Government Transformation Strategy

Note

This publication has three parts:

- the Government Transformation Strategy;
- additional detail covering background, scope, specific objectives, government beyond 2020 and the role of the Government Digital Service (GDS); and
- appendices, including case studies, services and data registers that have been and will be delivered.

This document sets out the strategy in full. It explains what transformation in government means in 2016 and beyond, and how this work will be done.

Ministerial foreword

To govern is to serve. Our purpose is to maintain the security, safety and prosperity of the nation and to deliver what we have promised the people who elect us.

Yet it is too often the case that citizens feel that they live at the convenience of the state: that the government acts not as servant but as master. The result is a perception that the country works for the people who govern, not those whom the government is tasked to serve. Whether it is a lack of belief in the capacity of government to deliver the pledges it makes at election time, or the frustrations thrown in the way of people every day - from filling in a form to trying to talk to someone on the phone - government seems less and less capable of doing what people want.

The result of that disenchantment is plain to see. Here in the United Kingdom and elsewhere in the democratic world, people are expressing their wish for a more responsive state at the ballot box. It is a call that demands a reply; indeed, if we wish modern democracy to flourish, it is imperative we respond.

This is no easy task. Government is more complex and wide-reaching than ever before. There is no company on earth - even the largest of multinationals - which comes close to having to co-ordinate the array of essential services and functions for millions of people that a modern government provides. Equally our duty is to serve everyone regardless of ability, age, gender, opinion or the places in which they choose to live. For these reasons and because bureaucracies are by their natures monopoly providers, government has been slow to use the transformative potential of digital technology to change the way it does business. It is at a double disadvantage, therefore: big and slow. In a world where people rightly expect the government to deliver public services effectively and at speed, that makes the challenge more daunting still.

The imperative is to change, therefore - and to do so at pace and at scale. This is the meaning of transformation. It is in essence a change of working, of culture and of disposition - changes that are made possible by digital technology. That technology is not change itself; it enables the change that is so transformative.

How we can make that change happen is the subject of this strategy document. It describes the progress we have already made, from simplifying the smallest

transactions between the citizen and the state to some of the largest reform programmes across the globe. This is only the beginning however: this strategy charts the direction of the total transformation of government - in how we work, how we organize ourselves and how we serve our citizens. It is the most ambitious programme of change of any government anywhere in the world, by a government that has already done more to transform itself than any other.

I commend the brilliant, driven civil servants of this country and the way in which they rise consistently to the challenge of delivering ever better government service. They prove every day that an inspiring, value-based public service ethos is alive and well in modern Britain. Yet achieving our ambitions for transformative public service will take a conscious and daily act of will on the part of public servants in every part of this nation's government. Unlike a business, we will not be forced to change by competition but must do so only because it is the right thing to do. This is change purely in the interests of public service; change that will make us fit servants of the people who ask us to govern. If we succeed, which we must, we will have done much to restore our democracy to the position the people deserve.

The Rt Hon Ben Gummer MP
Minister for the Cabinet Office and Paymaster General

Introduction

By harnessing digital to build and deliver services, the government can transform the relationship between citizen and state. Much has been done since the 2012 Government Digital Strategy, which demonstrated the potential of public service transformation by rebuilding some of the most high volume services to make them 'digital by default'. New digital professions are now established across the public sector. Departments have become better at sharing platforms and components, code, patterns and best practice. This is a strong foundation upon which to build.

> The UK Government is one of the most digitally advanced in the world. We have come top of the 2016 United Nations E-Government and E-Participation surveys. We have developed the award-winning and internationally renowned GOV.UK - and have opened its code which has been reused by governments around the world. The Government Digital Service (GDS) has led the digital transformation of government and is a model that is being copied internationally.

Many departments have started to transform how they deliver services. This has improved citizens' experience of a significant number of services, but in many cases it has not changed the way government organisations operate to deliver them. It has meant that organisations without public-facing services have not benefitted from the same degree of focus on digital transformation.

The next stage of digitally-enabled transformation has three broad components, which together form the scope of this strategy:

- transforming whole citizen-facing services - to continue to improve the experience for citizens, businesses and users within the public sector;
- full department transformation - affecting complete organisations to deliver policy objectives in a flexible way, improve citizen service across channels and improve efficiency; and
- internal government transformation, which might not directly change policy outcomes or citizen-facing services but which is vital if government is to collaborate better and deliver digitally-enabled change more effectively.

Increasingly, government departments will need to collaborate across traditional organisational boundaries. The vote to leave the European Union has heightened the need to be responsive and to be able to adapt to a changing environment. To build services that run seamlessly across government we must take the next steps in transformation. We will strengthen our digital capability. Where it meets user needs and satisfies the appropriate safeguards, we will make data easier to share across government and ensure it is managed securely.

Our commitment to digital transformation means that we must do this in a way that takes into account the risks of the digital age. As the National Cyber Security Strategy notes, cyber attacks are growing more frequent, sophisticated and damaging when they succeed. We must therefore ensure that we move forward in a way that is secure, deters criminal behaviour and which maintains our commitment to individuals' privacy.

Read the background for a more in-depth review of government's progress since the 2012 Government Digital Strategy.

Vision and objectives

Vision

We will transform the relationship between citizens and the state - putting more power in the hands of citizens and being more responsive to their needs.

The tools, techniques, technology and approaches of the internet age give us greater opportunities than ever before to help government:

- better understand what citizens need;
- assemble services more quickly and at lower cost; and
- continuously improve services based on data and evidence.

We will transform government services and make government itself a digital organisation so that:

- citizens, businesses and other users have a better, more coherent experience when interacting with government services - one that meets the raised expectations set by the many other (non-government) services and tools they use every day;
- elected governments can make a more immediate impact, delivering on policy goals by providing services and information more quickly, with the intended outcomes for their users - and the ability to change delivery quickly if the policy changes;
- the cost and time to build, change and run government is reduced, saving public money and allowing government to respond faster to socio-economic and political change;
- we improve trust between citizens and state, giving citizens confidence that their personal data is secure and being used in ways they expect, while making government activity more transparent and making publicly-owned, non-personal data available for reuse where appropriate; and
- we build secure systems by default, ensuring that we create protection against cyber crime through every stage of our digital transformation.

Objectives

In order to transform the relationship between the citizen and the state, in the period to 2020 the government will:

- continue to deliver world-class digital services and transform the way government operates, from front-end to back-office, in a modern and efficient way;
- develop the right skills and culture among our people and leaders, and bring together policy and delivery to enable services to be delivered in a learning and iterative environment, focused on outcomes for citizens;
- build better workplace tools and processes to make it easier for public servants to work effectively, including sourcing, governance, workplace

IT, businesses cases, human resources processes, common technology across the public sector and better digital tools for civil servants;
- make better use of data - not just for transparency, but to enable transformation across government and the private sector; and
- create, operate, iterate and embed good use of shared platforms and reusable business capabilities to speed up transformation - including shared patterns, components and establishing open standards.

This strategy is structured around these five objectives. For each objective, we set out what we will achieve by 2020.

We will work on the basis that:

- following the Design Principles, the Digital Service Standard and Technology Code of Practice, we will continue to start with user needs;
- users need a consistent experience of government services, unaffected by government decisions to structure itself differently to deliver the priorities of the day;
- public servants, intermediaries and businesses are users too, and that to succeed, we must understand their needs;
- everything will be designed and maintained with the right level of security - in particular for sensitive or personal data;
- departments retain responsibility for risk around delivery regardless of the sourcing arrangements; and
- we design for security, building the appropriate cyber and privacy safeguards into our digital transformation.

Read the vision and scope for more about the thinking behind these objectives.

Business transformation

While we have made huge progress in recent years, there are still many existing services that need improving. We can still do far more to build ‘online services so good people prefer to use them’ - the ambition of the 2012 Government Digital Strategy.

Based on what we have learned, there’s a cross-government consensus on how the scope of service transformation must expand. It must:

- bring policy development and service design closer together;
- cover the internal workings of departments as well as the services they offer to users;
- broaden the definition of users, for example to reflect that some users will interact with government through third-party services that use government APIs (application programming interfaces);
- recognise that government delivers services through a variety of channels (including online, telephone and face-to-face);
- cover departments that do not have many online services that citizens directly interact with;
- ensure government can provide content and services, and run projects across organisational boundaries; and
- be flexible in ways of working.

What we will do by 2020

The government has the following areas of priority for this Parliament:

- design and deliver joined-up, end-to-end services;
- deliver the major transformation programmes; and
- establish a whole-government approach to transformation, laying the ground for broader transformation across the public sector.

To do this:

- departments and agencies will keep working to improve the user experience of government services radically by building digital services that meet the Digital Service Standard;
- departments will complete their transformation programmes on the Government Major Projects Portfolio (GMPP) and others which were committed to in their 2015 Spending Review settlements, delivering multi-channel services which are accessible to all;
- departments will find ways to experiment with transformation approaches and learn about what works and what does not;
- we will establish a cross-government mechanism to build a common language, tools and techniques, and share knowledge and experience about how to approach major transformations from across government, drawing on learning from the private sector;
- we will build a framework for the best way to deliver transformation across government; and
- GDS will update the guidance supporting the Technology Code of Practice and other applicable standards to support a strategic approach to replacing old technology.

Read more about our business transformation commitments, including a list of important digital services that we will be monitoring specifically.

Grow the right people, skills and culture

Since 2012, many more digital, data and technology specialists have been recruited across government, improving government's technical capability significantly. The challenge now is to attract, recruit and retain specialists in a very competitive marketplace. In particular, we want to evolve our culture by:

- embedding digital skills throughout government;
- making sure digital experts understand government;
- making sure that civil servants of other professions understand digital;
- strengthening our leaders' skills in agile project and programme management; and
- establishing better ways to develop policy and deliver services in tandem - using an agile approach to iterate rapidly.

What we will do by 2020

Our ambition is to have one of the most digitally skilled populations of civil servants in the world, delivering the Civil Service vision to be 'A Brilliant Civil Service'.

We will do this by:

- establishing the principles around which we can best organise digital, data and technology in departments;
- growing the digital, data and technology (DDaT) profession in government, including developing consistent career paths and reward structures;
- building the best possible learning and development opportunities for DDaT professionals through the Digital Academy;
- building government's data science capability through the Data Science Campus and Data Science Accelerator training programme;
- making government a leader in attracting a diverse workforce for digital, data and technology roles;
- working with Civil Service HR and departments to make sure digital tools and techniques are embedded in other professions;
- supporting non-digital specialists in understanding the potential of new or different ways of working;
- working with Civil Service Learning to make sure that current and future leaders have the right training and experience to manage digital projects effectively, work in an agile way and manage digital-age organisations; and
- making policy based on user research, to enable iteration over time with increased collaboration between the policy and service design communities.

Read more about our people, skills and culture commitments.

Build better tools, processes and governance for civil servants

A digital government does not just deliver excellent public services for its users. It creates the right environment for world-class public services by having the right digital tools, workplace technology, governance and processes. Today there is wide diversity across government organisations in:

- the daily technology used by civil servants;
- how programmes of work are managed and governed;
- whether internal processes and controls support agile policy-making;
- sourcing (both commercial and procurement); and
- assurance (including quality control, service assurance and value for money).

What we will do by 2020

We will create empowering workplaces by:

- making sure government buildings have common, interoperable technology and that the design and use of space helps to create a culture of open, digitally enabled policy-making and service delivery;

- giving public servants the right, location-independent tools to do their jobs; and
- investigating the case for better digital services for civil servants by exploring opportunities across government for common digital tools for standard government functions

We will make sure all parts of government can govern, fund and effectively operate agile services, including where services span departmental boundaries.

Building on the Digital Marketplace's approach, we will embed user-centred, design-led, data-driven and open approaches in procurement and contracting across government by 2020.

Read more about our tools, processes and governance commitments.

Make better use of data

Data is a critical resource for enabling more efficient, effective government and public services that respond to citizens' needs. Data acts as the foundation upon which everything else rests.

We must earn and retain the trust of citizens and provide reassurance that personal and sensitive data is treated safely, securely and ethically within appropriate governance frameworks.

Government data is often held and used solely within the organisation that collected it and legacy systems make it hard to share information. There is too much duplication, overlap and contradiction in the datasets government holds. We need to get better at sharing data across organisational boundaries in ways that citizens are comfortable with.

What we will do by 2020

In this parliament, we will focus on the following priorities:

- making better use of data as an enabler for public services, particularly where those services cross organisational boundaries;
- opening up government data where appropriate and continuing to open up government services internally and externally through the use of APIs;
- removing barriers to effective data use in government by all parts of government through the data sharing provisions of the Digital Economy Bill, once it is passed by Parliament;
- appointing a new Chief Data Officer for government to lead on use of data;
- setting up a new Data Advisory Board to align efforts to make best use of data across government, which will oversee a number of examples of better use of data and areas where we can build momentum;
- making better use of data to improve decision-making, by building and expanding data science and analytical capability across government, for analysts and non-analysts alike;

- managing and using data securely and appropriately, ensuring that public sector workers understand the ethics of data sharing - including what is and is not permissible;
- building a national data infrastructure of registers (authoritative lists that are held once across government) and ensuring they are secured appropriately;
- improving data discovery tools for users, both within and beyond government; and
- transforming the way that government's major repositories of data are stored and managed.

Read more about our commitments for better use of data.

Create shared platforms, components and reusable business capabilities

Since 2010 we have taken strong first steps in moving towards a more fundamentally digital government. We share code, patterns, platforms and components. We share best practice for approaching technological and service design problems that apply across government. Cross-government platforms and cross-government services are the future.

We will build on the shared components and platforms to assemble business capabilities (the combination of the technology, processes and people required for a business outcome).

GOV.UK is the government's single domain and the place where online transactions start. We will establish how to make better use of GOV.UK for services that span departmental boundaries (or which are provided by third parties, which could include local government or outsourced services).

What we will do by 2020

To make it quick, cheap and easy to assemble digital services and to provide a consistent experience for users across all government services, we will build more reusable, shared components and platforms.

Building on the work we have already done, our priorities for government up to 2020 are:

- exiting large, single supplier and multi-year IT contracts;
- building shared components and platforms, extending the use of the ones that we have and onboarding more services;
- developing and publishing standards and implementation guidelines for components, platforms and capabilities to make public sector reuse easier;
- removing barriers to component, platform and capability reuse, and exploring reuse beyond central government;

- operating the digital services and components GDS and departments have already built on the GOV.UK single domain to a high standard of reliability, security and performance, and continuing to improve them to better meet their users' needs;
- making better use of GOV.UK Verify by working towards 25 million users by 2020 and exploring options for delivery of identity services for businesses and intermediaries;
- 'going wholesale' by expanding the number of available and supported APIs, inside and outside of government, for example by allowing accountants to submit tax returns automatically with the permission of their clients;
- sharing what we have built internationally and learning from best practice in other countries to continuously hone and improve our services; and
- overhauling government's legacy content and outdated publishing practices by 2020, so government services are clear, well maintained and easier to find on GOV.UK.

Read more about our commitments for platforms, components and business capabilities.

The vision beyond 2020

Most of our current major transformation projects are scheduled to be complete by 2021. However, transformation is a continuous process. While we deliver these major programmes, we need to plan for post-2020. By ensuring we are adaptable and responsive to change, we will be able to keep pace with technology as it evolves. This will ensure that we can maintain our momentum to transformation government.

To make government more flexible, we will make a clear plan for digital transformation beyond 2020. We will do the discovery and preparatory work needed to understand what further changes government will need to make in order to be fit for the digital age - changing how we change - including:

- how government structures may need to change in future;
- how policy is made, for example by creating early prototypes and iterating quickly based on evidence and feedback; and
- any other changes that might be needed to enable our vision to be delivered.

Read more about our expectations for government beyond 2020.

If we achieve these things, we will have reshaped government. We will be a government that puts the citizen first and meets their needs in a modern, efficient way: one that can adapt and change quickly to meet the needs of the country.

Background

When we say transformation, we mean a significant step change in the way a government organisation delivers its services and in the way it operates. Any change that government makes is driven by three considerations:

1. Citizens: changing the way government interacts with citizens and businesses, whether online, at national borders, face-to-face, on the phone or in an emergency.
2. Policy: implementing the government's policy agenda to make social change and change people's lives.
3. Efficiency: making government work in a more cost-effective way.

One of the most powerful enablers of transformation in the early 21st century is to adopt the tools, techniques, technology and approaches of the internet age. This is what we define as 'digital'. It is a cultural change as well as a technical one.

Since 2010, the UK government has become one of the most digitally advanced in the world. The Government Digital Service (GDS) was created in 2011 as a digital centre of excellence for government. GOV.UK was launched in 2012. By the end of 2014 it had replaced the majority of department and agency websites. Departments created numerous digital services across government. GOV.UK Verify was developed as a way for users to prove their identity online securely. Two additional reusable components have been launched that make the job of delivering services across government easier and the user experience more consistent: GOV.UK Pay and Notify.

We have also invested heavily in skills and people, recruiting a large number of digital specialists (most of whom work in departments) and improving the training available to public servants (through initiatives such as the Department for Work and Pensions (DWP) Digital Academy which has trained almost 4,000 staff since it was established in 2014).

Departments have been transforming themselves to make the most of the opportunities created by digital technology, both to meet their users' needs and to modernise their internal operations. Millions of citizens now have the convenience of doing business with government from their home or on the move at a time of their choosing - from April 2015 to March 2016 over 33 million people taxed their vehicle online (and no longer need a paper record), 93% of vehicle tax and drivers transactions (about 200 million per year) were done online, over 4 million people applied for a driving licence online and over 5.7 million people used the voter registration digital service, with a peak of 469,000 applications in one day.

Read the transformation case studies for more information about how:

- DWP is re-engineering the welfare system;
- HM Revenue and Customs (HMRC) is fundamentally rethinking tax in a digital age;
- HM Courts and Tribunals Service (HMCTS) is modernising the courts and tribunals system, enabled by digital services;

- HM Passport Office (HMPO) is moving to a modern, digital process where 31% of customers already use either the online channel or the new online renewal service, amounting to 2.2 million customers per year enjoying a digital experience;
- Office for National Statistics (ONS) is targeting 75% digital take-up in the 2021 Census;
- Department for Education (DfE) is launching a digital apprenticeship service; and
- Department for Environment, Food and Rural Affairs (Defra) is transforming services for its regulated customers.

As a government, we are here to further the prosperity and security of the UK, to serve the citizen and to build on our position as a world-leading provider of public services. The digital revolution kick-started by GDS in 2010 has seen us make great strides. However, there is much more we still need to do. We must reflect our increased experience and understanding. The government's approach to digital must be comprehensive and we must expand our focus, underlined by the creation of new senior roles with a wider government mandate.

This strategy builds on those of previous governments and sets out what public servants will do to continue to transform the public sector for the digital age. It is not just about providing the digital services citizens rightly expect, but also about ensuring that government continues to modernise itself on the inside. All of this must be enabled by giving citizens confidence that the government will respect their personal data and identity. By doing so we can improve outcomes, deliver a better service and improve the efficiency of our operations - transforming the relationship between citizen and state.

Read more about GDS's role in implementing this strategy.

Digital context

We all know the world is changing rapidly. The average British person now spends around £1,500 online for goods each year, making us the most frequent online shoppers in Europe. One of our major retailers made 4 in 10 sales online last Christmas, with smartphones and tablets the fastest growing channel, up by 31%. The UK digital economy is one of the most developed in the world, worth around £145 billion a year.

Globally, industries are being disrupted and transformed by software such as Netflix (entertainment) and Spotify (music), Uber (travel), Airbnb (accommodation) and Fitbit (health); retailers like Amazon are built around technology. There has also been a social media explosion: Facebook has nearly 1.8 billion active users each month and has built a multi-billion dollar mobile advertising business from scratch in the last few years.

The accelerating pace of internet-enabled change

A set of common factors have come together to create a multiplier effect, enabling rapid innovation, where the culture, technology and practices of the internet era are applied to to create services that people want to use, in many

cases generating demand that did not previously exist. WhatsApp and Facebook Messenger, for example, together handle 60 billion messages a day, while the combined global mobile networks handle 20 billion.

71% of UK adults now have a 'pocket supercomputer', which is personal and taken everywhere. On average, people spend over two hours a day using them, rising to nearly five hours for those aged 16 to 24. Each smartphone knows its location, has sensors and cameras, notifications, a contacts list, payment information and is much easier to use than a traditional computer. This fundamentally changes what is possible. Using the internet is no longer just about web pages and PCs with a mouse and keyboard. More and more devices are being connected together, for example in the home; these are built with components from the smartphone supply chain and will drive a corresponding rise in the amount of data from their sensors.

Wide availability of fast internet connectivity enables people to use their smartphones everywhere - not just when they are in the street, but at home and increasingly while sitting in front of a computer.

New business models enable people to share and sell goods and services to one another much more directly and cheaply. These consolidated platforms of demand allow people from outside an organisation to deliver something of value to the organisation's users. This is why, for example, an app store can sustain over 1 million apps.

Powerful services can now be assembled quickly by joining multiple data sets and commodity components. For example, combining location, maps and open, real-time public transport information in a cloud-hosted service can create a service that tells people the quickest way to reach their destination. Services can be linked to payments, profile or identity, notifications and messaging. Innovation is now limited by the vision and route to market, not by how long it takes to construct the technology.

Any organisation can now easily have a public face on the internet with a web page, or can use internet-based services to improve the way their organisation runs. However organisations that are truly 'of the internet' are applying some or all of the factors above to enable completely new ways of doing business.

Modern online businesses are using data analysis techniques and machine learning, so that their services change continually based on how they are being used. This helps them improve their efficiency, but poses new ethical questions around areas such as the impact of automated newsfeeds and pricing policies. Start-ups and traditional businesses alike store large amounts of personal information, raising concerns around security and privacy for their users in an environment where breaches are increasingly in the headlines.

The culture of start-up organisations is to focus on the outcomes they are trying to achieve, while consuming internet-based shared service platforms ('in the cloud') to support their internal processes - such as customer service, payments, HR, payroll and finance.

These components and back-end functions are shared by millions of users all over the world and thus attract significant investment, but can be tailored to meet specific user needs. A small company can now have a better HR system than a big enterprise and at a fraction of the cost per user. These organisations are often new enough to be unencumbered by legacy technology that would reduce their ability to change their businesses. Coupled with this, employees' expectations are changing: young people entering the workforce expect a different kind of employment.

This digital revolution is transforming society and creating significant economic benefits worldwide, much of which will be driven by the private market and entrepreneurs. The pace of change is accelerating raising people's expectations that government will apply the same practices and technologies to improve its services and also the way, behind the scenes, those services are delivered.

Implications for government services

Developments in the private sector may highlight opportunities for government, but some of these do not translate directly into public service provision. For example, private sector companies can choose to target certain customers and exclude others. Public service providers, on the whole, cannot.

Many sectors have been disrupted by new companies making the best use of digital technology, but it is not a given that similar benefits will be realised by government automatically. It is not possible to disintermediate critical services like benefits and courts, where people depend on public services and have no choice about whether to use them.

Services must work for the whole of society - not just the 77% of people who have basic digital skills, but for the 12.6 million adults who don't. This is particularly important as financial exclusion and digital exclusion often go hand in hand. People who are the least online are often heavier users of public services, highlighting the need to design services to include them. Nearly one in four people in the UK will be over 65 by 2040. A significant proportion of the adult population may never attain the digital skills to use online services without support, because of disabilities or lack of basic literacy skills.

As disruptive start-up businesses mature and their users begin to depend on their services, they face a tradeoff to ensure they provide a stable service while continuing to innovate. For example, for many years Facebook's mantra for developers was "Move fast and break things". It highlighted that moving fast was important and that they were willing to tolerate problems with the service to do it. However, just after its user base passed 1 billion in 2014, Facebook changed this to "Move fast with stable infrastructure" to reflect that their users now relied on its services. Having to fix things they had broken was slowing down their rate of innovation.

So it is not inevitable that the parts of government which serve people continuously, including the hardest to help in our society, will be automatically digitally transformed. Government needs to drive this actively, to ensure it is achieving the best for the UK, just as businesses and other governments are increasingly making use of these opportunities to rethink their business models.

Citizens rightly expect their experience of government services to be as good as the best consumer services. Government however must also protect citizens' identity and maintain our national security. So while it should be straightforward, renewing a passport requires much more stringent security processes than an online purchase does.

Critically, technology is now evolving so quickly that it is not the limiting factor in transformation. While the technology must work, the limiting factor is having the right people, with the right skills, working in the right way, in the right places. This strategy therefore places a much greater emphasis on people as the agents of transformation than did the 2012 Government Digital Strategy. Having the right organisational development skills and strong change leadership is as important as having data scientists or developers.

The division of accountabilities between different government departments has in the past resulted in multiple digital strategies, which, although directionally aligned, have not been brought together into a joined-up whole. Different parts of government have reached different levels of digital maturity; combined with their differing purposes, this has led to different approaches.

Even within the most digitally mature departments, there is a risk of creating disconnected business cases for change and missing the opportunity to consolidate demand and drive reuse within their organisational boundaries. In operational departments, the business change strategy and digital strategy now need to be considered as the same thing.

The time is right for us to think more laterally across departments - and for government to have an integrated transformation strategy, enabled by digital practices and technologies.

As government has become better at user-centred design, we have recognised that users' needs do not neatly align with the organisational structures of government. In response, we are increasingly building services that span multiple departments. This strategy therefore places a much greater emphasis than ever before on the systemic changes required in the centre of government to keep pace with people's raised expectations, as well as the comparative progress of other countries.

We need to create the conditions for transformation to be successful; the way we operate, govern, approve and deliver needs to match our level of ambition. This means that departments' transformation plans will need to be produced collaboratively to become increasingly interwoven. Read about the role of GDS in facilitating this process of convergence.

Progress to date in digital government

Government made significant achievements in digital government during the last parliament, including three major initiatives that paved the way for successful transformation across departments.

Focus on user needs

A focus on digital service delivery began to realise the possibilities of agile development: continuously iterating services, making the most of online channels and using the potential of modern technologies and data, fundamentally based on meeting the needs of users.

The creation of the Government Digital Service in April 2011 kickstarted this with the launch of the GOV.UK single domain and publishing platform. With help from GDS, departments demonstrated the potential of public service transformation through 25 exemplar services that radically rebuilt some of the most high volume services to make them 'digital by default'. This helped save £3.56 billion for taxpayers for the three financial years from April 2012 to March 2015. This focus on citizens' needs has been replicated as a model across the world.

Since then, most of the large departments have been successfully building their internal digital capability and learning from each other, with a focus on hiring world class people. The GDS Senior Civil Service Recruitment Hub has partnered with 19 departments to build their senior leadership talent. 114 permanent and 62 interim digital and technology leaders have been recruited into government via this partnership approach, as well as 91 senior short term hires who improved our capability to lead transformation across departments.

Agile development is now being carried out with single teams including policy experts, behavioural insight specialists, service designers, analysts, user researchers, front-end developers, server-side developers, testers, infrastructure engineers and data scientists. All work together to create easy to use, secure digital services using the practices of internet-era organisations, while making the necessary connections into, or replacing, complex and interconnected enterprise IT estates.

Focus on building skills and experience in the major programme disciplines

There was also a new focus on building the skills and experience in the major programme disciplines necessary to deliver complex programmes, from infrastructure to business transformations.

These complex programmes are all different but are characterised by their long-running nature, with multiple phases, navigating multiple layers of organisations (transition of staff and locations, for example) and especially by the need to maintain the operation of complicated existing service implementations which must continue while the change is being delivered.

The Infrastructure and Projects Authority (IPA, until January 2016 the Major Projects Authority, MPA) created a world class programme, run in partnership with Oxford University's Saïd Business School, to train public and private sector participants, who are either current or future Senior Responsible Officers of major programmes, in how to lead complex programmes successfully.

Since the inception of the Major Projects Leadership Academy in 2012, around 300 civil servants have graduated and further cohorts of 100 are currently enrolled or part way through. The MPA also established the Project Leaders Programme, in partnership with Cranfield University, which has seen more than 100 civil servants graduate with improved project and programme delivery and leadership skills, with a further 400 enrolled in current cohorts.

Together with the more established disciplines of external programme reviews by the IPA, these initiatives played an important part in increasing confidence in delivery across the government's portfolio of major projects, which currently includes 144 projects, with a whole-life cost of £455 billion. Many of these are infrastructure programmes. However, an increasing number, currently around 30 of them, are transformation programmes delivering improvements to citizen-facing services and considerable savings to the Exchequer through more efficient ways of working, enabled by a significant digital component. See the list of the major transformation programmes.

Focus on developing commercial skills

The third major initiative was a focus on developing the commercial skills necessary to get the best from the services delivered under contract.

Each department has a different pattern of service provision, including what is delivered under contract, for example: medical assessment in DWP, offender management in Ministry of Justice (MOJ) and the creation of community rehabilitation companies (CRCs) in the probation sector. Too often, however, virtually all technology services (from design, through software development, to infrastructure and operations) have been delivered under long-running monolithic contracts with a relatively few suppliers.

Since 2010, government has significantly improved the capability of the Civil Service to manage contracts and shape markets, again with a number of senior hires. In addition, it has sought much better value for money and responsiveness, through disaggregating monolithic contracts and beginning to make better use of readily available, competitively-priced technology services where these have become more commoditised.

The case studies included with this strategy demonstrate how these three initiatives are bearing fruit and underpinning real changes in how services are delivered.

To support such major initiatives, GDS established standards and policies to help ensure that digital services work consistently for everyone. This included cross-government technology services that provided common hosting, networking and best-in-class workplace technology.

Government now coordinates technology and digital spending centrally. It has freed the public sector to buy from a much wider range of high quality, relevant suppliers. As of November 2016, a total of £1.67 billion (excluding VAT) has been spent through the Digital Marketplace, of which 55% by value has been awarded to SMEs (equivalent of £1.65 in every £3 spent). Since the Digital Marketplace launched as public beta in November 2014, over 3,300 suppliers have registered to offer services to the public sector.

As a result of the progress so far on all of the above, the UK is now seen as a world leader in digital government. In 2016 the United Nations e-government survey ranked the UK top in the world for for both e-government (ensuring public institutions are more inclusive, effective, accountable and transparent) and e-participation (participatory decision-making).

But having shown the way, there is still much to do to ensure that we retain this leadership position. It is now the right time to stand back and identify what is needed to make further progress.

Across government we must create flexible digital infrastructure, and government services that are responsive to changing environments and enable us to iterate and improve existing services in an agile way.

Individual departments have accountability for the creation of the business capabilities they require. However, there is a critical role at the centre to enable departments to evolve and transform their operating models in dialogue with one another. The centre can provide departments and agencies with a collective understanding of what's going on around them. It can take action to solve problems once when departments are working towards the same outcome.

The role of the centre will be increasingly to supply the intelligence that ensures this 'situational awareness' is factored into the myriad technology and commercial decisions taken across government each day. Doing so will help government converge on a smaller number of non-duplicated capabilities over time.

A coordinated vision across all ministers is needed to transform government - both the services it provides and how it operates - to unlock further gains for citizens and businesses - as highlighted in the sections that follow.

Vision and scope

Vision

To serve the people of the United Kingdom better we want to create a responsive state that can change at pace and at scale.

To do this, we need to transform the relationship between citizens and the state - putting more power in the hands of citizens and being more responsive to their needs.

The tools, techniques, technology and approaches of the internet age give us greater opportunities than ever before to help government so that:

- citizens, businesses and other users have a better, more coherent experience when interacting with government services - one that meets the raised expectations set by the many other (non-government) services and tools they use every day;
- elected governments can make a more immediate impact, delivering on policy goals by providing services and information more quickly, with the intended outcomes for their users - and the ability to change delivery quickly if the policy changes;
- the cost and time to build, change and run government is reduced, saving public money and allowing government to respond faster to socio-economic and political change; and
- we improve trust between citizens and state, giving citizens confidence that their personal data is secure and being used in ways they expect, while making government activity more transparent and making publicly-owned, non-personal data available for reuse where appropriate; and
- we build secure systems by default, ensuring that we create protection against cyber crime through every stage of our digital transformation.

Scope

Transformation generally refers to making step-change improvements to whole services and whole organisations, as distinct from incremental improvements. Over the last five years, many departments have become comfortable talking about user-centred design, test-and-learn and channel shift to digital services. They have started to transform the culture of how they deliver services. While this has been a great success, in many cases they have not yet been able to transform the ‘back end’ of their organisations: those behind-the-scenes parts of their operations which deliver the services.

This strategy uses the term department to cover the organisations of central government, such as ministerial and non-ministerial departments and associated arm’s length agencies. To be successful, departments and their delivery bodies need to have a productive relationship and a clear understanding of their respective responsibilities.

While the digital exemplars from the previous parliament delivered excellent web interfaces that better meet user needs, the back-office processes and systems were often left unchanged. In some cases, the online service passes the contents of a web-form to back-office staff, who must then rekey the data into an existing system. In others, the online process has been grafted onto legacy technology which does not fully realise the value from digital. These services brought back-office benefits (such as allowing some eligibility checking or removing some of the issues with reading people's handwriting) and demonstrated that government is capable of delivering better online services, but have not fully delivered fundamental back-end transformation.

The world is also not standing still. Following the vote to leave the European Union, the need for government and the wider public sector to be agile and responsive to a changed environment across (or sometimes redefining) existing departmental boundaries has become even more important.

This has brought clearly into focus that the digital challenge is not simply about online interactions - but fundamentally about how departments operate on the inside.

Our work since 2010 means that there is now much more digital capability across government - particularly in the bigger operational departments. However, each department is different and there are still a significant number of smaller agencies and other public bodies which either do not have citizen-facing online transactions or are too small (either in terms of organisational size or in transaction volume) to have been able to invest heavily in digital tools and techniques. Many such smaller organisations have begun the journey of putting transactions online, but this is still a work in progress.

These smaller services have the opportunity to significantly reduce the burden on their users. However, recognising that they have smaller returns from the perspective of a departmental investment case, the Government Digital Service (GDS) started the Government as a Platform initiative. This plan was to provide a consistent user experience and dramatically reduce the costs of digital services by creating common capabilities for government, thus making the long tail of smaller volume transactions viable economically for transformation. We need to continue down this path and ensure that government services are available to all users in the right channel at the right time.

We must all remain mindful that government is not here just to make transactions go more smoothly. It is the role of government to provide thoughtful, well-designed, straightforward services that make it easy for citizens to interact with government. Government must also be financially responsible by using up-to-date approaches to improve the efficiency and effectiveness of how services are delivered. But ultimately, it is the role of government to improve the way the economy and society functions. So when we talk about transformation, it is critical that it is linked back to its role in implementing the policy agenda and, in particular for this strategy, in making full use of the huge opportunities afforded by technological progress.

In that context, the next stage of government transformation has three broad components, which together form the scope of this strategy.

Component of the strategy	Outcome	Explanation
Transforming citizen-facing digital services	Departments improve the digital citizen experience	We will continue to deliver a steady stream of high-quality digital services, which must be both available to citizens and used wherever possible.
Transforming the way departments deliver their services inside, enabled by digital	Departments deliver policy objectives in a flexible way, with improved citizen service across channels and improved efficiency	We must safely achieve the commitments departments have made to deliver major business change programmes to the way they operate internally. These are complex and take much longer than delivering just online services.
Transforming the way departments deliver their services inside, enabled by digital	All of government is able to deliver transformation more effectively	To enable both of the above, we must transform the way government governs itself. Critically, this will rely on even greater collaboration between professions and departments. We will identify and address challenges which are common to transformations in all departments, with the aim of making it easier to successfully deliver transformation and change across government.

Devolved administrations and the wider public sector

This transformation strategy is focused on UK central government. Other parts of the public sector like local government, health, police, parliament and devolved administrations have their own governance, are responsible for shaping their own approaches and have their own digital action plans and priorities.

There remains, however, much we can do to collaborate across sectors to meet common needs in the interest of delivering better services to users - for example, ensuring seamless end-to-end citizen journeys, sharing data and using common platforms. This strategy indicates several potential areas of collaboration.

The increasing devolution of powers has created a different service delivery landscape for people living and working in Scotland, Wales and Northern Ireland. Devolved services are subject to separate governance arrangements from those described in this strategy. Nevertheless there is close cooperation between our

respective administrations in order to learn from each other's experiences, share ideas and ensure that the experience provided for service users is as seamless as possible.

2015 Spending Review

The 2015 Spending Review settlement established the parameters for continued delivery of transformation across government during this parliament. Departments have developed their plans through to 2020 to deliver within these parameters, many of which depend upon a strong digitally-enabled element. These programmes are large, complex changes, affecting millions of citizens, tens of thousands of public sector workers and hundreds of suppliers. Transformation on this scale, whether in the private or public sector, is always a major challenge and requires coordination of significant changes to the business operating models on multiple levels across multiple departments, while maintaining services to those who depend upon them. A government priority is therefore to complete the delivery of these existing programmes safely, while at the same time beginning the process of planning out and making decisions on the next phases of work.

The transformation of public services in this parliament will be delivered by government departments, who are responsible for service delivery, with GDS providing leadership, support and expertise from the centre. Read more about GDS's role in supporting this strategy.

Expanding the focus on transformation

Government has evolved over hundreds of years and over this time has developed the organisational structures, processes and technologies which deliver today's services. Our vision builds on that of previous governments, which have laid the groundwork for transformation and made important steps on the journey.

Changing any complex organisation takes time. The services government delivers are vital to citizens and the risks inherent in change need to be carefully managed. These challenges are not unique to government. For example, much of the banking system relies on critical infrastructure which is now decades old. This highlights the generational nature of transformation, which is a continuous process and therefore much longer-running than a parliamentary cycle.

However now that digital is increasingly mainstream in society, we must seize the opportunity to transform the services government offers to all of the UK. We recognise that the public sector is not a single entity and that different parts have evolved at different rates. A one-size-fits-all-solution will not work or be appropriate. This means that while we have set out our vision for where we want to get to, the journey to get there will depend on the maturity of each organisation.

Objectives

In order to transform the relationship between the citizen and the state, in the period to 2020 across the whole of government we will:

- continue to deliver world-class digital services and transform the way government operates, from front-end to back-office, in a modern and efficient way;
- develop the right skills and culture among our people and leaders, and bring together policy and delivery to enable services to be delivered in a learning and iterative environment, focused on outcomes for citizens;
- build better workplace tools and processes to make it easier for public servants to work effectively, including sourcing, governance, workplace IT, businesses cases, human resources processes, common technology across the public sector and better digital tools for civil servants;
- make better use of data - not just for transparency, but to enable transformation across government and the private sector; and
- create, operate, iterate and embed good use of shared platforms and reusable business capabilities to speed up transformation - including shared patterns, components and establishing open standards.

We will work on the basis that:

- following the Design Principles, the Digital Service Standard and Technology Code of Practice, we will continue to start with user needs;
- users need a consistent experience of government services, unaffected by government decisions to structure itself differently to deliver the priorities of the day;
- public servants, intermediaries and businesses are users too - to succeed, we must understand their needs;
- everything will be designed and maintained with the right level of security - in particular for sensitive or personal data;
- departments retain responsibility for risk around delivery regardless of the sourcing arrangements; and
- we design for security, building the appropriate cyber and privacy safeguards into our digital transformation.

Business transformation

Current situation

To serve the people effectively, we must have a deep understanding of those whom a policy will affect.

We have made great strides in using digital tools and techniques to embrace this. We now deliver increasingly sophisticated digital services from a large number of government organisations which meet users' needs, receive high satisfaction scores and which can be changed easily, contributing to a more responsive state.

Many departments have reached the limits of how far they can transform without changing how the organisation works. Many services span multiple central government bodies, local authorities, devolved administrations, the third sector or outsourced services. We now need to focus on how public sector bodies work on the inside - in particular making them more responsive to the needs of the people they serve - so that they can continue to better meet users' needs on the outside. This is how we define 'business transformation'. We also need to collaborate more closely across organisational boundaries. Transformation is something that all parts of government need to mutually support.

This is what we have learned about how to approach transformation.

Bring policy development and service design closer together

The policy intent and scope of services are often fixed before teams start user research into how to design or improve it to best meet the needs of the its users. This results in policy not reaching its intent and a service not meeting the needs of users. Both the policy and the service must be designed, iterated and delivered in tandem.

For example, the Department for Communities and Local Government (DCLG) has worked across digital, technology, data and planning policy to deliver pilots of local brownfield land registers. The Department for Education (DfE) has been able to deliver the Apprenticeships service at pace by working on a single team basis, bringing together policy, digital and operations. While initially counter-cultural, the approach has since yielded great results and is a key strategic approach for DfE in the future.

Cover internal processes, as well as the services offered to users

Digital can no longer be a 'bolt-on' to the side of an organisation. It is now having a profound impact on the internal structures of departments. We need to look beyond channel shift. We need to redesign government services completely, including the processes within government that deliver them. If there are fundamental flaws in the business process behind a service, then simply providing it on a digital channel cannot fix those. We have the opportunity to design services in a completely different way, for example by

moving to prevention of fraud and error (rather than correction after the event) or re-inventing processes using more analytical techniques to automate where safe to do so.

Design for a broad definition of users

Transformation must consider the full range of users to deliver transformed services via whatever mechanisms are most appropriate. For example, 80% of HM Revenue and Customs' (HMRC's) transaction volume comes through APIs (application programming interfaces) which allows third-party software to exchange information with HMRC systems. In the criminal justice system, users might include individual parties, victims, witnesses and professionals. Services also need to interface with prosecutors, investigators, the police, defence solicitors, probation, the Parole Board, court and prison staff. We must also consider what we offer to other critical groups, for example the open source technology community.

> 75% of Defra's business users say they are satisfied or very satisfied with their new digital services. Read how Defra applied user centred design when transforming services as part of the Regulated Customer Digital Programme.

Recognise that government is inherently multichannel

We know that people sometimes need extra help. So we need to think about how a service can be delivered through different channels - be it via a contact centre, speaking to an immigration officer face-to-face when entering the country, accessing GOV.UK from a mobile phone, or (as we describe in platforms, components and business capabilities) via a third party application.

For example, HMRC's identifies those taxpayers who need extra help and then offers them the support that suits them best, whether by phone or in person at a place convenient to them. Not only is this a better service for people who really need extra help but it is more cost-effective and flexible for HMRC to administer. The NES team attended 23,447 appointments during financial year 2015 to 2016.

Recognise that transformation covers the whole public sector

Some departments don't have many online services which citizens or businesses interact directly with. This might be because they serve businesses or institutional users, or because they are primarily focused on policy development. These departments, along with arm's-length bodies, local authorities, social care, the emergency services, transport and education should also be seeking to maximise the transformation opportunity of digital. In a planned and properly sequenced way we need to continue to drive transformation of all of government, the Civil Service and the wider public sector.

Join-up across departments

The services we build increasingly cross traditional departmental boundaries to meet user needs. To fully achieve the benefits of digital government we need

to design services on a cross-departmental basis at an unprecedented pace and scale.

While our processes and accountability structures give us the ability to work across boundaries, we need to use our existing models of accountability and empowerment better to make it easier to design end-to-end services around user needs and to join up the transformation of back-office functions.

We must also ensure when joining-up that we are measuring value and efficiency at the level of the government, not per service or per department. Managing Public Money requires the public sector to avoid developing narrow solutions which fulfil that department's accountability but only partially meet people's needs, if this forces additional cost onto another part of government, for example through failure demand. Addressing this through appropriate project or programme governance is essential to long-term success.

Be flexible in ways of working

In order to serve people by providing services that efficiently meet their needs, we must respond to changes such as evolving user needs, the international context and the opportunities of new technology. This means progressively working towards more responsive and agile organisations - digitally-enabled from the front end of a service to its innermost workings, including people, process and organisational structure.

What success looks like

The measure of success must not be limited to substituting paper with online versions of the same form. The number of website interactions should be reducing, not increasing, as services are designed to be truly digital. With properly designed services, we should be looking to avoid unnecessary contact with government, which will mean that in the future, the number of digital transactions should decrease.

Proper service design should include fundamentally reconsidering the policy question - and potentially removing the need for a specific service or interaction altogether. For example, under the Job Seeker's Allowance (JSA) and Tax Credits regime, reporting a change of circumstances might involve a person calling Jobcentre Plus to close JSA, talking to HMRC to open Working Tax Credits and then talking to a local authority to keep their Housing Benefit going.

Under the Universal Credit (UC) regime, this all happens in one interaction following notification of change of circumstances. In most cases, for example when people increase earnings, this is already automated in UC, using data passed from HMRC to Department for Work and Pensions (DWP) under Real-Time Earnings. In case where it is not automated, for example when someone loses their job, DWP asks people to make contact, so that they can provide human support quickly (rather than waiting for a zero earnings notification from HMRC).

While government does want transactions like this to run smoothly and in this case smoothing the user journey was central to the policy intent, success will

ultimately be measured by the real world outcomes achieved (in this case, more people getting into work and progressing in work).

Our aim is not just to make transactions go more smoothly, it is to serve our users and improve the way the economy and society operates. To do this, transformation programmes must put policy, delivery and operational colleagues together in multidisciplinary teams to give them the best chance of achieving their policy outcomes.

Read people, skills and culture for the actions that we will take to embed multidisciplinary teams across the public sector.

Priorities until 2020

Transformation is a continuous activity. 2020 does not represent an end date for transformations, many of which are complex, long running programmes which will take many years to embed. However the 2020 deadline is critical as it is the end of a parliamentary cycle.

Our three cross-government priorities are to:

- design and deliver joined up services;
- deliver the major transformation programmes; and
- establish a whole-government approach to transformation.

Design and deliver joined up services

Digital capability has grown in departments in the last four years, enabling large numbers of services to be designed and delivered. We will continue to emphasise the importance of the service management model of multi-disciplinary teams led by an empowered service manager.

Different departments have different levels of maturity. While some now have significant expertise in delivering digital services (and will continue to develop these capabilities), others have fewer public-facing services and may not have extensive expertise in this area. However, delivering digital services online can be considerably quicker and less complex than large-scale business transformation and is an opportunity to continue to improve the basic digital citizen and business experience. So we will continue to make more government transactions available online, including smaller or less widely-used services.

A symptom of lower digital capability can be a narrow focus on technology and development, to the exclusion of user-centred design. As our approaches to delivering services mature, we will shift from thinking about designing and procuring technology to consuming standard components (enabled by technology). As we explain in platforms, components and business capabilities, by creating components and platforms that can be easily reused, it should become easier for all organisations to provide public services designed for the digital age. Moreover, our most digitally mature parts of government will be able to concentrate on innovation and keep the UK at the forefront of digital government internationally.

Despite the successes of the last four years, the scale of the task is considerable. There remain many services which need to be overhauled so that they live up to the expectations people and businesses will have in 2020.

Government is already committed to delivering a significant number of digital services. The following table highlights a short list spanning a range of important public facing services that we will make digitally accessible by 2020. These digital services and related guidance will be available with clear user journeys from GOV.UK by 2020.

Service name*	Department
Apply for a passport	Home Office
Apply for a visa	Home Office
Carer's Allowance	Department for Work and Pensions
Check if someone can work in the UK	Home Office
Check my State Pension	Department for Work and Pensions
Come to live or work in the UK	Home Office
Digital Driving Licence	Department for Transport
Get your MOT	Department for Transport
GOV.UK Verify	Government Digital Service
I want a divorce	Ministry of Justice
I want to fish	Defra
Make a plea	Ministry of Justice
Making tax digital for business	HM Revenue & Customs
Making tax digital for individuals	HM Revenue & Customs
NHS.UK	Department of Health
Renew my passport	Home Office
Universal Credit	Department for Work and Pensions

*Some of the service names on this list are provisional and subject to change.

This list will allow us to track the progress of this strategy: that the relationship between the citizen and the state is being transformed, with more digitally available services delivering the right outcomes. For services which are already operating, we will track how many are using it and progress in driving up take-up. In cases of low take-up we will use learnings from other services to make the necessary improvements.

In addition to providing this assurance the Performance Platform will be used to provide the data to support better decisions about services. We will increase its coverage across services and develop it to work with data from all channels services are offered through, not just online.

For many of the digital services which government has developed so far, the agile iterative change to the service has largely been limited to the online channel - not to policy or operational processes of the organisation. Changing the back end of these services is frequently only possible through larger-scale transformation programmes.

Deliver the major transformation programmes

Our priority through to 2020 is to deliver the challenging large-scale transformations committed in the 2015 Spending Review. Each department has a specific plan for how they will approach the transformation required of them in their settlement.

To ensure we deliver these programmes in the best possible way and maximise the investment, we will get better as government at:

- recognising major, multi-dimensional transformation programmes;
- supporting them appropriately to deliver in the best possible way, for example through the technology and commercial choices made and by helping them make use of a growing range of shared components; and
- helping them and intervening in them when necessary.

There is a wide range of transformation programmes in the Government Major Projects Portfolio (GMPP) - currently around 30 of the 144 are major transformation programmes (listed in the appendix). Every transformation now features a significant digital, data and/or technology component. 90% of them are scheduled to complete by the 2020 to 2021 financial year.

These programmes are making large scale changes to government that are much more than digitising transactions. Some are making significant changes to the way whole departments operate. Some are creating new organisations or fundamentally changing business models.

HMCTS is moving cases out of the physical courtroom that do not need to be there (for example divorce, minor speeding offences or preliminary crime hearings) as part of their modernisation programme. Read more about the digital services they are delivering to build an organisation that meets customers' needs and expectations, stripping away paper, unnecessary hearings, forms and duplication.

Programmes which have a strong digital component in particular require a 'test and learn' approach. What a service does and how it works need to be worked on in tandem, so a critical success factor is to understand user needs, test what works and iterate. Meanwhile, programmes delivering significant location and organisation changes still need to apply major programme disciplines, such as those set out in the Major Projects Leadership Academy.

Major transformations must therefore adopt appropriate elements of both agile and major programme disciplines at different times according to what the best methodology is for different aspects of the programme, aligned to the guidance set out in Managing Public Money.

This means recognising that for digital and behaviour change elements to be successful, they must be delivered in an agile way, which fits into a broader programme plan. Furthermore, components which are delivered in an agile way, once they move beyond their initial creation, require distinct approaches to turn them into stable, documented, supported services which can operate at national-scale. The longer-running government programmes now have enough experience to share their learning.

Establish a whole government approach to transformation

The purpose of establishing an approach to transformation across government is so that we get better at designing, managing and delivering transformation programmes based around user needs.

In platforms, components and business capabilities we outline our approach to avoiding government solving the same problems many times over, which results in fragmented approaches and negative impact on efficiency and progress. A common approach will be critical to building mutual visibility and situational awareness around government to enable this.

In tools, processes and governance we discuss how we will create the environment for this, including the necessary governance structures, processes and common standards.

Working across government in this way requires different ways of sharing experience and learning from each other. We will continue to build on the many communities of interest, practice and action which have been set up, including the Transforming Together network of those working in transformation, as well as the Transformation Peer Group, whose role is to bring together senior transformation leaders from around government and which has oversight of the portfolio of major transformation programmes.

We will also continue to work with colleagues in devolved administrations, local authorities and the wider public sector, to understand areas in which closer cross-sector collaboration will help better meet user needs - for example through ensuring high-quality end-to-end user journeys and interoperability of data where services span sectors. To support this, devolved administrations are also setting up their own communities. The Welsh Government Minister for Skills and Science chairs the Digital and Data Working Group, which provides leadership and oversight on transformation in the Welsh government. The

Scottish Government has established the Digital Transformation Service which has supported over 50 organisations with their digital projects over the last year.

How we will do this

Services

As government, we will continue to design and build new services that are:

- user-centered;
- focused on meeting their users' needs from start to finish and in whatever channel users need;
- evidence-based;
- delivered using agile methods; and
- high quality (meeting the Digital Service Standard).

The services' scope will increasingly include not just the front end but the back office and any other organisations (in government or not) involved in either the user's journey or the service's delivery.

We will develop networks of people across government working on policy, content and transactions which need to come together as coherent services for users. To support this we will roll out a redesigned site navigation on GOV.UK, with GDS working with departments to consolidate and create a better grouping of all existing content on GOV.UK by 2020.

Government will deliver accessible services which work for all users, irrespective of ability, enabled by better digital technology. We'll provide services in all channels necessary. This means continuing to provide more accessible digital services, while also ensuring that the provision of these services does not exclude users who need to use other channels to access the service. Therefore, government will commit to ensuring services are accessible and work to improve all channels using the tools, techniques, technologies and culture of the internet age.

Although services start with user needs, transformation is about more than the part of a service the user experiences. To properly serve the public, we must effect deeper change at pace and at scale throughout the organisation that provides the service - including those that are involved in providing it, across whatever online and offline channels users need, including the back-end processes, data, technology and people that it relies on.

Transformation programmes

Departments will implement what is in their single departmental plans and any other transformation work they have already committed to (the most significant programmes of which are the GMPP).

We will help practitioners across government get better at major transformation projects. Government transformation programmes are diverse in nature, but all of them are characterised by working on some or all of the following:

- location - programmes that require major location changes or estates rationalisation;
- organisation change - programmes that introduce new ways of working, require new skills, or change organisational culture;
- operating model - programmes which introduce fundamental changes in business process and ways of working; and
- digital - programmes which require major digital infrastructure change or create a new digital service.

The biggest and most complex transformations work on all of these at once. These are especially found in the projects at big service delivery departments, for example Making Tax Digital (HMRC), Universal Credit (DWP), Digital Services at the Border (Home Office) and HM Courts and Tribunals Service Reform (Ministry of Justice). They are the initiatives which both require the most support and offer the most to learn from. They are also some of the most fundamentally transformative, going deep into department structures, processes and services. Some of them are carrying out elements of these characteristics iteratively and then, having built confidence, rolling out major changes based on the learnings.

Every transformation that interacts with users has a strong digital element and must consider all channels, both digital and physical, through which services are delivered. They therefore present the opportunity to improve the way whole departments operate, not just improve the online services they offer. For example, while HMRC's Making Tax Digital programme offers services online, it's fundamentally about the digital transformation of the tax processes. There are further examples in the transformation case studies.

A challenge that all such programmes face is that they depend on testing and learning what works best while they iterate both how services work and how people interact with them. The big digitally-enabled transformation programmes have learned that behaviour change cannot be fully predicted in advance. Now that many projects have a significant digital component, GDS will work closely with the Infrastructure and Projects Authority (IPA) to support major programmes.

Create a cross-government approach to transformation

To deliver our priorities for 2020, we will:

- create mechanisms to help departments identify where they will need to collaborate, so that this can begin to happen before funding is set; and
- create a safe environment for experimentation and learning around business transformation.

We want to deliver these in a joined-up way across government, in a way that makes best use of digital. To develop our understanding of how best to deliver digitally-enabled transformation, departments will work together on:

- business transformation approaches;
- joining up services with shared user needs;
- working together on areas of policy overlap;
- designing change programmes that affect the same users so that they are integrated;

- sharing data when meeting the same user need;
- sharing user research on shared users; and
- identifying user needs or journeys that span departments.

Departments are keen to share what they have learned and we must facilitate this from the centre of government. To do this, we will build a cross-government evidence base to share approaches to transformation work. We will develop a common language for understanding and discussing departmental business transformation. We will also develop common tools and techniques for planning, delivering and assuring major transformations. Finally, we will use our insight into the work going on around government to provide everyone with visibility and make connections that encourage collaboration, convergence and consumption of shared capabilities.

A community of experienced practitioners from around government has begun building up a body of knowledge which has highlighted a number of themes, or 'lenses', which can help programmes ensure that their transformation programmes are on track. Since all transformations require the following, this can help project leaders assess where they have areas which are going well or which would benefit from greater attention:

- vision - to drive clarity around the outcomes of the transformation and set out at a high level how the department will operate in the future;
- design - to set out how different organisations and their component parts will be configured and integrated to achieve the vision;
- plan - so that we retain sufficient flexibility to be adaptive as the transformation progresses, while providing confidence of delivery;
- transformation leadership - having leaders who can motivate a large number of people (many of whom they do not lead directly) into action towards the vision;
- collaboration - key to transformation in a multi-dimensional environment that cuts across departmental boundaries;
- accountability - having clear accountability for policy and transformation outcomes; and
- people - to transform we will need to engage people, supporting them to change their ways of working.

We have established these seven views and started using them as part of supporting and assuring transformation programmes. Departments, led by the Home Office and supported by the IPA, have developed a maturity model that allows them to measure how well we are creating the conditions for successful transformation. The model engenders the right leadership conversations around progress, focus for the future and supports cross departmental thinking. We will continue to test and learn to improve this approach.

Departments, the IPA and GDS will continue to provide appropriate assurance for transformation programmes. They will evolve the assurance regime as government builds understanding of how to deliver these complex, multi-dimensional digital programmes.

Accelerate work on the emerging themes of transformation

Transformation is not just a digital activity but GDS will help transformations that have a significant digital element. Learn more about the work GDS has already done to support these programmes.

Although all departments operate in different contexts and have different areas of responsibility, common themes are emerging from the transformation programmes which are already underway or expected to start shortly. We will investigate the opportunity to provide support or add momentum to these to these.

Examples of these common themes include:

- providing tailored services to different users, based on their needs and what government already knows about them, which are most likely to deliver the best outcomes - for example by segmenting or 'triaging' users;
- decision making based on trust and risk: designing systems from the ground up with a modern approach to trust and risk, which minimises opportunities for fraud and addresses the cyber-security implications of transacting with people online rather than face-to-face;
- process automation: progressively automating manual processes wherever it is safe and makes strategic sense to do so; and
- encouraging behaviour change: continuously improving services based on data about how users react, to achieve better outcomes, provide better customer service and reduce failure demand.

Each of these are at different stages of maturity. Where they are at an early stage of their evolution, it may be best for government to custom-build a solution. Where interchangeable commercial products (known as commodity solutions) are available, it may be better to rent or buy those.

These themes play different roles in the services offered by different departments. We will identify which are of the greatest value and will work to expand our shared understanding and experience of them continuously. This will enable us to identify opportunities for common components.

Recognise the role of old technology and have a plan

To enable a more responsive state, we need to manage the technology that we use today as well as planning for the future. Much of the old technology that government services depend on was procured under single contracts which were designed to provide complete end-to-end systems.

To meet user needs through transformation programmes we need to have more control over the technology we use. This means that we will continue with our programme of leaving large IT outsourcing contracts, in particular breaking down these large end-to-end systems into smaller components that can be retired or reused individually as required. We set out how we will do this in platforms, components and business capabilities.

Moving away from this form of contract does not solve the problem of legacy technology, though. As soon as new technology is deployed it starts to age and begins its journey to becoming ‘legacy’ - technology that is in some way no longer effective. For example, it might be challenging to secure, it might use old interfaces making it difficult to integrate with other systems or it might start to cost more to support than it would cost to replace.

This means that upgrade of old (but otherwise fit-for-purpose) systems or like-for-like changes in components can be valid approaches, if transformation as part of service redesign is not possible currently, or where replacement would not make strategic sense.

To replace legacy technology progressively at the right pace, we will continue to build a shared understanding of:

- what outcomes government is working towards;
- the technology currently in use and how it relates to the services it supports; and
- how it is bought and supported.

GDS will update the guidance supporting the Technology Code of Practice and other applicable standards to support a strategic approach to replacing old technology.

Grow the right people, skills and culture

Current situation

The right people, skills and culture are vital to serve the public successfully.

We have made significant progress since 2010 with recruiting the right people to design, build and maintain digital services for the public. We have introduced new professions to government (such as service managers, user researchers, data scientists and content designers) which are now established across much of the public sector. In 2014 DWP launched the Digital Academy to enable its graduates to work effectively on agile digital delivery projects. A number of departmental delivery programmes also have begun to break down professional silos and embed multidisciplinary thinking and working.

There is a difference between digital professions and making civil servants digital. This means that we will need to think differently about specialist roles (such as technical architects, treating them more like the established professions) and other professions which will adopt digital tools and techniques as the way that they work. Over time, we expect to talk less about digital professions and more about the diverse range of specialist roles that come under this umbrella.

Priorities until 2020

The Civil Service Workforce Plan 2016 to 2018 sets out our priorities for our workforce in the period until 2020, including "ensuring that the Civil Service is world-leading in terms of digital transformation". We want to have one of the most digitally skilled populations of civil servants, delivering our vision for 'A Brilliant Civil Service'.

This has four supporting pillars and defines what the modern Civil Service is for and what it should look like:

- improved outcomes - from efficient, trusted services designed around user need;
- effective leaders - who are inspiring, confident, empowering and live
- our values;
- skilled people - who are high-performing, adaptable and take personal responsibility; and
- a great place to work - that is inclusive, flexible, modern and connected, encouraging openness, challenge, innovation and excellence.

This means that we need to strengthen professions which are currently seen as digital (such as service management, content design and data science) and also work towards a future where everyone operates in a digital way. This means making the best use of the tools, techniques, technologies and culture of the

internet age. It means having a generation of public servants of all professions who are confident working across organisational boundaries, understand the broader public policy context and who are equipped to identify and lead opportunities for radical digital change and reinvention.

How we will do this

Improved outcomes: joining up policy and delivery

To serve the British public best, different functions must work together to meet their users' needs. To do this, they need the same priorities - but also the same language and methodologies. We need to be user-centered, multidisciplinary, open with our thinking and working, data-driven and led by service design.

We will create an environment and culture that supports making policy based on cycles of user research and rapid iteration. We will invest in service design leadership and capability. We will ensure that the policy profession is fully equipped to work with agile design and delivery teams.

> Read how Universal Credit policy teams connect continuous policy and product evolution so they can make fast improvements based on continuous testing and learning.

We will agree principles around which we can best organise digital, data and technology in departments. Digital, data and technology is a critical function within government but is less well-established than other Civil Service functions, such as human resources or finance. There are significant differences in capability across the public sector, often driven by the type of organisation (departments running transactions are generally more mature than policy making departments, for instance), which we need to recognise on departments' common journeys to becoming fundamentally digital.

We will embed the shared principles of the Supplier Standard to support collaborative and constructive relationships across the public and commercial sectors, focussed on joint delivery.

Effective leaders and skilled people

GDS and departments will continue to develop the Civil Service functional model for digital together.

We will grow a skilled body of civil servants who have deep expertise in digital, data and technology (DDaT) by establishing:

- a single set of DDaT job families across central government;
- a pay strategy and framework for specialist roles in central government, to address recruitment and retention concerns across government and different parts of government competing with each other for a limited pool of people; and
- common job descriptions and guidance on how to recruit more effectively for specialist roles.

We will build the data science capability for government. The Office for National Statistics (ONS), the Government Office for Science and GDS will work collaboratively to build the data science capability for government through:

- ONS establishing the Data Science Campus - the national hub for data science skills;
- establishing and embedding a new career path for data scientists in government; and
- continuing to build on the success of the cross-government Data Science Accelerator training programme.

We will support departments in introducing digital tools and techniques. For example, the Cabinet Office has introduced digital business partners who bridge the gap between the department/policy teams and technical specialists.

We will develop approaches to bring a wider range of people into the digital, data and technology profession. The digital, data and technology function across government (and indeed across the whole sector) is predominantly male, white, able-bodied and heterosexual. In government, it is mostly based in London. We will respond to this by:

- producing a best practice recruitment toolkit with diversity and inclusion at its heart;
- providing a range of learning and development opportunities which are available to people in the profession regardless of things like working pattern, location, disability, or domestic commitments; and
- work with other organisations with missions to improve diversity in the UK technology sector

We will agree a structured career development programme for digital, data and technology professionals. We will emphasise the value of open exchange between departments, GDS and other central functions.

We will build and develop cross-government communities of practice to nurture and grow expertise, support continued professional development and develop informal networks, both inside and outside the Civil Service. The ambition of these communities will be to build truly cross-government capability flexible enough to meet future need. Communities of practice will also help to expand the profession's national footprint and to have a more diverse representation at all levels.

We will know we have succeeded in making digital, data and technology mainstream when growing digital skills throughout our organisations becomes a priority not only for chief digital officers, but also for all public sector leaders.

A great place to work

The culture and behaviours of an organisation cannot be changed quickly. This is an organic process, not an engineering one, and one that will take time.

We will:

- support non-digital specialists in understanding the potential of new or different ways of working (and demonstrating this with internal tools and services);
- increase awareness of data, building on fundamental data literacy to help public servants access rich datasets and make evidence-based, data-driven decisions;
- work with Civil Service Learning and departmental HR leads to ensure that digital tools and techniques are embedded in other professions;
- work with Civil Service Learning to ensure that current and future leaders have the right training and experience to effectively manage digital projects, work in an agile way and to manage digital-age organisations;
- contribute to specialist training for different professions in a way that is relevant for their work;
- create a safe environment where non-digital specialists can experiment and see how different tools and techniques will help them; and
- ensure those working on transformation programmes receive appropriate training on digital tools and techniques relevant to the transformation programme.

More broadly, we will also continue working across the wider public sector to share the tools and techniques we use in central government and advise on how they could be adapted to support transformational activity elsewhere.

But it is not only culture and training that is important in creating a great place to work. We must also build better tools, processes and governance, as explained in the following section.

Build better tools, processes and governance for civil servants

Current situation

For government to deliver excellent public services to users it must be equipped to do so properly. A culture of open, digitally enabled policy-making and service delivery is critical to our future success. The tools that public servants use, the space they work in and the governance and processes in place to support, enable and assure delivery of brilliant public services are therefore all essential to digital government.

While transformation of citizen-facing services has yielded significant benefits, there has been no concerted effort across government to improve internal services with digital technology in a fundamental way. This means that while some departments (such as the Ministry of Justice) have led the way with internal digital services like finding colleagues' contact information or managing freedom of information requests, the process for reusing these across government remains complicated - with different departments often reinventing or re-procuring similar products to different standards.

In a similar way, workplace technology is moving at different paces in different parts of government. Some departments (like the Cabinet Office) have modern services where users can choose the best modern devices and software to meet the needs of their craft. However these are in the minority. Other departments are working largely independently and at a different pace - and many have underlying technology problems they must solve first (such as fixing networks and back-end systems so that they can interface with new user devices).

A truly enabling environment is more than the internal services that people use or the technology they use to access them. It's about some fundamental questions: how does the Civil Service govern and manage its programmes of work? How do we assure services and make sure that we are delivering value for money? How fit are our internal processes and controls for agile policy-making? How do we source goods and services in a digital age? More fundamentally, what should we develop ourselves and what should we buy?

The past few years have seen changes to the governance arrangements around digital projects, including the introduction of HM Treasury guidance on agile projects. However, many projects still exist within the context of large programmes with complex interdependencies. We will ensure that we manage the transition of projects from implementation to continuous improvement with care.

Following the introduction of new approaches and ways of working since 2010, we are now moving into a more practical phase. We will therefore build on the previous phases of disruption and establish a common set of ways of doing things.

Priorities until 2020

We will renew our focus on transforming the way that the Civil Service and government works. In particular, we will focus on three areas:

- creating empowering workspaces so that our public servants have the right environment and location-independent tools to do their jobs
- improving guidance on how to seamlessly manage and assure programmes that cross organisational boundaries;
- leading a step-change in procurement to ensure that user-centred, design-led, data-driven and open approaches are commonplace in contracting by 2020 - and spreading these approaches to create a marketplace for government buyers.

Empowering workspaces and tools

We want to create empowering workspaces to help public servants be more productive, to model the future of public service delivery and to instill pride and loyalty in public service.

Modern workspaces will also support our efforts at culture change and help us to attract and retain top talent. By loosening the link between a physical building and a department we can also help create an agile and responsive government that can restructure itself to more easily meet the challenges of the day.

Better workspaces and tools will also increase security. If we do not listen to users' needs, it is more likely that they will attempt to circumvent security measures in an attempt to work in a more flexible manner.

The Government Property Unit is already leading a significant programme of estates rationalisation and improvement - ultimately leading to a set of regional hubs for the UK government with departments sharing common buildings.

Departments and the GDS are already working closely together to ensure that there is common, interoperable technology within each building - and that the space and approach can help create a culture of open, digitally enabled policy-making and service delivery. Employees should expect building infrastructure (such as wifi) to be secure by default and that government contracts will integrate security standards and expectations into them as a matter of course.

These programmes will continue, as will departments' own efforts to improve the technology that their people use. The Civil Service (and wider public sector) is a large organisation made up of many different professions - and different roles within each profession. For every public servant to be effective in her or his role it is important that they have the appropriate tools for their craft. We will continue with the modernisation of end-user technology, with a growing focus on interoperability between departments - and continue the move to industry-standard commodity hardware and software wherever possible.

In the broader digital economy, workers are less tied to physical offices and work increasingly from home and other locations. We want to lead the way

within government by providing the tools so that, depending on their role, public servants can also work flexibly and securely across a variety of locations.

To effectively recognise and provide for the full diversity of users' needs, government needs a diverse workforce with access to the technology and systems to do their jobs efficiently and effectively. For example, this means being provided with suitable assistive technologies and being able to access internal systems such as intranets, HR, jobs and training.

Governance

In 2014 the Government Digital Service produced six principles for agile governance. These act as our framework for future work.

By 2020, we want central government to:

- have an environment in which teams can rapidly iterate policy and delivery;
- trust different parts of government so that data and platform components can be made available without complex bipartisan arrangements;
- be able to deliver new services that span departmental boundaries;
- have assurance models that enable and encourage cross-departmental service delivery;
- improve technology and services on a continuous basis rather than time-bound programme spending, helping government organisations to continually improve and innovate how they deliver those services;
- recognise that when providing services to each other departments may need to bear the cost of changes to meet the needs of other departments;
- recognise that it will often be more expensive for one department to build a service for all departments to share (where security considerations permit) than building one specifically for their own use - but cheaper than every department buying or building their own; and
- provide radical transparency to citizens about: how money is being spent; who is responsible for services, components and management of data; and how they can participate in democratic processes around those services.

> The ONS aims for 75% of responses to the 2021 Census to be online first, up from less than 17% in 2011. Read about their coordinated agile and waterfall project management approaches, including two large, integrated rehearsals planned for 2017 and 2019.

Procurement

Bringing the tools, techniques and culture of the internet to public procurement has already begun. GDS operates the Digital Marketplace, which has embedded user-centred, design-led, data-driven and open approaches across digital, data and technology procurement and contracting. Our priority for 2020 is to embed these more widely across the whole marketplace for public sector procurement.

How we will do this

Creating empowering workspaces and tools

To help create empowering workspaces, we will deliver common technology across the public sector and develop the case for digital services for civil servants.

We will also deliver common technologies in public buildings, making it possible for civil servants to work seamlessly from more locations. We will deliver commodity designs for hardware and standard software, making it possible for departments to buy 'government ready' equipment according to their users' needs. Finally, we will investigate the potential to make it easier to move between departments with the same technology (and look at the case for easier ways to allow this to happen with, for example, a single email address for each civil servant, portable between departments, so users can have confidence in the end point for information of varying classifications).

We will continue to modernise end-user devices across all government departments, giving users choice of commodity hardware and software where possible and improving the interoperability between different organisations' technology.

To develop the case for digital services for civil servants, we will explore opportunities across government for common digital tools for standard government functions (such as intranets, document management, correspondence management or tools to manage freedom of information requests or parliamentary questions). In particular, we will look at where we could improve cross-departmental processes for the digital age.

> As part of HMPO's transformation, HMPO seeks to maximise the value of core capabilities such as facial matching and data verification services to benefit not just HMPO and other parts of government, but also private sector organisations seeking to combat fraud and crime. Read more about HMPO's approach.

To do these effectively, we will need to continue with our programme of moving away from large IT contracts. We explain how we will do this in platforms, components and business capabilities.

Improving governance

We will enable teams to move quickly in line with the original vision for programme business cases, ensuring cross-boundary programmes are set up to support collaboration and according to HM Treasury guidance.

The Digital Service Standard and Technology Code of Practice will continue as cross-government standards and will continue to be improved.

We will help departments look at their spending decisions at an earlier stage and in the context of wider plans.

We will explore ways to allow more scrutiny of higher risk, cost or complexity projects and provide more freedom for experienced teams delivering things in line with standards.

Departments will continue to create forward views of their planned spend on digital and technology which will scrutinised by the Government Digital Service. We will seek to bring earlier engagement on spending plans between departments and GDS, so that support can be provided at the most useful point.

The nature of transformation programmes is different from infrastructure programmes. The IPA will continue to convene a community of experienced practitioners from around government, including departments and GDS, which has been building up a body of knowledge on the best ways to assure transformation programmes. We will establish a mechanism to provide the Civil Service Board with an opinion on whether transformation or major programmes will be successful.

We will support specific programmes which are high-risk, or which need additional help to collaborate and share data. The role of the centre will be to provide guidance and help remove critical digital and technology barriers.

Create a step-change in procurement

We will continue to embed user-centred, design-led, data-driven and open approaches across digital, data and technology procurement and contracting.

We will continue the incremental and iterative development of the Digital Marketplace buyer and supplier user journeys, through the end-to-end procurement and contracting process.

Through the Crown Commercial Service (CCS), we will build on these approaches to create a marketplace to meet user needs in the end-to-end buying and selling process, maintaining a common user experience.

We will work with the wider public sector to support the increasing adoption of digital procurement frameworks and practices across the wider public sector.

Make better use of data

Current situation

This strategy is fundamentally about the relationship between the citizen and the state. Central to any successful relationship is trust. How government stores and uses data is critical to this.

Data is driving fundamental changes in our daily lives and in the economy. The ability to make easy data-driven decisions is becoming vital to the way that we all live and work. This should be the way that government provides services.

Data is a critical resource for enabling more efficient, effective government and public services that respond to users' needs. It is the foundation upon which everything else rests. Government holds datasets with a range of different characteristics. Some of this data is unstructured and some contains personal data relating to individual citizens. Other data sets contain information that is collated and curated by the government on behalf of the nation, such as lists of schools and hospitals.

When government makes effective use of data, we make better policy and deliver better, more tailored services for users. For example, data can be used in real-time by front-line staff to ensure the person they are serving gets the best possible support to meet their needs. Increasingly, government will be able to use predictive analytics to anticipate demand for services or policy changes and to prepare to meet citizens' and businesses' changing needs, informing government's decisions on what services to offer and how they should work.

Sharing private data between different parts of government has significant benefits for citizens and businesses and is critical to delivering many essential services. Government must be more transparent about how we use data to develop policy and deliver services. We must earn and retain the trust of citizens and provide reassurance that personal and sensitive data, such as health data, is treated safely, securely and ethically within appropriate governance frameworks. When we do share data, we must ensure that it is appropriate and done in such a way to ensure citizens' privacy.

The pace of technological change means we can use ever more sophisticated, data-driven approaches to tackle our biggest public policy challenges. Technology offers huge opportunities to achieve better policy and service outcomes for citizens. However, while an approach might be possible technologically, it might not be appropriate for government to use it. As we transform government, we must ensure we retain public trust and confidence in our use of data.

Delivering public services more effectively and efficiently requires joining together data from multiple public sector bodies. Across government, private data is already being harnessed to improve the quality and effectiveness of our policies and services, resulting in better outcomes. Online processes to apply for a passport, a driving licence, a Blue Badge or many other government-provided

services depend on the connection of data held by different public agencies. The convenience and cost-effectiveness of these digital services are felt by individual citizens and society as a whole. They would not be possible without the ability to share data securely within government.

In October 2016 we launched the National Cyber Security Centre (NCSC). In November 2016, we published the National Cyber Security Strategy. The NCSC supports local government, health and the wider public sector (as well as advising the third sector). The government is taking steps to further reduce the levels of cyber security risk in its supply chain by requiring many suppliers (such as those which handle sensitive or personal data) to adopt the Cyber Essentials scheme, which provides organisations with basic protection against the most common internet threats.

There are many challenges in making better use of government data. It is frequently stored and used only within the organisation that collected it, with sharing under legal constraints limited by old technology.

While sharing data should be needs-based and proportionate, it is too difficult to work across the public sector (including ministerial departments, the health system, local authorities and devolved administrations) to provide better services, deliver on our policy promises and to operate efficiently.

However, much of the data government holds is not personal or sensitive data. Rather, it is information the government holds on behalf of the nation, such as a definitive list of schools in the country. Information like this has to be accurate, reliable and easily accessible for those who depend on it, whether they are businesses, public agencies, voluntary sector organisations or individuals.

Among the most important data in a modern digital economy is geospatial data - the core reference data that enables things to be linked to a physical location, such as data maintained by Ordnance Survey. In the UK we have high-quality geospatial data that is available for consumption in a wide range of formats and digital services, in many cases as open data.

This government was elected in 2015 with a manifesto committing the UK to being the most transparent government in the world. We continue to work internationally on open data and transparency and are a founder member of the D5 group of countries - five of the world's most digitally advanced countries.

We will also ensure that we have the right people with the right skills and capabilities to manage and analyse data effectively. Read more about people, skills and culture.

Priorities until 2020

We will enable better use of data by addressing the technical, ethical and legal issues, specifically focusing on the following priorities:

- making better use of data as an enabler for public services, particularly where those services cross organisational boundaries;

- removing barriers to effective data use by all parts of government through the data sharing provisions of the Digital Economy Bill, once it is passed by Parliament;
- make better use of data to improve decision making, by building and expanding data science and analytical capability across government, for analysts and non-analysts alike;
- managing and using data securely and appropriately, ensuring that public sector workers understand the ethics of data sharing - including what is and what is not permissible;
- building a national data infrastructure of registers (authoritative lists that are held once across government) and ensuring that they are secured appropriately;
- opening up government data where appropriate;
- continuing to open up government services internally and externally through the use of APIs where appropriate;
- improving data discovery tools for users both within and beyond government; and
- transforming the way that government's major repositories of data are stored and managed.

The European General Data Protection Regulations are intended to be implemented across the UK by May 2018. These will change the standards and responses we must have in place to manage and protect the personal data of citizens. The Department for Culture, Media and Sport (DCMS) will work closely with the Department for Exiting the European Union (DExEU) on implementation of these regulations.

How we will do this

Removing barriers to effective data use in government

Through the Digital Economy Bill we are in the process of modernising legislation to enable data access for defined public interest purposes within government. At present, data sharing between public agencies takes place via a large number of bespoke, bilateral legal gateways. The Digital Economy Bill will enable the better use of data across government and the economy. Currently at House of Commons Report stage, the bill provides new legal mechanisms to support better use of data for targeted interventions, tackling fraud error and debt, the sharing of civil registration information and producing better statistics and research.

Make better use of data to improve decision making

We will:

- set up teams of our best data analysts and behavioural scientists to tackle cross cutting policy and operational issues, working alongside policy developers to deliver predictive models that inform and provide a stronger evidence base to underpin important policy and business decisions;
- give professional analysts producing our national and official statistics much better, secure access to an array of administrative and other new sources of data which will benefit the wider UK data infrastructure as well as the UK statistics system, enabling better, more well-informed decision-making,

more efficient data collection, processing and dissemination, and less administrative and financial burden on those who are required to respond to government surveys;
- deliver fresh statistical insight on social and economic change, in more relevant and timely ways through new and better statistical sources, informing public debate and policy-makers much earlier than is currently possible;
- embed behavioural insight thinking and practice in mainstream policy making - there are now 15 UK government departments or agencies that either have their own behavioural insights unit or individuals appointed to co-ordinate behavioural insight activities, or have commissioned projects from the Behavioural Insights Team directly; and
- invest in building data science and analytical capability across government, for analysts and non-analysts alike.

Managing and using data securely and appropriately

We will:

- appoint a new Chief Data Officer for government to lead on use of data;
- set up a new Data Advisory Board to align efforts to make the best use of data across government, which will oversee a number of examples of better use of data and areas where we can build momentum;
- provide public sector bodies with the necessary guidance to ensure they can make best use of data while adhering to best practice in the management of data including its collection, storage, access and analysis;
- provide assurance that decisions made on the basis of data insight and analysis are compliant with the very latest best practice and standards;
- reassure citizens that government is using data in the best way possible to improve the lives of individuals and the efficiency of services while behaving responsibly and appropriately;
- uphold our duty to keep personal and sensitive data safe and secure, working across government to embed common security standards that keep pace with advances in technology and implementing the recommendations of Dame Fiona Caldicott's Review of Data Security, Consents and Opt-Outs in health;
- make it easier for citizens to view and, if necessary, correct data about them when using transactional public services; and
- adhere to and continue to refine a set of ethical principles for the use of data science techniques in public services, for use across government.

HMRC's Making Tax Digital for Business programme plans to make intelligent use of data to reduce the burden for business users. Read how they will stop users having to complete separate tax returns or provide HMRC with information they have already given.

Creating registers

We will improve government data by creating a linked ecosystem of trusted, resilient and authoritative lists. We call these registers. These will ensure reference

data is easy to create, maintain, discover and use. As a single source of data, registers will be secured appropriately in line with their criticality to other services.

We will work with relevant departments and agencies to deliver the first tranche of these registers starting with domains for which the user need is greatest (see the list of potential data registers).

We will provide multiple access routes to registers based on clear user needs, including APIs, download options with automated update mechanisms and integration guidance.

We will create tools that make registers easy to use within the public sector and beyond. This will include feedback loops to enable data owners to crowdsource data cleaning and validate proposed changes, as well as flexible register update tools designed to integrate easily with data owners' existing processes. This work will drive and support data quality at all levels, underpinning citizen trust in government data with robust, provable integrity and authority and helping services provide consistent user journeys using core data.

We will deliver better services and drive innovation by ensuring the use of high quality, authoritative address data across the economy. We will continue to explore options for achieving this.

We have already delivered the country register and are considering the case for additional registers from across different departments, including territories and the constituent units of the UK, local authorities in England, types of local authority and schools in England.

Other potential registers are shown in the list of potential data registers.

Opening up government data

We will:

- engage widely with current and potential data users in the development of our open data agenda, in order to ensure that our work meets users' needs and that limited resources are focused on high-priority areas;
- tap into leading-edge thinking on data innovation through the Data Steering Group;
- where appropriate, release open government data to spur innovation and economic growth, including additional, higher quality contracting data through our commitment to the Open Contracting Data Standard for all contracts administered by our central purchasing authority, the CCS; and
- implement our third Open Government Partnership national action plan which sets out ambitious goals for open government in the UK, and promote the Open Government Partnership, advocating transparency, open data principles, good governance and new economic opportunities worldwide.

Improving data discovery tools for users both within and beyond government

We will improve the experience of publishing and accessing open data, enabling a shift in behaviour towards better open data management. This will lead to the provision of higher quality data, offering more relevant results when searching for government data.

Better management of open government data will improve the experience for end users (those working in policy, service teams and the private and civil society sectors) by making data easier to find and use and available in consistent structures and formats.

We will meet citizens' expectations that we store and process their data in a way which is secure and which protects everyone from misuse and fraud.

Transforming the way that government's stores of data are held and managed

We will explore if we can transform the way that the public sector holds and processes data. We are especially interested in large organisations that are effectively data custodians or registrars, particularly where these offer the opportunity for greater economic growth or prosperity, or greater efficiency/ lower operating costs.

For example, as announced in the Autumn Statement 2016, we have decided that HM Land Registry should focus on becoming a more digital data-driven registration business and to do this will remain in the public sector. The Land Registry will be transformed into a modern registration business, with the ambition that it will become the world's leading land registry for speed and simplicity.

Share platforms, components and business capabilities

Current situation

Since 2010 we have built and launched GOV.UK (the UK government's single domain for content and services) and introduced the design principles.

We have also taken promising first steps in moving towards towards a more fundamentally digital government - one where we share code, patterns, platforms, components and best practice for approaching common technological and design problems across government. Cross government platforms and cross-government services are the future.

We have built a number of shared components and platforms (such as GOV.UK Verify for online identity verification) but we also use commodity commercial products where these are supported by open standards. We will continue to evaluate whether to buy or build on a case by case basis, preferring industry-standard commodity components as a general rule.

Exiting legacy IT contracts is a precondition for all of this work. As we explain in business transformation not all old technology is toxic, but we need to have the right commercial models to effectively deliver the next stage of our transformation: shared platforms, components and business capabilities.

In order to explain what's next, it is helpful to understand what we have accomplished under the 2012 Government Digital Strategy.

Patterns and code

There is currently a lot of sharing of government code but little reuse (mostly because it is difficult to find, it may be unsupported and is it often easier to start again). Where there is copying of code, this can accelerate the development of services, but it does not secure the maximum benefit from reuse because it creates divergent paths and multiple maintenance streams.

To help address this, we have been supporting the delivery of high quality, consistent services for users by making reusable code available to all. For example, we have built front-end tools to help departments build their GOV.UK services. We have also developed a prototyping kit to support rapid iteration of new services using the GOV.UK styles.

We have a thriving cross-government community contributing to developing many other patterns, based on best practice that departments are developing jointly over time.

Most recently, we have started developing transaction patterns. These patterns help identify the best way for users to interact with the various steps in a service, such as checking eligibility. They increase the quality and consistency of services whilst reducing the effort departments have to invest to design services.

Common components and platforms

A common component provides a defined piece of functionality that usually only exists in one place and can easily be integrated into a wider service through the use of standards, preferably open standards. A platform is something that aggregates demand and disaggregates supply. Platforms are essential to better service delivery, Civil Service reform and to reinventing procurement for the digital age. GDS has focused on designing tools that act as platforms from the supplier perspective but also as components from the consumer side, meaning software developers can integrate them into the digital services they are building with ease.

An example of a common component that can be integrated into wider services using standard interfaces is GOV.UK Notify. It is also a platform that aggregates demand for notification services from government services and disaggregates supply of these services by third-party notification providers.

Platforms make it easier to procure and use third-party providers because these are intermediated by the platform. This means that government can change suppliers without departments themselves having to make any changes to their services.

It also means that we can more easily change the way that government works - for example, the Driver and Vehicle Licensing Agency's (DVLA) print shop has been integrated into GOV.UK Notify along with commerical printers so that public services can consume a printing capability at scale without having to integrate with a variety of different providers.

Because services do not have to interface with a specific provider directly, government can balance the load between different providers more easily, or make changes to back-office functions without affecting live services.

We have made a good start on platforms. However, we need to institutionalise their creation and use across the Civil Service. There is a critical role for GDS to maintain the catalogue of which platforms are available.

International role model

The UK government's pioneering digital approach has been recognised internationally, including most recently by the 2016 United Nations e-government survey. We are now a global leader to which other governments look to model their approach, for example:

- the New Zealand and Israeli governments used GOV.UK source code for their web services;
- the Australian government's Digital Transformation Office began with a small team and an alpha project, just as GDS did; and

- the United States government created its US Digital Service, modelled on GDS.
- We are also a founding member of the D5, a global network of the most digitally advanced governments in the world.

Priorities until 2020

We have seven priorities for this parliament:

- exiting legacy IT contracts;
- building, reliably operating and continuously improving components and platforms;
- moving to business capabilities;
- removing barriers to component, platform and capability reuse;
- supporting reuse beyond central government;
- going wholesale by expanding the number of available and supported APIs; and
- sharing internationally.

Exiting legacy contracts

Having control over technology is a critical part of delivering this strategy. We cannot undertake business transformation, implement better workspace technology, make better use of data or use shared components without more control over our technology. Our focus here is changing the way that we buy technology: creating a shared understanding of the commercial and supplier environment and being clear about the products and services we expect to need in the future.

In business transformation, we explain our approach to legacy technology.

Building, reliably operating and continuously improving components and platforms

Cross government platforms and cross-government components are the future. We will accelerate the pace and scale of transformation by avoiding duplicated development of solutions, developing new digitally native business processes and focusing on the specific challenges of legacy contract exit and transformation. We will do this in a way that is secure, with privacy and security considerations throughout the design and deployment of every component and platform.

We will build on the government as a platform concept, ensuring we make greater reuse of platforms and components across government. We will also continue to move towards common technology, ensuring that where it is right we are consuming commodity hardware or cloud-based software instead of building something that is needlessly government specific. Common components and platforms will cover both citizen-facing services and internal public sector technology.

We will work towards having a range of reusable components to make it quick, cheap and easy to assemble digital services. These will be a mixture of

government-built components (both from departments and GDS) and common components that government can procure that are based around open standards.

> The digital apprenticeship service was designed from the start to reuse or integrate services where possible and build components around open standards and flexible architectures. Read how they use GOV.UK Notify and an API integration with the Tax Platform, built together with HMRC.

Building reusable business capabilities

Components and platforms are necessary but not sufficient for the transformation of government. We will take this one step further to talk about 'business capabilities' - defined as all of the the people, process and technology an organisation needs to achieve a specific outcome.

Capabilities can be primarily technological (for example GOV.UK Verify gives services the ability to establish users are who they say they are) but also include the work carried out by people (such as internal audit). In this sense, the Government Internal Audit Agency provides a shared business capability to government (the ability for departments to audit themselves). We want to see more shared business capabilities wherever possible with defined interfaces so that they can be reused across government.

This way of thinking makes it easier for components, platforms or capabilities to recursively form part of other components, platforms or capabilities, or to be easily assembled to create new services which in turn deliver value to citizens and businesses.

Removing barriers to component, platform and capability reuse

Across the whole of government, we will do more to address the blockers to implementation and consumption of common components, platforms and business capabilities. This means:

- helping all parts of government understand the value of shared platforms, components and business capabilities;
- ensuring the right technical support and guidance is in place for reuse of code, components, platforms and business capabilities;
- maintaining a list of appropriately supported components, platforms and business capabilities, making sure they can be easily found and consumed;
- developing procurement frameworks to provide public sector organisations without the right level of digital capability and/or capacity to easily source professional services support in implementing platforms and components; and
- ensuring that everything is designed to be used securely and that service managers know how to maintain high levels of security - the National Cyber Security Centre will lead on coordinating security.

We will clarify our priorities and principles for technology - being clearer about where commodity cloud services should be used and where services should be

built for or by government organisations. We will also look at the environment in which technology is used. For example where we use old court buildings and Victorian prisons we may need to include this work in broader business transformation plans to ensure that we are looking at not only the technology in isolation but also the physical environment and infrastructure.

Supporting reuse beyond central government

GDS has built a number of platforms (such as GOV.UK Verify, Notify and Pay) that local authorities and non-crown public sector bodies want to use. We will investigate how best to make these and future platforms available to the wider public sector. Pilots in this area started in October 2016.

GOV.UK Verify allows people to use one account to prove their identity online securely for government services. GDS will work with the private sector to enable people to use the same account, which meets high government standards, to prove their identity online for private sector services, such as opening a bank account without having to go into a branch.

Going wholesale

In her 2010 report to the coalition government on the future of Directgov (one of the precursor websites to GOV.UK), Martha Lane Fox said "Make Directgov a wholesaler as well as the retail shop front for government services and content by mandating the development and opening up of Application Programming Interfaces (APIs) to third parties."

The initial phases of digital transformation have focused on online services and GOV.UK, the UK government's single domain. We have had some success with APIs, particularly in HMRC, where we have released a number of tax-related APIs for external software developers to use. We continue to work closely with software developers to enable them to bring new and more sophisticated products to the market.

Our priority for the period until 2020 is to expand the number of available and supported APIs, for use both inside and outside of government.

Inside government, this means moving away from monolithic systems that are intended to perform a large number of tasks to individual components that communicate with each other through APIs and which are shared across government, rather than bound to organisational silos.

Outside government, this means following the model established by HMRC and making whole services, components or platforms available to external software developers for reuse.

Sharing internationally

In this Parliament, we will work with other governments to set global standards for digital services and technology, both through our bilateral international relationships and especially through international partnerships such as the D5 and the Open Government Partnership.

We will share our platforms, common technology components, standards and guidance. We will help other governments develop their own capabilities to benefit from our approach. We will learn from best practice in other countries to continuously hone and improve our services.

We will also encourage other countries to adopt our approach to purchasing and procurement, to show how user-centred design can support successful delivery from a broader range of suppliers.

We will continue to be a world leader in data and transparency, promoting and implementing open, accessible technology across the UK public sector and D5.

How we will do this

Exit large IT contracts

Departments will continue to lead programmes to exit large IT contracts, with support from experts in the Cabinet Office, including the IPA, the Government Commercial Function and GDS where appropriate.

Develop new common components, platforms and capabilities

Across all of government, we will develop an ecosystem of reusable components and platforms so that these can be used together to quickly and easily deliver new or improved services for users. For example, DWP's payments out platform could be offered as a cross-government component, avoiding the need for different departments to build or procure their own solutions.

We will:

- provide advice and guidance on when and how to use common components, platforms and capabilities;
- develop and publish standards for components, platforms and capabilities;
- develop implementation guidelines to allow the public sector to easily reuse components, platforms and capabilities;
- share approaches to building business capabilities by adding guidance for people and process to shared platforms
- introduce procurement frameworks with pre-approved suppliers to aid transition;
- encourage and support all parts of the public sector to develop and support common components and business capabilities;
- create a list of assured components, platforms and business capabilities, publish it openly and establish a mechanism to join up service providers and potential consumers;
- co-ordinate, through the National Cyber Security Centre, the security properties of common components, platforms and capabilities;
- continue to operate the digital services and components GDS and departments have built so far on the GOV.UK single domain to a high standard of reliability, security and performance, and continue to improve them to better meet their users' needs; and
- continue existing support for sharing code libraries, patterns and findings from implementation.

We will also continue to develop the following specific components.

GOV.UK Verify

One of the most important and challenging aspects of delivering transformed online services is identity assurance - establishing that the user is who they say they are and not someone pretending to be them. GOV.UK Verify, the government's online identity verification service, went live in May 2016 and delivers a federated, market-based approach to identity assurance for central government that can be reused in the wider public and private sectors. We will continue to enable individuals to prove their identity online and to access government services securely and safely. We will help protect against the growing threat of online identity fraud.

To achieve this, we will:

- work towards 25 million people having a GOV.UK Verify account by 2020;
- run a series of pilots for local authority and private sector services during 2017 to understand the user need and the commercial and legal basis for allowing people to use their GOV.UK Verify accounts to access services in those sectors;
- continue to work with industry and GOV.UK Verify certified companies to expand the range of ways people can prove their identity online; and
- work with the Open Identity Exchange to further explore the role of secure, trustworthy digital identities and benefit from market innovation in that field.

Building on the identity verification that comes with GOV.UK Verify, we will be working with government departments to make sure that government transactions can be completed electronically.

We will also work across government to determine the best next steps for other forms of identity (such as verification of intermediaries and businesses) and which part of government would be best placed to lead on this.

GOV.UK Pay

The government receives millions of online payments every day. We want people to have the option to pay digitally for public services. We are committed to offering users who pay for public services online an experience as good as any they might expect from leading online businesses.

GOV.UK Pay took its first payment on 2nd September 2016. It makes it easy for people to pay government securely online, reducing the time and hassle of doing business with government and removing the need for the government to buy or build payment systems multiple times. We aim to increase its scope over time, so that citizens can pay for services using a wide range of payment types (such as cards, Direct Debit and e-wallets).

We will work with the financial technology (FinTech) sector to use GOV.UK Pay as a catalyst for the development and adoption of new methods of payment - showing how government can be at the vanguard of innovation and act as a catalyst for our own digital sectors.

GOV.UK Notify

The government receives millions of calls every year from people anxious to find out the progress of an application, or to check if a payment has been received. We want to avoid people needing to call government and to reduce the amount that government spends on contact centres. We want to transform the way citizens communicate with government.

GOV.UK Notify sent its first messages on 18th July 2016, making it easier for service teams across government to keep people updated through text messages, emails or letters.

Transform government's content and publishing practices

To make it quicker for GOV.UK users to find exactly what they are looking for, we will co-ordinate work across government to review and consolidate government's existing stock of published content (currently over 300,000 items and growing at 2,500 new pages per month, with a large number not being viewed by anyone) and roll out a unifying site navigation for all content (from services through to policy information) based on users' needs.

We will transform government organisations' approach to producing, managing and retiring content so it is maintained and designed in the context of whole services to meet well understood user needs. We will also investigate the potential to reinvent the end-to-end process of drafting content and publishing it on GOV.UK, so that digital content (designed to be read on screen and easily portable to other formats) becomes the default.

We will continue to improve all aspects of the GOV.UK single site and publishing tools iterating towards the vision set out previously, including by 2020:

- improving tools for content teams across government, so it is easier to create, review and manage digital content based on evidence of user needs;
- targeting improvements of the top tasks that users come to GOV.UK to do, improving the user journeys across GOV.UK;
- making the history of changes to any page on GOV.UK easily visible and comparable;
- making public APIs of government content publicly available for reuse; and
- providing more effective ways to help users find and access transactional services and seek help through other channels when they need it.

Investigate other new platforms

We will investigate the case for adopting additional platforms across government, for example based on:

- payments out - DWP are updating their existing payments out solution to meet the needs of not just DWP teams but so that it can be reused by other government departments in the future;

- common forms - Home Office have built a reusable component that lets service teams quickly assemble forms-based digital services and is already in use in the Home Office and which has a strong potential for reuse; and
- message passing - DWP have built a component that allows medical professionals to authenticate with DWP services to allow faster submission of medical diagnosis and quicker assessment of benefits cases (designed with a view to it being reused by other parts of government).

We will also explore whether we could create components to meet other common needs (such as appointment booking or secure digital messaging between government and citizens).

Build and support APIs

We will introduce guidance and standards for APIs for both internal and external services. This will include further consideration of how the private sector can best reuse our services (such as the example of using Verify identities to open a bank account, above).

We will pilot new APIs, publish what we have learnt from what we have done today and publish a roadmap of APIs for data, services, components and platforms.

We will openly develop the process by which GDS will co-ordinate and provide assurance of public-facing APIs built across government.

Work with international partners

We will:

- demonstrate how we are using the D5 principles and mutual co-operation to establish a world-leading approach to government use of digital and technology to
- enable countries to more easily develop an advanced digital government based on our expertise and assets;
- engage with the United Nations (UN) and Organisation for Economic Co-Operation and Development (OECD) to find out how better digital government can be achieved across the world and support work on using digital government to support international development;
- work with businesses and other countries around the world to make sure that we are learning from and making use of advances in technology and digital capability;
- continue to play a leading role in the international Open Government Partnership and share the UK's expertise in open government; and
- work with other governments, businesses, data scientists and the international open data community to develop an anti-corruption innovation hub to explore how new technology and approaches can better tackle corruption.

Government beyond 2020

The majority of the transformation programmes on the Government Major Projects Portfolio (GMPP) are scheduled to be complete by April 2021.

Although many of the current portfolio of departmental transformation programmes will be complete by that time, transformation is a continuous process and the work that needs to be done is evolving constantly. Transforming the citizen experience of government will continue, at each stage making best use of leading practices and technologies as they develop.

While the current programmes are very challenging and need the full support of government to be successful, we will also spend a proportion of our time beginning to plan the work we will carry out post-2020.

Transformation programmes typically have a long lead time, so it is critical that we begin to explore the work that will be conducted during the next Parliament, so we can take advantage of progress in technology. This will put us in a much stronger position to maintain the momentum on transforming government services and the way government operates, in line with the policy priorities of the government post-2020.

What we expect to see

Nobody can predict what the world of 2020 will look like. Technology moves quickly and changes constantly. However we do expect what we call 'digital' currently to be largely mainstream by then.

Rather than thinking about specific technologies, we will take action now to become more adaptable to change and respond quickly to rapidly changing circumstances. To guide this, we will focus on principles we can be reasonably sure of:

- we will continue to focus on user needs, but with an increasing focus on providing services that are personalised to meet the needs of individuals;
- we will continue to focus on building trust in government's use of personal data to enable service transformation;
- we will reuse more standard components, platforms and capabilities across the whole public sector (and beyond, wherever appropriate);
- we will increasingly use data to make decisions, both to inform policy and to iterate rapidly the way services work, based on updating evidence and data continually;
- we will monitor emerging security threats and any security issues raised by new technologies closely;
- we will identify emerging technologies that are of interest to government and build shared understanding and demonstrate how they can help government continue to transform services, as well as identify potential ethical and privacy implications; and

- we will need to be more flexible in the way we organise ourselves to respond more quickly to a changing world - this means having the tools to work effectively across boundaries and ensure that we collaborate to serve the citizen.

With these in mind, we can plan our next steps as a leading digital government.

There are also some macro trends that we will need to respond to, both on a societal level and in the way government operates. For example, we will investigate:

- how best to coordinate to deliver joined-up service as we increasingly devolve power to regions and nations;
- the transformative potential of artificial intelligence and machine learning;
- public sector use of health data and wearables;
- appropriate use of biometrics;
- risks and opportunities arising from the Internet of Things;
- how we can best audit and assure both the use of algorithms in delivering government services and the guidance and legal framework for use of algorithms in process automation;
- opportunities to better use geospatial data and Earth observation data; and
- as we increasingly devolve power to regions and nations, we will co-ordinate how best to deliver joined-up services.

We will ensure the work under this strategy continues to align with the way that new technologies are disrupting other industries, for example the significant shifts in transport, such as drones, driverless cars and advances in rail technology.

Our ambition is to show how central government can lead innovation in the public sector. To do this we will consider how new government capabilities can be useable not only by central government and the wider public sector, but also by third-party organisations.

The parliamentary cycle is longer than the fast-paced technology sector. Wherever it is safe and appropriate to do so, we will find ways to start using using and learning from these new technologies within the scope of current programmes.

What we will do now to prepare for the period after 2020

We want to make the best possible preparations for the post-2020 period. We will use current and emerging sources of data so that we can understand what is working well for the current transformation programmes and combine this learning with emerging macro-trends to make the best possible plans for the period after 2020.

To prepare for this, we will:

- work with departments to collate the benchmark data needed to understand how each department and its arm's-length bodies currently

work - especially in terms of business, service and technical architecture - so we can make more informed choices about future trade-offs or transformations;
- continue to map the current transformation programmes across government, joining them up with the single departmental plans, so we can understand departments' capacity and capability for managing future transformation - and work together to set the level of ambition against other constraints such as the availability of key skills;
- map out expected future transformation work to identify cross-departmental dependencies, so that the centre can provide appropriate support;
- understand the external environment, including macro changes in people's needs of government and opportunities from new technology; and
- develop a vision of what digital government could look like in the future - and use this to agree what the level of ambition should be.

Support, enable, assure: the role of the Government Digital Service

GDS's evolving role

Government is building stronger functions at the centre of government. Digital is one of 10 corporate functions. Functions bring specialist delivery skills and a cross-cutting perspective to the way government operates, to improve delivery of government policy.

The Government Digital Service (GDS) leads the Civil Service digital function.

GDS will continue to support, enable and assure government digital initiatives. GDS's role is to:

- set appropriately challenging standards for government digital technology and support the increased digital capability of government by identifying, curating and sharing best practice;
- strengthen the digital, data and technology communities across government - setting professional standards and standardising approaches to recruitment, retention, pay and career development;
- act as a centre of digital expertise (including exploring new ideas and developing prototypes) and make sure this expertise is deployed effectively;
- build, continually improve and operate products and services that the rest of government can rely on;
- provide targeted digital, data and technology expertise (from GDS, departments or external sources) to other government organisations as support for critical projects; and
- provide assurance for digital projects through spend controls, service assessments and in collaboration with the Infrastructure and Projects Authority (IPA).

GDS's future role reflects both GDS's growing maturity and improvements in departmental capability over the last period. It is not prescriptive - GDS will continue to be adaptable, working in a way that is responsive to the changing needs of government. GDS will:

- reiterate its commitment to help support departments to transform digitally;
- do more to enable departments to analyse and improve their digital services; and
- be clear in articulating its future role in supporting departments and helping to assure they are transforming in the right way.

GDS will work effectively with other corporate functions

To enable deep transformation, we will work in a more joined-up way with the other functions (for example, finance, commercial, human resources, property, infrastructure and projects).

We will work with the functions to design services that meet users' needs and can be reused across government. We will draw on central government networks and levers to help align the priorities of departments.

To provide assurance, GDS will:

- set standards for what good looks like and give clear guidance to help people get there;
- make sure that money spent, and services delivered, meet these standards; and
- use our position at the centre of government to ensure departments meet and implement standards, spot and address duplication, and ensure better use of technology across government.

Departments will:

- have a pipeline of planned digital and technology activity; and
- establish design authorities to bring strategic oversight and assurance to digital and technology activity.

GDS's role in the Government Transformation Strategy

The Government Transformation Strategy sets out five objectives for GDS for the period up to 2020:

- continue to deliver world-class digital services and transform the way government operates, from front-end to back-office, in a modern and efficient way;
- develop the right skills and culture among our people and leaders, and bring together policy and delivery to enable services to be delivered in a learning and iterative environment, focused on outcomes for citizens;
- build better workplace tools and processes to make it easier for public servants to work effectively, including sourcing, governance, workplace IT, businesses cases, human resources processes, common technology across the public sector and better digital tools for civil servants;
- make better use of data - not just for transparency, but to enable transformation across government and the private sector; and
- create, operate, iterate and embed good use of shared platforms and reusable business capabilities to speed up transformation - including shared patterns, components and establishing open standards.

Business transformation

Government's objective through to 2020 is to create joined-up services that meet user needs, and to deliver the major digitally-enabled transformation programmes of whole services and back-office functions. To achieve this government will collaborate to establish a joined-up approach to transformation.

How GDS will support this objective

GDS will:

- create, support and iterate the components which is best placed to create, and otherwise support the wider public sector in the creation of shareable components;
- agree appropriate standards with departments, using industry open standards where possible;
- govern the use of common standards;
- accelerate work on the emerging themes of transformation; and
- update the guidance supporting the Technology Code of Practice and other applicable standards to support a strategic approach to old technology, including migration paths.

We will also update the Service Manual to provide guidance on building:

- whole services, not just online transactions;
- services used only within government, as well as services for the public; and
- services that cross the boundaries of organisations or sectors.

Grow the right people, skills and culture

Government's objective by 2020 is to grow the right culture and skills among our people and leaders.

How GDS will support this objective

The integration of the Digital Academy into GDS will form an important part of this work.

We will complete the transfer of the Digital Academy from the Department for Work and Pensions (DWP) to GDS. This will create a nationwide capability for providing digital training to civil servants and provide a platform to expand and enhance the training offered. We will explore opening up the Digital Academy to other parts of the public sector too (such as local authorities and devolved governments).

We will use the Digital Academy to deliver a UK-wide programme of multidisciplinary training, framed by the Technology Code of Practice, Commercial Operating Standards, Digital Service Standard and the Supplier Standard, including:

- digital skills for public servants;
- policy skills for digital professionals;
- standards and spend controls - helping departmental colleagues understand why these are important, and how to make best use of them; and
- commercial, finance and legal awareness for delivery teams.

We will also collaborate across government to support change in other Civil Service professions, and will seek further opportunities to do so. As of 2016, GDS is helping with two cross-Civil Service activities.

Civil Service HR has proposed a leadership academy to develop products to support senior leadership development - to include learning on all core professions, for example DDaT, commercial and project management. GDS will support this initiative through the expertise of the Digital Academy.

Build better workplace tools and processes for civil servants

Government's objective is that by 2020 the design and use of space helps to create a culture of open, digitally enabled policy-making and service delivery and that public servants will have the right, location-independent tools to do their jobs. We will make sure all parts of government can govern, fund and effectively operate agile services, including where services span departmental boundaries.

How GDS will support this objective

GDS will support departments to move away from costly, inflexible systems integration contracts by bringing expertise and control in-house. We will:

- publish principles and approaches to contract disaggregation, noting that the legacy situation of each organisation might require a different approach;
- continue to work with the Government Commercial Function and the IPA to provide internal consultancy to support departments that require hands-on help in exiting large contracts; and
- help other parts of government design digital, data and technology related procurement frameworks to meet the needs of government's buyers and suppliers, by aligning them with the Technology Code of Practice and Commercial Operating Standards.

GDS will also continue to publish advice and guidance on public sector technology, particularly around interoperability and common technology. In particular GDS will:

- work with the Government Property Unit to ensure that common, interoperable, technology is in place in government buildings;
- work with departments to support them in specifying, purchasing and operating common, interoperable, devices for users; and
- with departments, carry out discovery and determine appetite for common tools for central government (such as records management, intranets or freedom of information management tools).

Working closely with the Crown Commercial Service, GDS will continue to operate the Digital Marketplace, which will remain the default place for buying and selling digital, data and technology related products and services.

Making better use of data

Government's objective by 2020 is to make better use of data. This provides greater transparency, and unlocks data as an enabler for transformation across government and the private sector.

Between now and 2020, GDS will help departments to improve their use of data through targeted support to tackle specific data challenges. We will also collaborate with the rest of government to develop common tools, standards, guidance and infrastructure. This will enable the effective management and use of data to achieve better outcomes for citizens.

GDS will act as a central hub to support, enable and assure departments' data-driven transformation efforts, and will play a leading role in networking, convening and sharing effective approaches across departmental boundaries.

How GDS will support this objective

We will build on recent GDS discovery work to explore the best way to support more secure and efficient access across organisational boundaries to personal data already held by government, within legal gateways. This will help government to offer better, more joined-up services, while appropriately protecting the privacy and security of personal data, in particular adhering to the principle that, in any given use case, data access should be the minimum necessary to fulfil the stated service objective. The government remains opposed to national ID cards, and has no plans to create a national identity database.

GDS will do this by working with a cross-section of the public sector to pilot proof-of-concept work.

This will allow us to test the viability of a scalable, multi-party, cross-government:

- API-based solution for the querying of distributed personal datasets;
- approach for conveying user consent in support of reuse, where appropriate; and
- approach to the creation and management of governance structures that will give departments confidence regarding the quality of the data they are looking to query or share, which will reduce the cost of the matching they do currently when seeking to reconcile data obtained elsewhere with their own datasets.

This alpha will then be tested with a wider set of departments, seeking an approach to collect data once and reuse it where appropriate elsewhere in government, for the purpose of improving specific services and outcomes for citizens.

Create shared components, platforms and reusable business capabilities

Government's objective by 2020 is to assemble a set of reusable business capabilities to speed up transformation - including sourcing, shared components, establishing open standards, and a responsive approach for futureproofing.

We will set standards and curate shared resources so the rest of government can speed up its rate of transformation to best meet their users' needs.

How GDS will support this objective

GDS will have several roles to play in the meeting this objective. These will be:

- in delivery - to build and operate components centrally, once, where it makes sense to do so;
- as a convener - to bring government together to identify where common components and capabilities are required;
- as a custodian - to create a list of important shared components and promote them across government;
- to develop standards and govern them - to iterate and extend the Digital Service Standard, Technology Code of Practice and other standards as appropriate;
- to work with departments to help them identify potential areas of change early, and to support them through early-stage design and change pipelines;
- to lead work with departments to overhaul all of government's legacy content and make reforms to outdated publishing practices so government services and information are clear, well maintained and easy to find; and
- to support departments in increasing the number of services connected to GOV.UK Verify and make Verify work for more people so they can use it easily and safely to access all the digital services they want to use.

GOV.UK Verify allows users to use one account to securely prove their identity online for government services. We will work with the private sector so that users can use the same account to prove their identity online for private sector services like opening a bank account without having to go into a branch. We will begin pilots in 2017.

Appendix: case studies

Case study 1: Universal Credit

This flagship welfare reform aims to increase the numbers of people working by 250,000 as a result of a combination of transforming work incentives, extending conditionality and the greater simplicity of the system.

Compared to the legacy benefits system, the move to Universal Credit is estimated to generate gross economic benefit of £7 billion every year once it is fully rolled out.

The old regime comprises six different benefits, operated by the Department for Work and Pensions (DWP), HM Revenue and Customs (HMRC) and 350 local authorities. This complex landscape is confusing to claimants, and in many cases actively works against people trying to do the right thing by working, or working more. The transformation to Universal Credit delivers a single, seamless support for people out of work or in low paid work.

The transformation depends on several actions:

- fundamental policy reform of the support for those out of work or in low paid work - this policy design directly addresses the problem with the legacy policies, introducing a single rate at which financial support is withdrawn as earnings rise;
- extensive user research, including behavioural science, to ensure that all elements of the day-to-day service reinforce the overarching goal to encourage work, and more work;
- exploitation of data, across government and beyond, to tailor the service and reduce fraud; for example, the introduction of Real Time Earnings and the policy choice to pay UC monthly (not fortnightly) removes the need for claimants to report earnings; links developed with social landlords help us understand how individuals are coping with managing their finances and rent payments independently, informing our policy iteration and future delivery approach;
- much stronger local partnerships to support vulnerable claimants, who are probably using other public services at the same time;
- fast improvement by testing and learning, and involving policy teams in continuous policy and product evolution. Focus on building for the complex elements first (services for couples and family claims, for example) and scaling the service at the right pace, instead of big bang implementation, using lessons learned to inform incremental rollout of the service; and
- driving a culture and behaviour change amongst 50,000 people responsible for front-line delivery of services to move away from the legacy services, systems and support, to a new way of supporting and engaging with claimants, including those who are in work and want to interact through different channels.

Early evidence shows claimants of Universal Credit on average find work faster than those claiming legacy benefits. This means that for every 100 Jobseeker's Allowance claimants who find work, 113 Universal Credit claimants will have moved into employment.

DWP will continue its successful rollout of five jobcentres per month to June 2017, expanding to 30 in July 2017. Following a break over the summer DWP will scale up to 55 jobcentres per month between October and December 2017. From February 2018 this will increase to 65 per month, finishing with the final 57 jobcentres in September 2018.

The annual savings from reduced spending on welfare, and lower losses from customer error and fraud, reflect simpler rules. However, in addition, DWP has taken the opportunity to transform the way the business operates to deliver those policy rules. The resulting savings will enable DWP to increase the time and effort put into helping people into work.

This business transformation hinges around building the maturity of DWP's people, processes and technology, expressed as six foundations:

- secure self service wherever possible: making use of the online/mobile channel wherever it is appropriate, to enable DWP front-line people to focus on interactions that help people, not just process data;
- decision making based on trust and risk: designing the system from the ground up with a modern approach to trust and risk, which minimises opportunities for fraud, and addresses the cyber-security implications of transacting with people online rather than face-to-face, for example, by using GOV.UK Verify to give users a safer and more secure way to prove their identity;
- intelligent data use, sharing and management: using real time earnings information and other data sources to automatically calculate a customer's entitlement to benefit and check their circumstances;
- advanced analytics for segmentation: providing tailored services to different claimants, based on their needs and what DWP already knows about them, which are most likely to deliver the best outcomes in the most cost-effective way;
- automated processes: automating manual processes wherever it is safe to do so; and
- customer behaviour change: designing and continuously improving the service, based on how users interact with it, to help people, encourage work, and reduce fraud.

During this Parliament, Universal Credit will transform a significant proportion of working age benefits, making it a proving ground for these foundations.

As with all of the most significant transformations now underway across government, the Universal Credit programme is bringing together different disciplines to deliver including agile development, bringing together a range of skills and expertise to deliver an effective and intuitive service rooted in customer needs, and the programme management structures to deliver complex change, such as moving experienced HMRC staff to DWP and integrating new and existing DWP systems.

Case study 2: Digital Tax

Transforming tax and the end of the tax return

By 2020, HMRC will have moved to a fully digital tax system, bringing an end to the annual tax return. Businesses and individual taxpayers will be able to register, file, pay and update their information at any time of the day or night, and at any point in the year, to suit them.

The Personal Tax Account

The Personal Tax Account sits at the heart of our offer for individuals and is already a key channel allowing us to transact with our customers in new and innovative ways. To deliver transformation on this scale we have had to rapidly grow our digital capability. We run the largest digital operation in government and we have built a team of outstanding people who have designed, developed and delivered the Personal Tax Account in-house, at HMRC.

Agile methodology and new ways of working are at the heart of the development of the Personal Tax Account and we have involved our customers at every stage. Insights gained from early research told us that customers are more likely to use a service if it is designed to meet their needs, can be used at times that suit them, and provides reassurance that any transactions have been successfully completed. These requirements are being built into the account as we develop it, and we continue to review the service to make sure that we are getting it right using behavioural and user testing tools to examine the real customer experience and see how they navigate and use the account.

Our award-winning Multi-channel Digital Tax Platform enables us to develop and deliver new services for the Personal Tax Account far quicker than ever before. The service starting in private beta in July 2015 with almost 3,000 people helping us test the system through to the end of November 2015. Since the live launch in December 2015 we now have almost 7 million individuals using their online account for 50 transactional services, including checking their estimated Income Tax, claiming a refund, checking their projected State Pension, managing their tax credits and filing self-assessment returns.

As more people interact online, HMRC's channel-shift ambition is becoming a reality, including paperless options, two-way secure messaging, electronic forms and robotics, which are helping to reduce paper submissions and progress-chasing phone calls.

The latest Self Assessment (SA) peak in January 2016 was our most digital ever and the Personal Tax Account was fundamental to HMRC achieving this huge digital milestone. Comparing SA16 to SA15 clearly highlights the channel shift taking place:

- nearly half a million more returns were filed online (9.25 million in total);
- paper returns were down 21%;
- telephone contact was down 7%; and
- phone wait times halved (down to 5.16 minutes).

There were 114,000 webchats held between customers and HMRC advisers during the SA peak in January 2016. Of these, over 77% confirmed they would otherwise have phoned. This alone translates into HMRC needing to answer 88,000 fewer calls.

We have now introduced new tax re-payment service which allows customers who are due a refund to get their money back direct from HMRC via their Personal Tax Account, without the need for a cheque or a trip to the bank. Tax that they have overpaid will be refunded directly to their bank account within 3 to 5 days. Between August and November 2016, 1.4 million customers used the online service to claim their refund. And our new payment service makes it even easier for those customers who have underpaid to settle their liabilities quickly and efficiently.

From 2017, HMRC will further develop its use of real-time data and the third party information it already receives to make tax code adjustments that will help avoid under- and over-payments through the tax year. This will be of particular benefit to taxpayers with more than one job, or those with low or fluctuating income, many of whom contact HMRC regularly to change how their personal allowances are shared between jobs and pensions to prevent overpayments of tax. In the future, they will be able to see these adjustments clearly through their digital tax account and choose how their personal allowances are allocated. And they will be able to set an overpayment of one tax against the under-payment of another so that it feels like paying a single tax. Meanwhile a greater use of pre-population of information will eradicate bureaucratic form-filling and remove the risk of missed deadlines, unnecessary penalties, debts arising, and errors in the system being carried forward from one year to the next.

By working collaboratively across government departments and integrating services such as Tax-Free Childcare and Child Benefit into the digital account, individuals will have one place to go for all their financial affairs, and additional customer groups can benefit from dealing with HMRC digitally.

However, we recognise that many of the people we serve still need support when using online services. For this reason we have developed a customer support model that adapts our approach according to our customers' needs and also developed the capability of our front line advisers to give them confidence to promote the benefits of the Personal Tax Account. HMRC works to keep customers in the digital channel and builds on the successful online services already in operation through other mediums such as YouTube videos, webinars and webchats. HMRC also works closely with customer groups (such as Citizens Advice and Age UK), to identify how they can help less able computer users and avoid digital exclusion.

HMRC is putting the customer at the heart of its digital transformation and giving them the tools and information they need to take control of their tax affairs.

Making Tax Digital for Business

HMRC plays a crucial role in the UK. We collect the money that pays for the UK's public services, and help families and individuals with targeted financial support. We also help the compliant majority get their tax (and tax credits) right and take strong steps to prevent and respond to minority cases in tax evasion, avoidance and fraud.

The Making Tax Digital for Business (MTDfB) programme is part of a wider agenda which will transform tax administration for individuals and businesses, providing customers with the kind of digital services they expect from a modern organisation. It will change how customers interact with HMRC, how HMRC receives information from customers and intermediaries, but also how HMRC, and in time wider government, presents and uses that information. It enables the end of the burden of the annual tax return for millions of customers, delivering on the government's Budget 2015 commitment.

The MTDfB programme goes wider than just providing new digital interfaces for customers as it will also modernise and streamline HMRC's IT architecture behind the scenes to enable transformational process simplification. It will reduce the burden on businesses by:

- intelligent use of data: removing the need for customers to complete separate tax returns and/or provide HMRC information that it already holds and exploring (with appropriate safeguards) the use of information from multiple sources to calculate tax liabilities or entitlements so customers do not have to provide it separately;
- real time: bringing the provision of tax information closer to the point of transaction, with businesses updating HMRC directly from their digital records on a quarterly basis (or more regularly if they prefer);
- single financial account: giving all customers a complete view of their tax liabilities and entitlements, with overpayments offset against liabilities; and
- digital account: providing every business (and their agent where they have one) with access to a digital tax account showing an up to date picture of their likely tax bill based on the information they have provided so far, with the option to make voluntary payments as they go to spread the cost of their tax.

By 2020/21 MTDfB will deliver the Business Tax Account (BTA). Every business customer already has access to their own digital account which is the route to the full range of services they need to register for, manage and pay their taxes. Some 3.2 million businesses have already used their account. By bringing together services in one place, the BTA enables businesses to see an overview of their current position and the actions they need to take for their main business taxes. The programme will continue to enhance and improve the BTA and the digital support services that sit around it.

By 2020 business customers will be keeping their records digitally, using commercial software, and updating HMRC with summary data quarterly. They will be able to see their tax affairs in near real-time, in one place, with any overpayments offset against liabilities. By collecting information from businesses more regularly, playing and playing this back to customers and showing them what this means in terms of estimated tax due, they can plan their cash flow and budget more effectively. This will apply to unincorporated businesses from April 2018, to VAT from April 2019 and companies from April 2020. This will be underpinned by legislative change.

HMRC are also building application programming interfaces (APIs) to enable software providers to develop products to allow businesses (and their agents) to keep digital records and provide updates to HMRC. This represents a move away from web services, and is a key part of the HMRC's wider API strategy.

Case study 3: Digital change in the courts and tribunals service

The government has allocated close to £1 billion to help modernise courts and tribunals and create a system that is just, accessible and proportionate - and that better meets the needs of the people who use it.

Over the past 20 years the courts and tribunals system has undergone significant change. Hundreds of separate organisations have come together to form HM Courts & Tribunals Service (HMCTS) - each bringing its own buildings, processes, working practices and IT systems.

One of the driving forces behind our modernisation programme is to look across the system and make it work better as a coherent whole - with common working practices, simpler processes, a shared digital infrastructure and fewer, better court buildings and tribunal hearing venues.

Today, most cases that enter the courts and tribunals are still managed on paper. Our staff enter data manually from paper forms or even from forms that have been submitted online because we do not have the technology to progress cases electronically. We waste time and money printing and handling evidence - much of which is created digitally (for example, text messages, tweets, pictures and mobile phone videos).

Reform of the courts and tribunals is based on two ideas to help create a just, proportionate and accessible justice system:

- making courts and tribunals more customer-driven so they are consistent, predictable and easy to understand; and
- investing in better systems and processes, designed around the people who use them, and taking advantage of modern technology.

A great deal of this will be made possible by digital change. In the future, things like non-payment of TV licences, fare evasion on public transport or minor speeding offences will be dealt with quickly and efficiently using digital services. This will allow magistrates and courts to focus their resources and attentions where they are most needed.

In the criminal courts, new digital services will help cases progress through the system smoothly and without unnecessary delays. The guiding principle is to use technology where possible to improve the speed and efficiency of the courts.

We have already equipped the majority of our criminal courts to work digitally, removing a vast amount of paper and wasted time. The Digital Case System in the Crown Courts holds almost 17 million pages of information. If we printed them and piled them up, it would reach as high as the Burj Khalifa - the tallest building in the world. Most of our criminal courts also now have wifi for legal professionals - and 40,000 court users are registered to use it.

We are following the same principles to bring efficiency and simplicity to civil, family and tribunals. If our starting point is that appearing in court may not be the right answer for everyone, we are going to do far more to encourage parties to resolve disputes themselves. We will do this by introducing better signposting to mediation and alternative methods of dispute resolution.

These developments will help to guide and inform changes in other areas of HMCTS's work.

We will move away from adversarial hearings in favour of mediation and online dispute resolution and we are introducing online services to apply for a grant of probate, or for a divorce. Similarly, we are planning to introduce a new 'online court' for lower value money claims to offer a simpler, more affordable way for individuals and businesses to resolve disputes.

We are determined that online services will increase access to justice, not diminish it. To this end, specialists in assisted digital are involved in every aspect of our modernisation programme. No new service will be launched without the right support in place, and we are paying particular attention to the digitally excluded to ensure the courts and tribunals are open to everyone.

This programme is the most ambitious of its kind anywhere in the world. We are transforming the way the courts and tribunals operate so they can better accommodate the way people live their lives and run their businesses. This will ultimately help to make the service more consistent, predictable and easy to understand for those who use our courts and tribunals. The digital change involved is complex, but we have got off to a strong start and we are confident that by 2022, we will have delivered the government and the judiciary's shared vision of a modern, world-class system.

Case study 4: HM Passport Office

HM Passport Office (HMPO) serves over 8 million customers annually as the sole provider of UK passports to British Citizens living anywhere in the world and as custodian of the registration of key life events (births, deaths, marriages and adoptions) in England and Wales through the General Register Office (GRO).

Around 85% of eligible UK residents currently hold a valid passport, facilitating over 60 million overseas journeys annually and enabling British citizens to prove their identity for the many purposes including opening bank accounts and obtaining credit.

HMPO transformation is about taking what is currently a highly linear, manual, one size fits all process involving the handling of large volumes of paper and turning it into a modern, digital process. Customers will have the ability to apply online, including uploading their own digital photographs, without any requirement to send in paper copies of birth or marriage certificates, reducing the likelihood of errors in applications. We aspire to over 90% of our applications being fully digital by 2020.

Our paper-based case working system will become completely digital, moving work to wherever there are people able to undertake it. Checks will be automated where possible and will be supplemented by extensive use of data analytics; HMPO will have the facility to issue some passports without human intervention. Automation will mean that fewer applications will need to be looked at by examiners and the nature of the examination process will be different. Examiner effort will become more targeted, which will result in improved fraud detection and public protection performance, while making the role of the examiner more interesting.

Current communication systems are also mainly paper-based, with several hundred letter templates being the default method of communication. The new online approach will communicate digitally by default, allowing customers to be kept informed and reassured throughout their engagement with HMPO.

HMPO will also share technology with the Home Office to reduce IT costs, including migrating to a shared desktop and network infrastructure. At the core of our transformation is a fundamental shift away from large system integrators delivering aggregated long-term system development and maintenance, towards the use of smaller service providers and with Home Office acting as the service integrators. This approach allows the re-use of existing services, such as facial matching and data verification, and makes it considerably cheaper and easier to add new services or substitute in updated services in the future.

The transformation has a significant technology design, build, integration and service optimisation element, but also a substantial business change element which will include process redesign, job redesign and estates and staff rationalisation.

Collectively this transformation will save the taxpayer over £80 million per year.

There are eight key elements to HMPO transformation.

1. The large majority of customers will apply online in a fully digital form, including uploading digital photos and supporting documents.
2. Those customers who are unable (digital exclusion) to apply online will be provided an 'assisted digital' channel and those who do not wish to apply online will be offered alternative channels including a paper based channel at least for a period of time.
3. Any paper documents that HMPO needs in support of an application, which will be minimised to the extent possible, will be verified and digitised at the earliest opportunity in the application process, such that the application is fully digitised upon receipt into examination.
4. All applications will be subject to automated checks including facial matching, life event verification (checking birth, marriage and death details) and checking the customer's details against stop files and watch lists. Applications that fail one or more of the automated checks or which require deeper checks will be passed to a case worker for examination and possibly further intervention.
5. This approach will free up examination time for more in depth checks on applications that have the higher perceived level of risk, while avoiding nugatory work on lower risk applications. Through data analytics, the case working teams will have better analysis and data on individuals than is currently available to them and will enhance their ability to identify fraudulent applications.
6. The document handling and case working functions are likely to share IT, estate and people with other case working parts of the Home Office, such as UK Visas and Immigration (UKVI).
7. HMPO will make greater use of the data it holds, offering data verification services more widely to the public, private sector and other parts of government to combat identity fraud and protect citizens.
8. HMPO will provide a more differentiated service offering, putting the customer in the driving seat. HMPO will offer more optional services to customers, including different delivery options and the option to purchase additional products and services.

Case study 5: Census

Once every 10 years since 1801 every household in England and Wales has been required by law to respond by answering a series of questions, providing an unparalleled source of consistent and comparable information about population, household and housing characteristics. This provides a unique source of detailed statistics that underpins national policymaking to help allocate funding and plan investment and services.

Every decade there is a review to establish whether a ten yearly census is the best way to meet information needs. In 2014 the National Statistician recommended that there would be an online first census of all households and communal establishments in England and Wales in 2021 with special care taken to support those who are unable to complete the census online. Resulting from this the Census programme has set the following top level objectives:

- run a high quality 2021 online census data collection operation that provides statistics which meet users needs with a target for 75% of responses to be collected through digital channels;
- drive the acquisition of new administrative data sources to facilitate population, household and person characteristics to be estimated;
- maximise the potential for wider benefits to ONS from the investment in the census;
- provide value for money;
- protect, and be seen to protect, confidential personal data; and
- make a recommendation about the future nature of the census and methods for the production of population statistics beyond 2021.

The 2021 Census will be digital by default and the target of a 75% online response (up from a 16.7% online response in 2011) is currently the highest of any comparable country. The costs of processing online returns is less than that of paper responses so the greater the proportion of online responses the lower the cost. In 2011 all households were sent a paper questionnaire but in 2021 households will firstly be provided with an invitation to participate online.

By achieving this online response target the ONS will support the government agenda to drive digital citizen engagement and will provide relevant assisted digital support. ONS will be using behavioural insights and a multi-channel approach to drive up self-completion rates.

The approach

The census operation is a large and complex activity. However most of the operation and much of the expenditure is in a comparatively short period of a couple of months around Census Day in 2021. It is an event - rather like the Olympics - there is only one chance to get right.

Census has both digital and non-digital aspects and a waterfall project management approach is being used for the majority of the non-digital delivery. An agile approach is being used for digital delivery and ONS is actively managing how these two project management approaches align.

There will be two large integrated Census rehearsals in 2017 and 2019. The purpose of these is to confirm the design of the questionnaire and the contract relationships as well as to test and refine operational delivery mechanisms.

Running a Census data collection operation involves the following activities:

- using identification methods for all residential households and communal establishments and supplying each address with the means to respond to the Census;
- securely collecting data from each household and, in close to real time, recording responses to identify and follow-up with non respondents;
- processing and analysis of the data through back-end systems;
- managing a temporary field force to help and persuade the public to respond; and
- community engagement to ensure maximum inclusion from all sections of society.

Once the data collection operation is concluded, a complex set of processes needs to be conducted to convert responses into statistical outputs and then to disseminate those outputs. The scale of the Census means small percentages translate to large volumes; for example 1% of addresses being incorrect inconveniences around 250,000 households.

Wider transformation

ONS continues to align to best working practices as informed by GDS guidance and the 'Better Statistics, Better Decisions' strategy. All digital and technology work on the Census will follow the overall ONS Enterprise Architecture approach, which is aligned to the Digital by Default strategy adopted across government and the government wide Technology Code of Practice.

The Census programme is part of a wider ONS transformation that is focussed on:

- moving away from developing siloed applications towards the provision of a small number of generic platforms across the organisation;
- modernising the ONS technology and data estate; and
- supporting the wider ONS community to develop the right culture to become an agile organisation focused on a service driven business model.

The ONS wide platforms where Census will be involved include:

- online collection - developing online data collection and working with the Data Collection Transformation Programme in ONS which is focussing on the other ONS surveys;
- survey management - transforming the efficiency of survey taking by enabling adaptive response management and more effective allocation of workloads; and
- publishing and dissemination - transforming ONS's ability to disseminate data through a single web platform and other channels putting users' needs at the heart of the approach.

ONS is responding to spending pressures by reorganising around DevOps principles, using new architectural patterns which emphasise the integration of services - sourced internally or externally (for example, from other national statistical institutes or Government as a Platform - GOV.UK Verify, GOV.UK Notify, GOV.UK Pay etc.) which are delivered via use of cloud-based services and technologies.

Working with a collaborative approach will mean that value for the organisation is delivered as early as possible. Census is a major digital opportunity for ONS and the entire Official Statistics system, representing a mechanism to transform many of ONS' systems and facilities. This is being achieved by building minimum viable products with steady incremental enhancement with rigorous testing at each stage. As part of this ONS is committed to working in the open and development code will be shared via Git repository hosting services.

Case study 6: Apprenticeships

The UK is not as productive as many other developed countries. Employers tell us that this is because there is a lack of technical skills in the workplace. Apprenticeships can meet that need by combining off-the-job training with a real job.

The apprenticeship reform programme has been designed to solve the UK's productivity puzzle. A key part of the programme will be the digital apprenticeship service which goes live in April 2017.

The digital apprenticeship service will help employers in four ways.

1. Put employers in control: by setting up an account on the service, employers will be able to access funding for apprenticeship training, choose the type of apprenticeships they want to run, the number of apprentices they take on, and the training provider that suits their needs.
2. Offer new apprenticeships: the service will list the new apprenticeship standards which have been designed by employers for employers (and will be independently overseen by a new Institute for Apprenticeships).
3. Focus on quality: through the service, employers will be able to find the right apprenticeship for them, from entry level to degree level apprenticeships and beyond, and be able to find approved training providers to deliver the training.
4. Encourage diversity and social mobility: apprenticeships are an accessible route for all people with aspiration, no matter what their background or circumstances. Degree apprenticeships will enable learners to study to graduate level without getting into debt. Through our service, employers will be able to access a diverse pool of talent.

The way the government funds apprenticeships is changing. From April 2017, larger employers (with a wage bill of over £3 million) will have to pay a levy towards training apprentices. They will be able to manage this funding through the digital apprenticeship service.

Working differently

We are delivering the new apprenticeships service in a joined up way, bringing together policy, digital and operations teams into a single co-located flexible delivery team.

We run the same fortnightly sprint cycle and unified show and tell across all three areas. This is work in progress and we make no claims to having built perfect harmony but the approach has already resulted in much better collaboration, faster and higher quality delivery and much closer engagement with all stakeholders from Ministers to end users.

The digital apprenticeships service is being delivered by people from the Department for Education, the Skills Funding Agency, the Department for Business, Energy and Industrial Strategy, and HMRC. Only a culture of open collaboration, iteration and flexibility allows us to deliver at the pace we need across the range of organisations involved.

Designing differently

In the past services tended to be build as monoliths, vast complex code bases running on top of very expensive and complex legacy systems.

In designing the new digital apprenticeship service we started from the premise that we would:

- seek to reuse or integrate services;
- build components around open standards and flexible architectures;
- put data at the foundation of the new service; and
- most critically, meet the needs of the users of the service.

In short we would use the GDS Design Principles to rethink how we build our core services.

Because the levy is a tax we need to be able to exchange information with HMRC. Rather than build an ad hoc gateway we set up a joint team with HMRC to build a secure integration between apprenticeships and the Tax Platform. This means that we now have a standard, highly performant API based integration with HMRC which makes any future developments much faster, simpler and safer.

The apprenticeships service needs to communicate with many different people and organisations - people looking for opportunities, businesses managing their levy, providers offering services. The list is long. In the past we would have had to build our own tools to send them emails or text messages. Now, thanks to GOV. UK Notify, we can integrate that functionality into our service within a single sprint with the guarantee that the service we are using is robust and economic.

Data is the lifeblood of the new service. It runs in real time and that makes it essential that we can track and respond to issues. So we are building the service around a single, immutable data store that will capture everything that happens across the service. We can then use this data store to feed real time reporting for operations, MI and stock reports for analysis and feedback, and to drive a series of managed APIs for true flexible reporting and data science. The data we collect should be a core asset and we aim to build that in right from the start.

We have built the service with users right from the start. We have carried out user research throughout the process, speaking to 546 employers and 308 providers up to private beta and then involving 100 employers in the private beta itself. We do this because the better the service meets the user need, the simpler it is for people to use. This reduces support costs while driving up takeup. The more we involve users, the more we learn and the better the end service becomes.

Go live is the start of the delivery, not the end. In parallel with delivery of the core service we are moving to a new flexible approach to service operation using supplier agnostic cloud hosting tools, self-scaling and self-healing services, and flexible deployment.

We are sharing knowledge and experience with organisations across government to learn what a great service feels like to operate and to ensure that we are building a service that can rapidly and flexibly respond to the opportunities and challenges of the future.

Case study 7: Defra services for regulated customers

Defra's Regulated Customer Digital Programme, has delivered modern digital services to make it easier for customers to do business with government, as well as delivering significant business benefits. It is transforming the way Defra works as a regulator to protect people, the environment, and supporting sustainable growth.

Defra has placed the customer at the heart of digital service design, delivering efficient and innovative new online services, and supporting the delivery of several government efficiency strategies including:

- the government's 'red tape challenge';
- Defra's 10 point plan for growth; and
- the Environment Agency's Smarter Environmental Regulation Review.

New digital services

Defra has delivered a number of new exemplar digital services for a large number of regulated customers and is continually transforming the services for others, including:

- fishing rod licensing ('I want to fish') - applying for a rod licence online;
- waste exemptions - businesses can easily register their exemptions;
- data returns - companies providing data on their environmental performance;
- permitting for flood risk assessments - apply for permits to build in areas of flood risk;
- international waste shipments online - supporting companies in exporting or importing waste; and
- waste electrical and electronic equipment online - helping companies meet their recycling obligations.

Making things simpler

The Regulated Customer Digital Programme has enabled Defra to deliver transformed services following the Smarter Environmental Regulation Review by:

- simplifying and improving processes and procedures on how regulated customers interact with us, transforming from paper based approaches to digital online services;
- reducing the amount of guidance and support material by providing simple on screen supporting information and content; and
- simplifying how data is collected and managed so that customers only need to provide it once.

Using agile delivery to become more efficient

Through the Regulated Customer Digital Programme, Defra has used the latest agile delivery techniques to embed a digital by default approach. By continually improving new and existing digital services Defra has also identified further efficiencies and ensured the maximum benefit is realised for users.

It has also developed services on platforms that can be reused across Defra group - to reduce the cost of developing future digital services. Efficiency savings were delivered through moving outdated paper based processes to smarter environmental regulation, delivering more for the environment.

Transforming services for customers

The Regulated Customer Digital Programme has actively demonstrated collaboration across government to deliver the Digital by Default strategy, and demonstrated how substantial benefits can be achieved for the communities Defra serves.

Defra has engaged with a large proportion of its regulated customer base through detailed user research, enabling customers to help develop digital services that meet their needs, and improving how they engage with Defra in future.

So far:

- more than 75% of customers say they are satisfied or very satisfied with the new services;
- Waste Carriers Licence digital service has an 85% satisfaction rate (based on first 2,000 registrations); and
- Waste Exemptions Digital Service has a 92% satisfaction rate (based on first 550 registrations).

Reducing Defra costs

The Regulated Customer Digital Programme will deliver £1.3 million annual savings for Defra through the decommissioning of legacy systems and other efficiency measures by 2016/17.

Appendix: list of exemplar services 2013-2015

Read more about these services here: http://www.gov.uk/transformation/exemplars

Service name	Department	Status as at March 2015
Register to vote	Cabinet Office	Live
Find an apprenticeship	Department for Business, Innovation and Skills	Live
Redundancy payments	Department for Business, Innovation and Skills	Beta
Renew a patent	Department for Business, Innovation and Skills	Live
Land Registry	Department for Business, Innovation and Skills	Beta
Student finance	Department for Business, Innovation and Skills	Live
Waste carrier registration	Department for Environment, Food and Rural Affairs	Beta
Rural payments	Department for Environment, Food and Rural Affairs	Beta
View driving licence	Department for Transport	Live
Personalised registration	Department for Transport	Beta
Vehicle management	Department for Transport	Beta
Carer's Allowance	Department for Work and Pensions	Live
Claim Personal Independence Payment	Department for Work and Pensions	Alpha
Universal Credit	Department for Work and Pensions	Beta
PAYE for employees	HM Revenue and Customs	Live
Digital Self Assessment	HM Revenue and Customs	Live
Your tax account	HM Revenue and Customs	Live
Agent online self serve	HM Revenue and Customs	Beta

Service name	Department	Status as at March 2015
Registered Traveller Service	Home Office	Live
Passports	Home Office	Beta
Visas	Home Office	Live
Civil Claims	Ministry of Justice	Live
Make a claim to an employment tribunal	Ministry of Justice	Live
Prison visit booking	Ministry of Justice	Live
Lasting power of attorney	Ministry of Justice	Live

Appendix: potential data registers

We will explore the case for creating the following registers.

Register	Department
Ambulance trusts (England and Wales)	NHS Business Services Authority
Apprentice assessment organisations (England)	Department for Education
Bank holidays	Cabinet Office
Central government services	Cabinet Office
Charities (England and Wales)	Charity Commission
Childcare providers (England)	Ofsted
Clinical commissioning groups (England and Wales)	NHS Business Services Authority
Companies	Companies House
Constituent units of the UK	Cabinet Office
Counting rules for reporting crimes (England and Wales)	Home Office
Countries recognised by the UK	Foreign and Commonwealth Office
Courts (England and Wales)	Ministry of Justice
Dental practices (England and Wales)	NHS Business Services Authority
Fire authorities (England and Wales)	Home Office
Fire stations (England and Wales)	Home Office
Food authorities	Food Standards Agency
Forensic pathologists (England and Wales)	Home Office
Further education establishments (England)	Department for Education
Geographical, political and administrative territories not recognised as countries	Foreign and Commonwealth Office

Register	Department
Government domains	Cabinet Office
Government organisations	Cabinet Office
GP practices (England and Wales)	NHS Business Services Authority
Higher education establishments (England)	Department for Education
Industries	Government Statistical Service
Local authorities in England	Department for Communities & Local Government
Local authorities in Northern Ireland	Northern Ireland Executive
Local authorities in Scotland	Scottish Government
Local authorities in Wales	Welsh Government
Local authority boundaries of England	Boundary Commission of England
Local authority boundaries of Scotland	Boundary Commission of Scotland
Local authority boundaries of Wales	Boundary Commission of Wales
Occupations	Government Statistical Service
Places of worship registered for marriage of same sex and opposite sex couples (England and Wales)	Home Office
Police forces (England and Wales)	Home Office
Police stations (England and Wales)	Home Office
Prisons (England and Wales)	Ministry of Justice
Proscribed terrorist groups (England and Wales)	Home Office
Qualifications (England)	Department for Education
Registered family mediators (England and Wales)	Family Mediation Council
Registered social workers (England)	Department for Education
Schools in England	Department for Education

Register	Department
Schools in Scotland	Scottish Government
Schools in Wales	Welsh Government
Venues for civil marriages and partnerships (England and Wales)	Home Office

Appendix: list of major transformation programmes on Government Major Projects Portfolio (GMPP)

As of November 2016

This list includes major programmes from the GMPP which have been identified as transformation programmes because of their significant work on some/all of locations, organisation change, operating models or digital. Programmes in bold are those with strong citizen-facing digital elements. In addition to the programmes listed here, the IPA are tracking 29 programmes in early development which may become GMPP transformation programmes in the future.

Department	Programme name	Strong citizen-facing digital element
BEIS	Smart Metering Implementation Programme	yes
CO	GOV.UK Verify (part of GaaP)	yes
CO	Government Hubs Programme	no
Defra	CAP Delivery Programme	yes
DFE	30 Hours Free Childcare Project	yes
DH	Visitor and Migrant NHS Cost Recovery Programme	no
DH	NHS.UK	yes
DH	100,000 Genomes Project	no
DWP	Universal Credit Programme	yes
DWP	DWP People and Locations Programme	no
DWP	Fraud, Error and Debt Programme	no
DWP	New State Pension Project	yes
HMRC	Building Our Future Locations Programme	no
HMRC	Columbus	no
HMRC	Customs Declaration Services	no

Department	Programme name	Strong citizen-facing digital element
HMRC	Making Tax Digital for Business	yes
HMRC	Making Tax Digital for Individuals	yes
HMRC	Tax-Free Childcare	yes
HO	Biometrics	no
HO	Digital Services at the Border	yes
HO	Immigration Platform Technologies	yes
HO	Disclosure and Barring Service (DBS) Programme	yes
HO	Smarter Working	no
MOD	Army Basing Programme	no
MOD	Logistics Commodities Services Transformation	no
MOJ	HMCTS Reform	yes
MOJ	Criminal Justice System common platform	yes
NCA	NCA Transformation Programme	no
ONS	Census Transformation Programme	yes