did not extend into understanding the role of digital in the new Department for International Trade, of which UKTI is now part.

Defra (research conducted May to June 2016)

Defra's digital journey started in 2012, when it published its first digital strategy for the whole departmental group.[179] Defra held two of the GDS digital exemplar projects: the Common Agricultural Policy (CAP) Delivery Programme and waste carrier registration.

While the digitisation of waste carrier registration went relatively smoothly and soon saw high registration and satisfaction rates (both 95%), the CAP Delivery Programme ran into major problems such that the online system eventually had to be withdrawn. This led to significant manual data entry and a sharp rise in associated costs (a 40% increase against the original business case by September 2015).

Defra has 34 arm's-length bodies (ALBs), some of which are larger than the core department. In the new Parliament, the department has focused on bringing them closer together as 'One Defra' and sharing services where possible. Digital is a big component, with data acting as a catalyst for collaboration between the organisations.

As part of the 2015 Spending Review, Defra obtained funding for digital technology and data projects, and is planning to spend £66m in capital on these projects during this Parliament, to realise benefits that it forecasts at around £100m.

Over the past year, Defra has pursued an open-data programme, with strong ministerial backing. In June 2015, the then Secretary of State for Environment, Food and Rural Affairs, Liz Truss, announced that over 8,000 datasets from the department and its ALBs would be made available as open data before the end of June 2016. This target was exceeded by over 3,000. Publishing all these data stimulated cross-organisational working, making different ALBs aware of each other's datasets. Opening up datasets has driven up their quality, which is vital if they are to be used for data-driven digital services.

Parliament (research conducted April to May 2016, focusing on the 2012–14 Q&A project)

Digital activity in Parliament is focused on two areas: digitising and automating internal business processes, and channelling information between members, staff and the public. Until 2015, these were dealt with by two separate units: the bicameral Parliamentary Information and Communication Technology Service (PICT) and the Web and Intranet Service (WIS). Following a review of their web activities by mySociety, they have been brought together into a new Parliamentary Digital Service, in an attempt to re-orientate Parliament's IT services towards 'the internet values of usability, needs focus and agility'.[180]

This new Parliamentary Digital Service must drive change across a highly fragmented organisation. Parliament is split between two Houses (the Commons and the Lords), and hosts 650 MPs and 800 Lords and their offices, split across 11 political parties. The administration has multiple autonomous departments and offices that support the Houses of Commons and Lords (for example, the Scrutiny Unit, Private Bill Offices and Libraries).

Any attempt to change existing processes must gain buy-in from hundreds of members (some of whom do not use email), and work across multiple "small units with large amounts of autonomy and very strong identities".[181]

Parliament has not been put under the same financial pressure as many government organisations in recent years, but the post-2010 Whitehall spending cuts still "made everyone think in a slightly different way".[182] During this time, a focus of PICT's work was to reduce Parliament's printing and publishing costs. This was successful: in the House of Commons, spending on printing and publishing fell from £11.8m in 2011/12 to £7.7m in 2014/15.[183] However, it reinforced the use of computer systems as a tool to reproduce existing processes on a screen, rather than a means to transform those processes: initially, these systems produced on-screen outputs that mirrored their paper predecessors exactly.[184]

Over time, PICT's work became more ambitious and digitally driven. We spoke to people involved in the Q&A project (2012–14), which digitised the process by which Written Parliamentary Questions were sent to departments, answered and published. This project involved behaviour change among 26 government departments' correspondence offices, and the members of both Houses who no longer received their answers on paper.[185] It was achieved using agile methods, by an in-house team (including contractors).[186]

References

1. Office for National Statistics, *Internet Access – Households and Individuals: 2016*, statistical bulletin, Office for National Statistics, Newport, 2016, retrieved 4 October 2016, www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/bulletins/internetaccesshouseholdsandindividuals/2016.
2. Ofcom, *Adults' Media Use and Attitudes – Report 2016*, Ofcom, London, 2016, pp. 118–19. This report does not address digital exclusion.
3. Cabinet Office, 'Government Digital Service opens for business', press release, Cabinet Office, London, 9 December 2011, retrieved 4 October 2016, https://www.gov.uk/government/news/government-digital-service-opens-for-business.
4. Electoral Commission, 'Electoral Commission calls on government to harness resources for voter registration', press release, Electoral Commission, London, no date, retrieved 4 October 2016, www.electoralcommission.org.uk/i-am-a/journalist/electoral-commission-media-centre/news-releases-campaigns/electoral-commission-calls-on-government-to-harness-resources-for-voter-registration.
5. Based on a review of National Audit Office reports into IT projects since the year 2000. For projects still ongoing – Universal Credit and the Common Agricultural Policy Delivery Programme – we used the annual spending figures reported in the annual report of the Major Projects Authority (since 2016, the Infrastructure and Projects Authority).
6. Twentyman, J., 'The UK's DVLA becomes "digital by default"', *Financial Times*, 2 November 2015, retrieved 4 October 2016, https://www.ft.com/content/c38bf7ba-8145-11e5-8095-ed1a37d1e096.
7. Stephen, J., Page, J., Myers, J., Brown, A., Watson, D. and Magee, I., Sir, *System Error: Fixing the flaws of government IT*, Institute for Government, London, 2011, p. 16, retrieved 11 October 2016, www.instituteforgovernment.org.uk/publications/system-error.
8. For a full explanation, see Brown, A., Fishenden, J. and Thompson, M., *Digitizing Government: Understanding and implementing new digital business models*, Palgrave Macmillan, Basingstoke, 2014.
9. Wachter, R.M., *Making IT Work: Harnessing the power of health information technology to improve care in England*, Department of Health, London, 2016, p. 4.
10. 'Day-to-day spending' refers to the Resource Departmental Expenditure Limit (RDEL) – the spending allocated to each department that government controls. McCrae, J., 'The Spending Review: what really happened', blog, Institute for Government, London, 29 December 2015, retrieved 4 October 2016, www.instituteforgovernment.org.uk/blog/12956/the-spending-review-what-really-happened.
11. McCrae, J., *The Spending Challenge: How to cut spending while maintaining quality*, Institute for Government, London, 2016, p. 5.
12. Andrews, E., 'The Civil Service is 18% smaller than in 2010. Now what?', blog, Institute for Government, London, 18 March 2016, retrieved 4 October 2016, www.instituteforgovernment.org.uk/blog/13423/the-civil-service-is-smaller-than-in-2010-now-what.
13. Bowie, J., 'Jeremy Heywood interview: the Cabinet Secretary and head of the Civil Service on life at the top of Whitehall', Civil Service World, 19 October 2015, retrieved 4 October 2016, www.civilserviceworld.com/articles/interview/jeremy-heywood-interview-cabinet-secretary-and-head-civil-service-life-top.
14. Government Digital Service, *Digital Efficiency Report*, Cabinet Office, London, 2012, retrieved 4 October 2016, https://www.gov.uk/government/publications/digital-efficiency-report/digital-efficiency-report.
15. *Ibid.*
16. National Audit Office, *Central Government Staff Costs*, National Audit Office, London, 2015, p. 19, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2015/06/Central-government-staff-costs.pdf.
17. National Audit Office, *HM Revenue & Customs 2015–16 Accounts*, National Audit Office, London, 2016, p. R14, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2016/07/HMRC-Annual-Report-and-Accounts-2015-16.pdf.
18. *Ibid.*, p. R14; Foster, M., 'HMRC chief Lin Homer looks to "diamond-shaped" future for department', Civil Service World, 9 September 2015, retrieved 4 October 2016, https://www.civilserviceworld.com/articles/news/hmrc-chief-lin-homer-looks-diamond-shaped-future-department.

19. Interview, 2016.

20. National Audit Office, *Replacing the Aspire Contract*, National Audit Office, London, 2016, p. 4, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2016/06/11130-001-Replacing-the-Aspire-contract.pdf.

21. House of Commons Commission, *Thirty-seventh Report of the Commission, and Annual Report of the Administration Estimate Audit Committee*, The Stationery Office, London, 2015, p. 41, retrieved 4 October 2016, www.parliament.uk/documents/commons-commission/HoCCommission-Annual-Report-2014-15-HC341.pdf.

22. Foreshew-Cain, S., 'How digital and technology transformation saved £1.7bn last year', GDS blog, 23 October 2015, retrieved 4 October 2016, https://gds.blog.gov.uk/2015/10/23/how-digital-and-technology-transformation-saved-1-7bn-last-year.

23. Driver & Vehicle Licensing Agency, *Driver & Vehicle Licensing Agency Annual Report & Accounts: 2015–16*, GOV.UK, London, 2016, p. 8, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/545618/dvla-ara-2015-16.pdf.

24. HM Revenue & Customs, *HM Revenue & Customs Annual Report and Accounts 2015–16*, GOV.UK, London, 2016, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/539608/HMRC_Annual_Report_and_Accounts_2015-16-web.pdf; HM Revenue & Customs, *HM Revenue & Customs Annual Report and Accounts 2014–15*, GOV.UK, London, 2015, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/449343/HMRC_Annual_Report_and_Accounts_2014-15__Web_accessible_version_.pdf.

25. We applied the % savings achieved by DVLA and HMRC between 2013/14 and 2015/16 to the operating costs for 2015/16 listed in government's Online System for Central Accounting and Reporting (OSCAR) database for transactional agencies (or departmental areas) identified in the 2012 departmental digital strategies as having transactional services with over 100,000 transactions a year.

26. Driver & Vehicle Licensing Agency, *Driver & Vehicle Licensing Agency Annual Report & Accounts: 2015–16*, GOV.UK, London, 2016, p. 72, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/545618/dvla-ara-2015-16.pdf.

27. HM Revenue & Customs, *HM Revenue & Customs Annual Report and Accounts 2015–16*, GOV.UK, London, 2016, p. 43, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/539608/HMRC_Annual_Report_and_Accounts_2015-16-web.pdf.

28. National Audit Office, *Replacing the Aspire Contract*, National Audit Office, London, 2016, p. 4, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2016/06/11130-001-Replacing-the-Aspire-contract.pdf.

29. Office for National Statistics, *Internet Access – Households and Individuals: 2016*, statistical bulletin, Office for National Statistics, Newport, 2016, retrieved 4 October 2016, www.ons.gov.uk/peoplepopulationandcommunity/householdcharacteristics/homeinternetandsocialmediausage/bulletins/internetaccesshouseholdsandindividuals/2016.

30. Ofcom, *Adults' Media Use and Attitudes – Report 2016*, Ofcom, London, 2016, pp. 118–19.

31. Interview, 2016.

32. Interview, 2016.

33. Flyvbjerg, B. and Budzier, J., 'Why your IT Project may be Riskier than you Think', *Harvard Business Review*, September 2011, retrieved 4 October 2016, www.sbs.ox.ac.uk/sites/default/files/BT_Centre/Docs/Risky-ICT-HarvardBusinessReview.pdf.

34. Dunleavy, P., Margetts, H., Bastow, S. and Tinkler, J., *Digital Era Governance*: *IT corporations, the state, and e-government*, Oxford University Press, Oxford, 2008, p. 70.

35. Based on a review of National Audit Office reports into IT projects since the year 2000. For projects still ongoing – Universal Credit and the Common Agricultural Policy Delivery Programme – we used the annual spending figures reported in the annual report of the Major Projects Authority (since 2016, the Infrastructure and Projects Authority).

36. Stephen, J., Page, J., Myers, J., Brown, A., Watson, D. and Magee, I., Sir, *System Error: Fixing the flaws of government IT*, Institute for Government, London, 2011, p. 31, retrieved 11 October 2016, www.instituteforgovernment.org.uk/publications/system-error.

37. National Audit Office, *Early Review of the Common Agricultural Policy Delivery Programme*, National Audit Office, London, 2015, p. 9, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2015/11/Early-review-of-the-Common-Agricultural-Policy-Delivery-Programme.pdf.

38. National Audit Office, *Universal Credit: Early progress*, National Audit Office, London, 2013, p. 8, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2014/09/Executive-Summary.pdf.

39. National Audit Office, *Managing the Risks of Legacy ICT to Public Service Delivery*, National Audit Office, London, 2013, p. 10, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2013/09/10154-001-Managing-the-risk-of-legacy-ICT-Book-Copy2.pdf.

40. Stephen, J., Page, J., Myers, J., Brown, A., Watson, D. and Magee, I., Sir, *System Error: Fixing the flaws of government IT*, Institute for Government, London, 2011, retrieved 11 October 2016, www.instituteforgovernment.org.uk/publications/system-error.

41. Cabinet Office, *Government Digital Strategy*, Cabinet Office, London, 2012, retrieved 11 October 2016, https://www.gov.uk/government/publications/government-digital-strategy.

42. GOV.UK, 'Digital Service Standard', in *Government Service Design Manual*, points 1, 2 and 4, retrieved 4 October 2016, https://www.gov.uk/service-manual/service-standard.

43. HM Revenue & Customs, *Number of Taxpayers and Registered Traders*, HM Revenue & Customs, London, 2016, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/519575/Apr16_Numbertaxpayerstraders_bulletin_Final.pdf.

44. Organisation for Economic Co-operation and Development, *Tax Administration 2015: Comparative information of OECD and other advanced and emerging economies*, OECD, Paris, 2015, pp. 251–3, retrieved 4 October 2016, www.keepeek.com/Digital-Asset-Management/oecd/taxation/tax-administration-2015_tax_admin-2015-en#page253.

45. du Preez, D., 'HMRC reaches final agreement with suppliers to exit Aspire – start of a difficult journey', Diginomica, 31 March 2016, retrieved 4 October 2016, http://diginomica.com/2016/03/31/hmrc-reaches-final-agreement-with-suppliers-to-exit-aspire-start-of-a-difficult-journey.

46. Interview, 2016.

47. HM Revenue & Customs, *Single Departmental Plan 2015 to 2020*, GOV.UK, London, 2016, retrieved 4 October 2016, https://www.gov.uk/government/publications/hmrc-single-departmental-plan-2015-to-2020/single-departmental-plan-2015-to-2020.

48. du Preez, D., 'HMRC reaches final agreement with suppliers to exit Aspire – start of a difficult journey', Diginomica, 31 March 2016, retrieved 4 October 2016, http://diginomica.com/2016/03/31/hmrc-reaches-final-agreement-with-suppliers-to-exit-aspire-start-of-a-difficult-journey.

49. Driver & Vehicle Licensing Agency, *Driver & Vehicle Licensing Agency Annual Report & Accounts: 2015–16*, GOV.UK, London, 2016, p. 12.

50. *Ibid*., p. 5.

51. UK Trade & Investment, *UKTI Annual Report and Accounts 2014–15*, GOV.UK, London, 2015, p. 9, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/443633/UKTI-Annual-Report-Accounts-2014-2015-Web-Version.pdf.

52. Department for Environment, Food and Rural Affairs, *Department for Environment, Food and Rural Affairs: Annual report and accounts 2015–16*, GOV.UK, London, 2016, p. 19, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/547296/defra-annual-report-2015-2016-web.pdf.

53. House of Commons Committee of Public Accounts, *The Common Agricultural Policy Delivery Programme: Twenty-sixth report of session 2015–16*, House of Commons Committee of Public Accounts, London, 2016, p. 3, retrieved 4 October 2016, www.publications.parliament.uk/pa/cm201516/cmselect/cmpubacc/642/642.pdf.

54. Department for Environment, Food and Rural Affairs, *Department for Environment, Food and Rural Affairs: Annual report and accounts 2015–16*, GOV.UK, London, 2016, p. 5, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/547296/defra-annual-report-2015-2016-web.pdf.

55. House of Commons Commission, *Thirty-seventh Report of the Commission, and Annual Report of the Administration Estimate Audit Committee*, The Stationery Office, London, 2015, p. 42, retrieved 4 October 2016, www.parliament.uk/documents/commons-commission/HoCCommission-Annual-Report-2014-15-HC341.pdf.

56. Government Digital Service, 'USDS, 18F and GDS: why the strategy is delivery – video transcript', GDS blog, retrieved 4 October 2016, https://gds.blog.gov.uk/usds-18f-and-gds-why-the-strategy-is-delivery-video-transcript.

57. Volume data for September 2015 to August 2016, where available on the GOV.UK performance platform. This does not include any data for the following four HMRC services – PAYE for employers, digital self-assessment, your tax account and agent online self-serve – so the actual number is likely to be much higher. Retrieved 15 September 2016, https://www.gov.uk/performance/services.

58. Freeguard, G., Andrews, E., Devine, D., Munro, R. and Randall, J., *Whitehall Monitor 2015: The Coalition in 163 charts*, Institute for Government, London, 2015, p. 103, retrieved 10 October 2016, www.instituteforgovernment.org.uk/publications/whitehall-monitor-2015.

59. Speaking at 'From disaster to recovery: learning the lessons of Universal Credit', Institute for Government, London, 6 September 2016, retrieved 5 October 2016, www.instituteforgovernment.org.uk/events/disaster-recovery-learning-lessons-universal-credit-0.

60. Interview, 2016.

61. Speaking at 'From disaster to recovery: learning the lessons of Universal Credit', Institute for Government, London, 6 September 2016, retrieved 5 October 2016, www.instituteforgovernment.org.uk/events/disaster-recovery-learning-lessons-universal-credit-0.

62. Interview, 2016; DVLA digital comms team, 'We've reorganised the way we work within DVLA', Inside DVLA blog, 19 June 2015, retrieved 4 October 2016, https://insidedvla.blog.gov.uk/2015/06/19/weve-reorganised-the-way-we-work-within-dvla.

63. Hallsworth, M., with Parker, S. and Rutter, J., *Policy Making in the Real World: Evidence and analysis*, Institute for Government, London, 2011, pp. 9, 43, retrieved 4 October 2016, www.instituteforgovernment.org.uk/sites/default/files/publications/Policy%20making%20in%20the%20real%20world.pdf; Norris, E., Kidson, M., Bouchal, P. and Rutter, J., *Doing them Justice: Lessons from four cases of policy implementation*, Institute for Government, London, 2014, retrieved 4 October 2016, www.instituteforgovernment.org.uk/sites/default/files/publications/Policy%20Implementation%20case%20studies%20report%20-%20final.pdf.

64. Interview, 2016.

65. National Audit Office, *E-borders and Successor Programmes*, National Audit Office, London, 2015, p. 34, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2015/12/E-borders-and-successor-programmes.pdf.

66. Dunleavy, P., Margetts, H., Bastow, S. and Tinkler, J., *Digital Era Governance*: *IT corporations, the state, and e-government*, Oxford University Press, Oxford, 2008, p. 76.

67. Interview, 2016.

68. Two interviews, 2016.

69. Interview, 2016.

70. Interview, 2016.

71. Weerakkody, V., 'Digital government: a new approach is needed', blog, Institute for Government, London, 21 June 2016, retrieved 4 October 2016, www.instituteforgovernment.org.uk/blog/13877/digital-government-a-new-approach-is-needed.

72. Norris, E. and Rutter, J., *Learning the Lessons from Universal Credit*, Institute for Government, London, 2016, p. 7, retrieved 10 October 2016, www.instituteforgovernment.org.uk/publications/learning-lessons-universal-credit.

73. Interview, 2016.

74. Hallsworth, M., with Parker, S. and Rutter, J., *Policy Making in the Real World: Evidence and analysis*, Institute for Government, London, 2011, retrieved 4 October 2016, www.instituteforgovernment.org.uk/sites/default/files/publications/Policy%20making%20in%20the%20real%20world.pdf.

75. Interview, 2016.

76. HM Revenue & Customs, *Making Tax Digital: Consultations*, HM Revenue & Customs, London, 2016, retrieved 4 October 2016, https://www.gov.uk/government/collections/making-tax-digital-consultations.

77. Two interviews, 2016.

78. Interview, 2016.

79. National Audit Office, *Information and Communications Technology in Government: Landscape review*, National Audit Office, London, 2011, p. 16, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2011/02/1011757.pdf.

80. Interview, 2016.

81. Interview, 2016.

82. Twentyman, J., 'The UK's DVLA becomes "digital by default"', *Financial Times*, 2 November 2015, retrieved 4 October 2016, https://www.ft.com/content/c38bf7ba-8145-11e5-8095-ed1a37d1e096.

83. See Government Digital Service, *Technology Code of Practice*, Government Digital Service, London, 2016, point 14, retrieved 4 October 2016, https://www.gov.uk/government/publications/technology-code-of-practice/technology-code-of-practice.

84. Two interviews, 2016.

85. Three interviews, 2016.

86. Stephen, J., Page, J., Myers, J., Brown, A., Watson, D. and Magee, I., Sir, *System Error: Fixing the flaws of government IT*, Institute for Government, London, 2011, p. 12, retrieved 11 October 2016, www.instituteforgovernment.org.uk/publications/system-error.

87. National Audit Office, *Governance for Agile Delivery*, National Audit Office, London, 2012, p. 7, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2012/07/governance_agile_delivery.pdf.

88. Stephen, J., Page, J., Myers, J., Brown, A., Watson, D. and Magee, I., Sir, *System Error: Fixing the flaws of government IT*, Institute for Government, London, 2011, pp. 53–4, retrieved 11 October 2016, www.instituteforgovernment.org.uk/publications/system-error.

89. Three interviews, 2016.

90. Interview, 2016.

91. House of Commons Committee of Public Accounts, *The Common Agricultural Policy Delivery Programme: Twenty-sixth report of session 2015–16*, House of Commons, London, 2016, p. 5; National Audit Office, *Early Review of the Common Agricultural Policy Delivery Programme*, National Audit Office, London, 2015, p. 9.

92. HM Treasury, *The Green Book: Appraisal and evaluation in central government*, The Stationery Office, London, 2013, retrieved 12 October 2016, https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent.

93. HM Treasury, *Agile Digital and IT Projects: Clarification of business case guidance*, HM Treasury, London, 2015, retrieved 4 October 2016, https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent/agile-digital-and-it-projects-clarification-of-business-case-guidance.

94. Interview, 2016.

95. Interview, 2016.

96. Interview, 2016.

97. Interview, 2016.

98. Stephen, J., Page, J., Myers, J., Brown, A., Watson, D. and Magee, I., Sir, *System Error: Fixing the flaws of government IT*, Institute for Government, London, 2011, pp. 53–4, retrieved 11 October 2016, www.instituteforgovernment.org.uk/publications/system-error.

99. Interview, 2016.

100. Interview, 2016.

101. Interview, 2016.

102. Hellier, D., 'Digital tech employees are offered 36% higher wage than UK average', *The Guardian*, 11 February 2016, retrieved 4 October 2016, https://www.theguardian.com/technology/2016/feb/10/digital-tech-employees-higher-wage-average.

103. Gallagher, Y., 'Skills for digital transformation', blog, National Audit Office, London, 18 December 2015, retrieved 4 October 2016, https://www.nao.org.uk/naoblog/skills-for-digital-transformation; National Audit Office, *Replacing the Aspire Contract*, National Audit Office, London, 2016, p. 26, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2016/06/11130-001-Replacing-the-Aspire-contract.pdf.

104. Interview, 2016.

105. Interview, 2016.

106. Interview, 2016.

107. Interview, 2016.

108. See Public Accounts Committee, *Oral Evidence: Managing and replacing the Aspire contract, HC 79*, House of Commons, London, 2016, question 14, retrieved 4 October 2016, http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/public-accounts-committee/managing-and-replacing-the-aspire-contract-progress-review/oral/34398.html.

109. Interview, 2016.

110. Interview, 2016.

111. DVLA digital services, 'Driver & Vehicle Licensing Agency @ TechHub', blog, GOV.UK, London, retrieved 4 October 2016, https://dvladigital.blog.gov.uk/techhub.

112. Interview, 2016.

113. Interview, 2016.

114. Interview, 2016.

115. Interview, 2016.

116. Interview, 2016.

117. Baxendale, C., *How to Best Attract, Induct and Retain Talent Recruited into the Senior Civil Service*, GOV.UK, London, 2015, p. 5, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/418051/FINAL_EXTERNAL_HIRES_REPORT_150328.pdf.

118. House of Commons Committee of Public Accounts, *Use of Consultants and Temporary Staff: Thirty-sixth report of session 2015–16*, House of Commons Committee of Public Accounts, London, 2016, p. 5, retrieved 4 October 2016, www.publications.parliament.uk/pa/cm201516/cmselect/cmpubacc/726/726.pdf.

119. Interview, 2016.

120. Interview, 2016.

121. Interview, 2016.

122. Interview, 2016.

123. Interview, 2016.

124. Lane Fox, M., 'Directgov 2010 and beyond: revolution not evolution', letter to Francis Maude, 14 October 2010, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/60993/Martha_20Lane_20Fox_s_20letter_20to_20Francis_20Maude_2014th_20Oct_202010.pdf.

125. McCrae, J., Harris, J. and Andrews, E., *All In It Together: Cross-departmental responsibilities for improving Whitehall*, Institute for Government, London, 2015, pp. 15–6, retrieved 4 October 2016, www.instituteforgovernment.org.uk/publications/all-it-together.

126. Maxwell, L., with contributions from others, *'Better for Less': How to make government IT deliver savings*, Network for the Post-Bureaucratic Age, 2010, retrieved 12 October 2016, http://archive.openforumeurope.org/openprocurement/open-procurement-library/Better%20for%20less.pdf/view.

127. Cabinet Office, 'UK government appoints first national technology adviser', press release, Cabinet Office, London, 18 April 2016, retrieved 4 October 2016, https://www.gov.uk/government/news/uk-government-appoints-first-national-technology-adviser.

128. Cabinet Office, 'Government draws the line on bloated and wasteful IT contracts', press release, Cabinet Office, London, 24 January 2014, retrieved 4 October 2016, https://www.gov.uk/government/news/government-draws-the-line-on-bloated-and-wasteful-it-contracts.

129. Government Digital Service, *Technology Code of Practice*, Government Digital Service, London, 2016, retrieved 4 October 2016, https://www.gov.uk/government/publications/technology-code-of-practice/technology-code-of-practice.

130. Foreshew-Cain, S., 'How digital and technology transformation saved £1.7bn last year', Government Digital Service blog, 23 October 2015, retrieved 4 October 2016, https://gds.blog.gov.uk/2015/10/23/how-digital-and-technology-transformation-saved-1-7bn-last-year.

131. National Audit Office, *The Centre of Government: An update*, National Audit Office, London, 2015, p. 6, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2015/03/The-Centre-of-government-an-update.pdf.

132. Bond, C. and Bearpark, R., 'Changing the cogs of government', Government Technology blog, 27 September 2016, retrieved 5 October 2016, https://governmenttechnology.blog.gov.uk/2016/09/27/changing-the-cogs-of-government.

133. GOV.UK, 'Recruitment Hub: helping departments bring digital and technology skills into government', in *Government Service Design Manual*, GOV.UK, London, retrieved 4 October 2016, https://www.gov.uk/service-manual/the-team/recruitment/hub.html#senior-civil-servant-scs-recruitment.

134. Lane Fox, M., 'Directgov 2010 and beyond: revolution not evolution', letter to Francis Maude, 14 October 2010, p. 6, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/60993/Martha_20Lane_20Fox_s_20letter_20to_20Francis_20Maude_2014th_20Oct_202010.pdf.

135. Interview, 2016.

136. Cabinet Office, 'GOV.UK wins Design of the Year 2013', press release, Cabinet Office, London, 16 April 2013, retrieved 4 October 2014, https://www.gov.uk/government/news/govuk-wins-design-of-the-year-2013.

137. Cabinet Office, 'Digital marketplace: transforming how businesses sell services to government', press release, Cabinet Office, London, 27 April 2016, retrieved 4 October 2016, https://www.gov.uk/government/news/digital-marketplace-transforming-how-small-businesses-sell-services-to-government.

138. National Audit Office, *Information and Communications Technology in Government: Landscape review*, National Audit Office, London, 2011, p. 16, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2011/02/1011757.pdf.

139. National Audit Office, *Protecting Information across Government*, National Audit Office, London, 2016, retrieved 9 October 2016, https://www.nao.org.uk/report/protecting-information-across-government.

140. Interview, 2016.

141. Ashton, J., 'Shaping the future of the government security profession', Government Security blog, 22 August 2016, retrieved 5 October 2016, https://securityprofession.blog.gov.uk/2016/08/22/shaping-the-future-of-the-government-security-profession.

142. Hall, K., 'Don't tell the Cabinet Office: HMRC is building its own online ID system', *The Register*, 24 May 2016, retrieved 4 October 2016, www.theregister.co.uk/2016/05/24/hmrc_builds_its_own_gateway_replacement_id_system.

143. Interview, 2016.

144. Interview, 2016.

145. Cabinet Office, 'Government Digital Service announces plans to run a national digital academy', Cabinet Office, London, 15 September 2016, retrieved 4 October 2016, https://www.gov.uk/government/news/government-digital-service-announces-plans-to-run-a-national-digital-academy.

146. Policy Profession, 'About us', GOV.UK, London, no date, retrieved 4 October 2016, https://www.gov.uk/government/organisations/civil-service-policy-profession/about.

147. Civil Service, *Civil Service Workforce Plan 2016–2020*, Cabinet Office, London, 2016, https://www.gov.uk/government/publications/civil-service-workforce-plan-2016-to-2020.

148. Speech by Matt Hancock, 'Government property 2016', Cabinet Office, London, 3 February 2016, retrieved 4 October 2016, https://www.gov.uk/government/speeches/government-property-2016-matt-hancock-speech.

149. Lord Carter of Coles, *Review of HMRC Online Services*, HM Revenue & Customs, London, 2006.

150. HM Revenue & Customs, *HMRC Digital Strategy*, HM Revenue & Customs, London, 2012, p. 4, retrieved 5 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/360216/2012-digital-strategy.pdf.

151. Interview, 2016.

152. HM Revenue & Customs, *Making Tax Digital*, HM Revenue & Customs, London, 2015, retrieved 5 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/484668/making-tax-digital.pdf.

153. Interview, 2016.

154. Sukhraj, P., 'HMRC to shut 137 offices over next five years as part of digital strategy', *CCH Daily*, 12 November 2015,retrieved 4 October 2016, https://www.cchdaily.co.uk/hmrc-shut-137-offices-over-next-five-years-part-digital-strategy.

155. HM Revenue & Customs, *HM Revenue & Customs Annual Report and Accounts 2015–16*, GOV.UK, London, 2016, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/539608/HMRC_Annual_Report_and_Accounts_2015-16-web.pdf; HM Revenue & Customs, *HM Revenue & Customs Annual Report and Accounts 2014–15*, GOV.UK, London, 2015, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/449343/HMRC_Annual_Report_and_Accounts_2014-15__Web_accessible_version_.pdf.

156. Interview, 2016.

157. National Audit Office, *Replacing the Aspire Contract*, National Audit Office, London, 2016, p. 6, retrieved 4 October 2016, https://www.nao.org.uk/wp-content/uploads/2016/06/11130-001-Replacing-the-Aspire-contract.pdf.

158. House of Commons Committee of Public Accounts, *Managing and Replacing the Aspire Contract*, House of Commons Committee of Public Accounts, London, 2015, p. 10.

159. Driver & Vehicle Licensing Agency, *DVLA Annual Report and Accounts 2006–07*, The Stationery Office, London, 2007, p. 24, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/250709/0800.pdf.

160. Driver & Vehicle Licensing Agency, *DVLA Annual Report & Accounts 2009–10*, The Stationery Office, London, 2010, p. 11, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229241/0178.pdf.

161. Driver & Vehicle Licensing Agency, 'DVLA services to be transformed to benefit motorists', press release, Driver & Vehicle Licensing Agency, Swansea, 4 July 2012, retrieved 4 October 2016, https://www.gov.uk/government/news/dvla-services-to-be-transformed-to-benefit-motorists.

162. Interview, 2016.

163. Two interviews, 2016.

164. Driver & Vehicle Licensing Agency, *Driver & Vehicle Licensing Agency Annual Report & Accounts: 2015–16*, GOV.UK, London, p. 24, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/545618/dvla-ara-2015-16.pdf.

165. Campbell, P., 'Scrapping paper car tax discs cost £400m in revenue in first year', *Financial Times*, 18 August 2016, retrieved 10 October 2016, https://www.ft.com/content/cbd26432-6492-11e6-a08a-c7ac04ef00aa.

166. Driver & Vehicle Licensing Agency, *Driver & Vehicle Licensing Agency Annual Report & Accounts: 2015–16*, GOV.UK, London, p. 24, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/545618/dvla-ara-2015-16.pdf.

167. Interview, 2016.

168. Interview, 2016.

169. UK Trade & Investment, *Britain Open for Business*, UK Trade & Investment, London, 2011, p. 14, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/294090/Britain_open_for_business_-_UKTI_s_five_year_strategy_1_.pdf.

170. *Ibid.*, p. 14.

171. UK Trade & Investment, *UK Trade & Investment Annual Report and Accounts 2012–13*, UK Trade & Investment, London, 2013, p. 10, retrieved 4 October 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246788/0024.pdf.

172. Interview, 2016.

173. James, F., 'Passion, trust, and learning in export delivery', Digital Trade blog, 29 July 2015, retrieved 4 October 2016, https://digitaltrade.blog.gov.uk/2015/07/29/passion-trust-and-learning-in-export-delivery.

174. Caplin, J., 'Good morning, global business', Digital Trade blog, 31 July 2015, retrieved 4 October 2016, https://digitaltrade.blog.gov.uk/2015/07/31/hello-world.

175. UK Trade & Investment, 'UK Trade & Investment's settlement at the Spending Review 2016', press release, UK Trade & Investment, London, 25 November 2015, retrieved 4 October 2016, https://www.gov.uk/government/news/uk-trade-and-investments-settlement-at-the-spending-review-2015.

176. Interview, 2016.

177. UK Trade & Investment, 'Cross-government approach at heart of new drive to boost exports', press release, UK Trade & Investment, London, 19 January 2016, retrieved 4 October 2016, https://www.gov.uk/government/news/cross-government-approach-at-heart-of-new-drive-to-boost-exports.

178. Two interviews, 2016.

179. Department for Environment, Food and Rural Affairs, *Defra Digital Strategy 2012*, Defra, London, 2012, retrieved 13 October 2016, https://www.gov.uk/government/publications/defra-digital-strategy-2012.

180. mySociety, *Parliament's Online Services*, mySociety, London, no date, p. 24.

181. Two interviews, 2016.

182. Interview, 2016.

183. House of Commons Commission, *Thirty-seventh Report of the Commission, and Annual Report of the Administration Estimate Audit Committee*, The Stationery Office, London, 2015, p. 41, retrieved 4 October 2016, www.parliament.uk/documents/commons-commission/HoCCommission-Annual-Report-2014-15-HC341.pdf.

184. Interview, 2016.

185. Interview, 2016.

186. Two interviews, 2016.

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About the authors

Emily Andrews is a researcher at the Institute for Government, which she joined after completing a PhD in History at the University of Warwick. As well as managing the Institute's research into digital government, she has worked on the data-driven Whitehall Monitor programme and research into central Whitehall responsibilities. She was previously a secondary school teacher.

Daniel Thornton is a programme director at the Institute. He began his career in the Foreign Office and subsequently worked in Parliament, the Treasury, the Cabinet Office, 10 Downing Street and as a director in the Department for Communities and Local Government. He then worked for Gavi, which funds immunisation in low-income countries. Daniel leads on the Institute's work with the Civil Service.

Joseph Owen is a researcher at the Institute, which he joined in May 2016 after five years as a consultant working across the public sector. In addition to the Institute's research on digital government, he is also involved in the Institute's Brexit work.

Alex Bleasdale worked at the Institute between September 2015 and August 2016, researching both digital government and strategic focus.

Gavin Freeguard is a senior researcher at the Institute, and leads the Institute's Whitehall Monitor programme.

Ines Stelk joined the Institute in April 2016, and is involved in work on digital government, Brexit and our Ministers Reflect programme.

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2 Carlton Gardens
London SW1Y 5AA

Tel: +44 (0) 20 7747 0400
Fax: +44 (0) 20 7766 0700
Email: enquiries@instituteforgovernment.org.uk

Web: www.instituteforgovernment.org.uk
Twitter: @instituteforgov

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