A Brief Introduction to Digital Transformation

A guide for public sector leaders who want to understand and get the best out of technology

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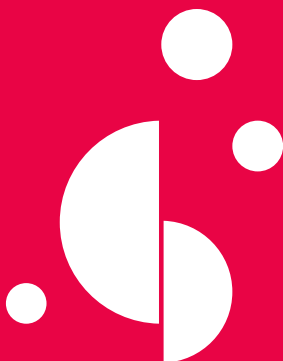
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A Brief Introduction to Digital Government

A guide for public sector leaders who want to understand and get the best out of digital

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Introduction

Much has been promised about the potential of digital technologies to positively enhance the work of government and the public sector.

This is often called **Digital Government**.

Nesta has previously explored the theme of digital government, with a particular focus on local authorities, in our 2016 report *Connected Councils*. In this short Nesta guide, which is designed for public sector leaders, we explore what digital government is and how you can think about the role that digital technologies might play in your own organisation.

Section 1

Section 1 reviews some common misconceptions and pitfalls surrounding digital government and offers advice on how to avoid them. It warns against adopting a 'technology-driven' approach and instead recommends focusing on technology's potential to enable real-world outcomes.

Section 2

Section 2 highlights some of the most useful things that digital tools can enable public sector organisations to do. Examples are given in four categories: 1) Streamlining existing processes; 2) Enabling new operating models; 3) Engaging citizens; 4) Making better use of information.

Section 3

Section 3 describes some of the project management processes that are well suited for projects involving the use or creation of digital tools. It explains how and why organisations need to adapt their approach to governance, budgeting, team formation and leadership to enable projects to thrive.

Section 4

Section 4 explains some of the key challenges for public sector technology and how to overcome them. It provides advice on what organisations should ideally look for in their procurement or development of new technology.

Section 5

Finally, Section 5 provides an overview of the skills and capabilities needed by public sector organisations. It highlights that responsibility for creating an environment in which digitally-enabled projects can thrive sits squarely with leadership teams.

Section 1

What is digital government?

The digital delusion

Discussion about digital government often goes something like this:

A number of game-changing digital technologies have reached a state of maturity, offering new and exciting possibilities. We now have responsive websites, smartphone apps, cloud computing, the Internet of Things, blockchain, artificial intelligence, and so on. If we can just get the right technologies into government and public sector organisations, it will enable them and the services they provide to be more effective and efficient.

Some of these new technologies are indeed powerful and open up new doors. As we shall see in the next section, digital tools are being used to deliver a wide variety of significant benefits in public sector organisations around the world. However, there are serious potential pitfalls to this kind of technology-driven narrative and approach.

❌ The pitfalls of being technology-driven

When organisations take the term 'digital government' too literally and think it's primarily about technology, five negative consequences can follow.

1. **Organisations focus on (technical) means rather than (real-world) ends**. Conversations start with an emphasis on what the technology can do, instead of what an organisation is trying to achieve. In particular, organisations can get caught up in the hype around new technologies, adopting them because they sound innovative without thoroughly considering whether they're the best solution for what they're trying to do. This approach risks leading to expensive misadventures that produce few tangible results.

2. **The role of digital technologies in delivering reform gets overstated**. Digital technologies represent just one set of tools in a wider toolbox. Overly fixating on the digital aspect of any reform misses the wider suite of tools and innovations available to public sector organisations who wish to improve their work and services.

3. **It disempowers and disengages politicians, public sector leaders, service managers and frontline staff**. By framing conversations primarily in terms of technology (and all the jargon that comes with it) it says to these groups: *"Your expertise and experience aren't relevant here; leave it to the digital experts."*

4. **Responsibility for reform gets delegated to and led by the digital team**. With the assumption that digital government is all about technology, digital teams are put in the driving seat of reform efforts. Much-needed collaboration with non-technical teams can be missed.

5. **Organisations bolt on new digital tools to the same old ways of working**. A technology-driven approach risks leading to technology-only reforms. In the absence of wider organisational collaboration, digital teams end up having to make technology tweaks to existing ways of working. This inevitably results in relatively superficial reforms. An inefficient process with a better website is just a more expensive, digitised, inefficient process!

These pitfalls can become mutually reinforcing.

Pitfall 1
Organisations focus on 'technical means' rather than 'real world' ends

Pitfall 2
The role of digital technologies in delivering reform gets overstated

A technology-driven approach risks leading to technology-only reforms

Pitfall 5
Organisations bolt on new digital tools to the same old ways of working

Pitfall 3
It disempowers and disengages polititians, public sector leaders, service managers and frontline staff

Pitfall 4
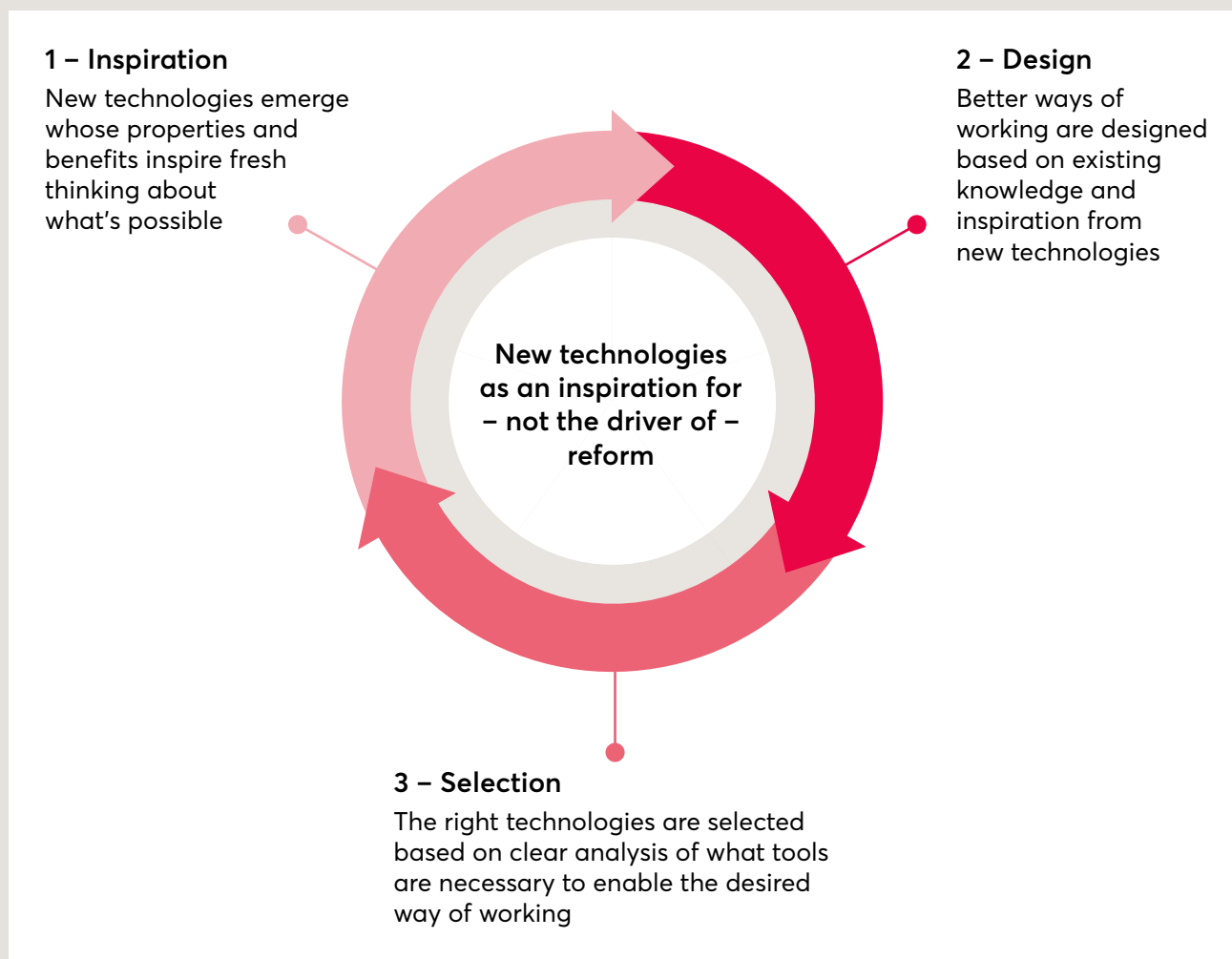Responsibility for reform gets delegated to and led by the digital team

Let's now consider each of these pitfalls and consider how they can be avoided.

✖ Pitfall 1: **Organisations focus on (technical) means rather than (real-world) ends**

How it should be: Organisations should focus on the real-world outcomes they want to enable and initially be agnostic about the technology that might help them achieve them. Only by being clear about what they're trying to do can they sensibly select the right tools for the job.

New technologies – and the hype that surrounds them – can be useful for inspiring creative thinking about novel ways of addressing old problems. (Who could have imagined the potential for online transactions before the advent of the Web?) But that doesn't mean organisations need to slavishly follow new technology trends. Just because blockchain exists, it doesn't mean that anyone needs blockchain for social care. However, we might instead take inspiration from characteristics of blockchain and consider whether a decentralised approach could offer a better way to solve a particular problem. (For more ideas on how technology can inspire and enable radical new ways of working, see Nesta's Upstream Collaborative.)

1 – Inspiration
New technologies emerge whose properties and benefits inspire fresh thinking about what's possible

2 – Design
Better ways of working are designed based on existing knowledge and inspiration from new technologies

New technologies as an inspiration for – not the driver of – reform

3 – Selection
The right technologies are selected based on clear analysis of what tools are necessary to enable the desired way of working

✖ Pitfall 2: **The role of digital technologies in delivering reform gets overstated**

How it should be: Digital tools can be powerful and they're likely to be a key component of most reform efforts. But organisations shouldn't focus on them to the exclusion of the many other means they have to enhance their work.[1]

Indeed, if we were to come up with a Maslow-style hierarchy of public sector innovation, digital technologies would surely not be at, or near, the base. Without, for example, having in place the right people and relationships, skills and competencies, assets and resources and effective ways of working, no amount of technology is likely to make a significant difference.
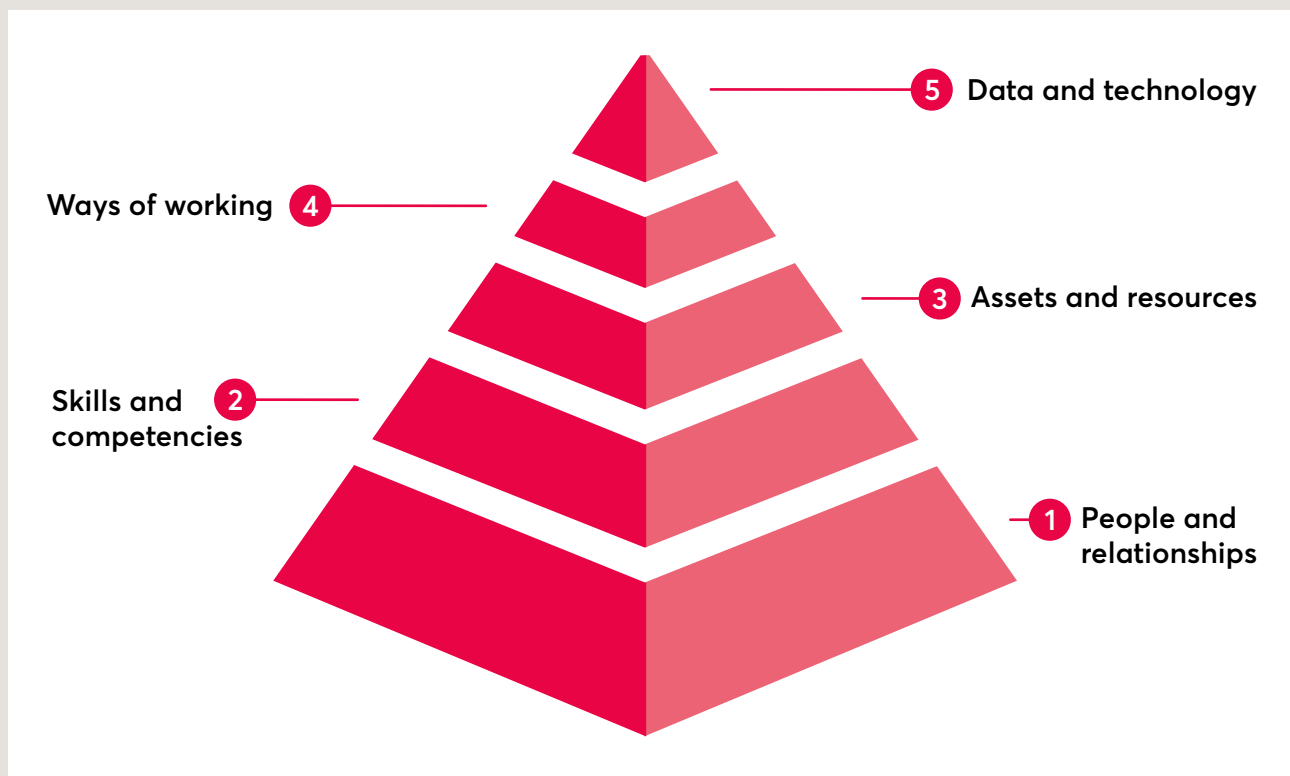
Ways of working **4**

Skills and competencies **2**

5 Data and technology

3 Assets and resources

1 People and relationships

❌ Pitfall 3: **It disempowers and disengages politicians, public sector leaders, service managers and frontline staff**

and

❌ Pitfall 4: **Responsibility for reform gets delegated to and led by the digital team**

How it should be: Technology is best understood as an enabler, not the driver of public sector reform. So, the big question is: 'What do you want to enable?' Answering that question is the responsibility of everyone in an organisation and especially of its leadership. Asking the digital team to drive these conversations is the tail wagging the dog.

Digital experts are a vital part of modern public sector organisations. However, they should operate within wider, multi-disciplinary teams who bring a variety of different skills and perspectives to bear on designing new ways of working that maximise the benefits that technology has to offer. Digital experts can advise on what's possible and help select or design digital tools that can enable the desired ways of working. We'll explore the role of digital teams in more detail in Section 5.

❌ Pitfall 5: **Organisations end up bolting on new digital tools to the same old ways of working**

How it should be: Broadly speaking, it's likely that most organisations will achieve the greatest improvements in their operations by putting in place better policies and processes, rather than better tech. In recent years, we've seen exponential levels of innovation in the technologies available to the public sector, but much less innovation in the structures and processes to which they are applied. Yet it's the latter where the most creative thought is needed.

Organisations should, therefore, first focus on achieving operational excellence – exploring whether there are better ways of running a process, delivering a service, or meeting a need – which can then be enabled by better technology.

A better way to understand digital government

Given the pitfalls outlined above, we can see that the term 'digital government' is misleading and unhelpful when it's used to imply that it's all about using digital technologies.

Instead, the term makes sense to the extent that we're thinking about reforms at a time when digital technologies are having an unprecedented impact on government, business and society. Like the Bronze Age or Iron Age (in which the era is defined by the dominant material or technology), we now truly live in the Digital Age.

Put simply, leadership teams should concern themselves with what reforms are possible in the digital age. That entails working with colleagues with many different skillsets to rethink what outcomes, ways of working, operating models, team structures and organisational culture they want to put in place, that can be inspired and made possible by digital technologies. Or, as Tom Loosemore has succinctly put it, digital is about *"applying the culture, practices, processes, business models and technology of the internet-era to respond to people's raised expectations."*[2]

Section summary

Let's review the key points we've covered in this section:

Key point 1
A technology-driven approach risks leading to technology-only reforms.

Key point 2
Technology is best understood as an enabler, not the driver of public sector innovation.

Key point 3
There have been exponential levels of innovation in the technologies available to the public sector, but much less innovation in the processes to which they are applied. It's the latter where most thought is needed.

Key point 4
Most organisations will achieve the greatest improvements by focusing on putting in place better policies and processes rather than better tech.

Key point 5
Leadership teams should focus on what reforms are possible in the age of digital.

Section 2

What can you do with digital?

Like all tools, digital technologies are a means to enable certain ways of working or to achieve certain outcomes.

There are many different ways to describe the best uses to which digital tools can be put. In this section, we'll review four broad categories. These are neither formal nor exclusive. Rather, they're intended to highlight what's possible in areas likely to be of particular interest to public sector leaders.

They are: 1) Streamlining existing process; 2) Enabling new operating models; 3) Engaging citizens; 4) Making better use of information.

1. Streamlining existing processes

In their approach to digital government, most public sector organisations have focused almost exclusively on streamlining existing, mostly transactional processes and services. They've done so with the aim of realising technology's promised potential to make them faster, easier to use and cheaper to run.

Let's consider some typical initiatives.

Making it easier for citizens to find information. Many public sector organisations have begun their digital government journey by creating user-friendly websites to optimise access to information from any device. For example, the UK government's creation of GOV.UK combined more than 300 separate department and agency websites into one.[3]

More recently, organisations have experimented with using more sophisticated technologies to improve access to their information. Oxford City Council and Enfield Borough Council are trialling the use of chatbots – computer programs that simulate a conversation with human users – which can offer more personalised answers to citizens searching for specific answers.[4] Meanwhile, Aylesbury Vale District Council now enables residents who own an Alexa-enabled device to access selected information on the council and its services (such as bin collection dates) through simple voice commands.[5] The aim of using these types of technology is to absorb time-intensive routine requests, while freeing up council employees to focus on more complex issues.

Enabling transactional services to be accessed online 24/7. Organisations can make transactional services available online or via mobile apps, such as paying tax or reporting a pothole. Other examples are more meta-level, such as citizens being able to prove their identity using GOV.UK Verify in order to use other transactional services.[6]

The intention of this form of 'channel shift' is to create convenience for citizens while reducing pressure and demand on more expensive points of contact, such as telephone and in-person visits.

There are, however, two important notes of caution. First, putting transactions online can, counterintuitively, increase dissatisfaction and costs if a better website or app simply reduces the barriers to accessing the same inefficient operation behind the scenes. If you're optimising an existing function, look at how digital tools can improve the entire end-to-end process, rather than just bolting on a nicer front face to an old way of working.

Second, organisations should be aware that not everyone has the skills or access to get online. They must, therefore, be mindful not to exclude these, often vulnerable, groups from accessing the services they need.

Empowering frontline workers with real-time information. Cloud-based tools (which allow the same content and functionality to be accessed from any device with an internet connection) can enable frontline workers using tablet devices to view and record information in the field. This can be hugely productivity-enhancing, helping them make more informed decisions, record information more consistently, and cutting out hours of time re-entering information back at HQ.

Examples of these tools in action include social workers being able to view an individual's case history and interactions with other agencies, and bulky waste collectors being able to intelligently optimise their routes.

2. Enabling new operating models

There's potential for achieving more dramatic transformation using digital technologies if organisations are willing to consider adopting radically different operating models for addressing needs. This option deserves serious attention as existing public service models come under growing pressure and may no longer prove sustainable or sufficiently effective. (This area of work is explored in depth in Nesta's Upstream Collaborative.)

Let's look at some examples of how digital tools are enabling alternatives to the traditional model of public services.

Enabling radical restructuring. Digital tools can enable organisations to be reshaped and teams to be empowered to function more effectively. The Buurtzorg model of community nursing provides a powerful example. In place of having hundreds of community nurses timetabled to the nearest few minutes by a large back office staff (as is the case with many UK social workers), the Buurtzorg model sees nurses arranged in self-managing teams of no more than 12. Those teams handle their own recruitment, time management, schedules and workload for their patch, which covers up to 60 people. The result has been the creation of 900 teams in the Netherlands, supported by a back office of just 50 administrators and 20 trainers. The model has led to radical improvements in service outcomes, up to 40 per cent cost reductions and higher staff morale.[7]

A key enabler of this different way of working is that teams are able to coordinate their activity and support each other through their own social network platform.

✓ **Augmenting the capacity of a public service with volunteers**. Technology can involve new groups of people working alongside the public sector. One such example is GoodSAM, of which Nesta was an early supporter. When somebody calls 999 to report that an individual has had a cardiac arrest, as well as dispatching an ambulance, many ambulance trusts are now able to send out an alert to GoodSAM. The GoodSAM app alerts qualified first aiders in the vicinity of the victim, highlighting their location and that of the nearest defibrillator so they can hurry to the scene and potentially save a life.[8]

This is not an app that just digitises calling 999. Rather, it augments the capacity of the public service by intelligently tapping into a volunteer network.

✓ **Government as a matchmaker**. Learning from the best characteristics of modern 'platform' businesses like Airbnb and Uber, public sector organisations might consider using or supporting websites and apps that connect two sides of a market in a particular sphere, matching those with certain needs with others who can address them. Nesta has supported a number of ideas along these lines. These include TrustonTap and Equal Care Co-op, which help connect those in need of care with local carers.[9]

✓ **Creating peer-to-peer networks**. Similar digital tools can enable public sector organisations to connect citizens to provide peer support to each other. This idea is neatly demonstrated by Casserole Club, a peer-to-peer alternative to meals on wheels, created by FutureGov. Meanwhile, the Nesta-backed charity Beam connects homeless individuals with groups of donors willing to fund their back-to-work training.[10]

✓ **Involving social innovators in addressing problems**. There are many charities and other third sector organisations that are developing or using digital tools to address social issues. Some of these initiatives focus on helping citizens better participate in their communities and address local needs that would otherwise place demands on public services. We call this 'digital social innovation' or 'tech for good'. Hundreds of these organisations can be found at digitalsocial.eu and should be proactively supported by the public sector.

For more radical operating models like these to have a chance of success, it's important to note that they don't merely entail public sector organisations adopting different technologies and updating their internal processes. Rather, they may also require working with different types of organisation (e.g. cooperatives) and new groups of people (e.g. volunteers), redistributing power (e.g. Buurtzorg's self-managing frontline teams) and playing different roles, such as convenor, incentiviser or matchmaker.

3. Engaging citizens

While digital government may most commonly be associated with improving service delivery, digital tools can also be used to enable citizens to engage with the work of government and the public sector in new and more sophisticated ways. These forms of democratic innovation are often overlooked.

Let's look at some examples:

Crowdsourcing ideas for local initiatives. In Iceland, 'Better Reykjavik' was launched in 2010 as a collaboration between the local government and a technology charity so that citizens could suggest, debate and rank ideas for improving their city. Via a website, citizens have the opportunity to vote on specific proposals, and collectively make real decisions about how local resources are spent and allocated. A similar platform, decide.madrid.es, is available in Madrid.

Giving residents a say in how local budgets are spent. Participatory budgeting initiatives invite residents to propose and vote on ideas for how a portion of the city budget should be spent. The most well-known is 'Madame La Maire, J'ai une idée' (Madam Mayor, I have an idea) in Paris. Anne Hidalgo, the city's mayor, allocated €500m over six years to be distributed according to citizens' suggestions. Ideas and votes are handled using a website, complemented by significant in-person engagement (through town hall style meetings) across the city.[11]

Crowdfunding for local projects. Digital tools can be used to enable citizens to financially support local projects that would otherwise not be viable. Sometimes these projects depend solely on citizen funding; in other instances, the local authority commits itself to match citizen contributions. In 2015, using an existing funding pot of £100,000, Lewisham Borough Council invited local groups to upload their project ideas to the crowdfunding site, Spacehive, and demonstrate community support through attracting pledges. The council then pledged to give up to £10,000 to the most popular projects.[12]

Making better decisions with citizen deliberation. In 2019, the UK Government's Innovations in Democracy programme is supporting eight to ten pilots of citizens' assemblies across England that use digital engagement tools to enhance their work.[13] Those pilots might learn from examples such as the Australian Citizens Parliament (ACP), which used an 'Online Parliament' to bring 300 people together to make recommendations on how to strengthen Australia's democracy.[14] Participants were randomly selected to ensure representativeness and then invited to join a curated, closed group which tried to replicate the conditions for deliberation online.[15]

4. Making better use of information

Behind the scenes in every public sector organisation, there are dozens of IT systems and pieces of software that serve the specific needs of particular teams. We'll have more to say on how to think about these 'back-end' systems in the next section.

One of the challenges is that this IT fragmentation can make it hard for different teams to work together and to find and exchange useful information. Organisations should, therefore, consider how they might use digital tools to overcome these issues.

Enabling collaborative working. Many public sector teams are learning from the private sector by adopting off-the-shelf digital products that make it easier to collaborate with colleagues. Among the most common examples are Slack, which enables teams to communicate and work in real time; G Suite and Office 365, which enable the same documents to be edited by multiple people at the same time; and Trello for project management. Packages like Basecamp combine many of these functions into one. These examples are purely indicative; many other similar products are available. All these tools can make it easier to create work together, share it and ensure it can be searched for and discovered at a later date.[16] They can have a dramatic effect on ways of working and are useful for enabling the project management methods outlined in the next section.

Seeing information from multiple sources in one place. Digital tools can help take data stored in different systems and make it easier to view and interrogate in one place. For example, the London Borough of Camden's Residents Index links data about residents and places from 17 different sources within the local authority to create one 'golden' record of local residents. This has improved multi-agency working and helped spot fraudulent activity.

Encouraging open data innovation. It's not only public sector organisations who can do useful things with their data. They can incentivise the creation of useful products and services that help them and their users by releasing high-quality open data for others to work with. Transport for London publishes real-time, machine-readable data, which many external developers (both businesses and hobbyists) have used to create more than 700 apps that help Londoners navigate their city. TfL has thereby stimulated the creation of useful digital products without building or commissioning them themselves.

Preserving legacies, building futures

As they reflect on the ideas above, public sector leaders need to make a conscious decision about whether they want their use of technology to optimise and reinforce their existing ways of working or to enable much more dramatic changes.

While using technology to optimise current operations may feel like the best option in some areas, there's a risk that it will make it harder to embrace more meaningful changes later on. That's because making tweaks with digital tools might perpetuate old ways of working that would have been better stopped altogether.

The priority is to give careful thought to whether a particular area is fit for purpose, or whether an entirely new paradigm is warranted. Technology can enable both.

Three horizons thinking

Do we want our innovations to enable a new paradigm?

New operating models

Technology

Existing ways of working

Or reinforce the status quo?
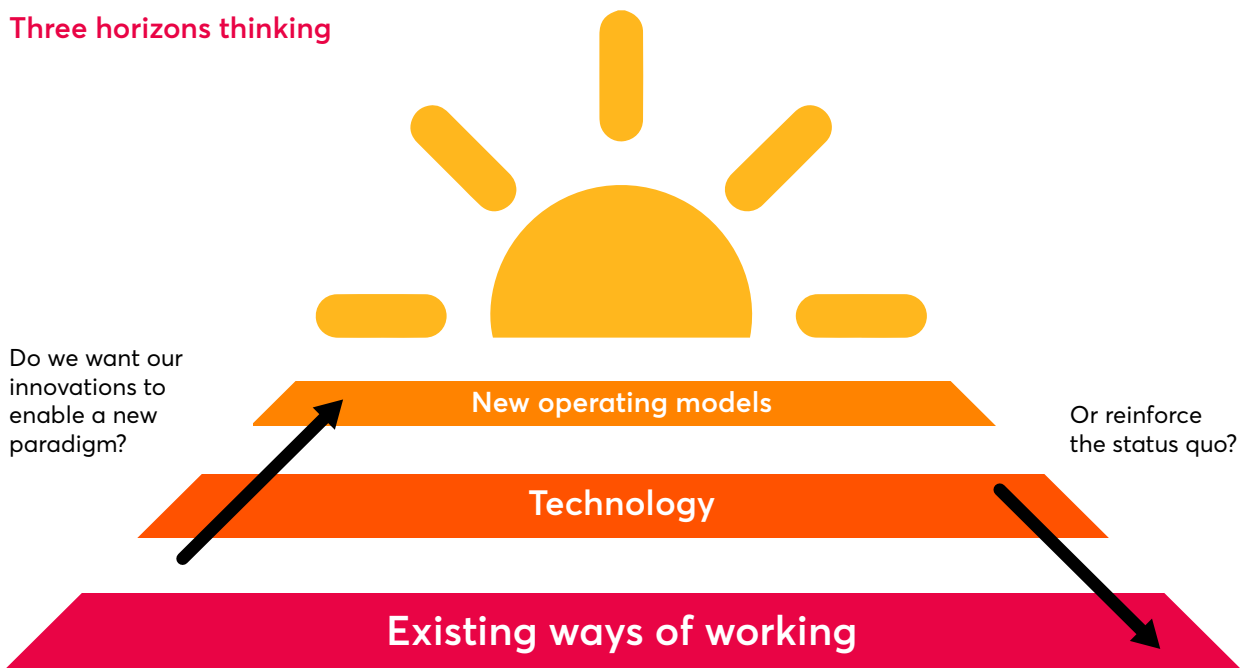
Section summary

Let's review the key points we've covered in this section:

Key point 6
Digital tools can enable more streamlined versions of what organisations already do, or completely different operating models.

Key point 7
When optimising an existing function, organisations should look at how digital tools can improve the entire end-to-end process, rather than bolting on a nicer front face to an old way of working.

Key point 8
The level of transformation that digital technologies can enable is primarily down to how much of a process or way of working organisations are willing to change.

Section 3

Designing with digital

Now that we've seen some examples of what digital tools can enable, how should organisations go about designing and implementing the technology and processes in which they are used?

Who's the user?

Whatever area of work you wish to improve with digital tools, the golden rule is to focus on understanding and meeting user needs. Services should be designed to fulfil what the user actually wants to achieve, not what your organisation assumes they require.

It's not by accident that the first two principles of the UK Government Digital Service (GDS) Digital Service Standard are: 1) Understand user needs, and 2) Do ongoing user research.[17]

In most cases, it's assumed that the users will be citizens. However, it's important to remember that digital transformation needs to work for public sector staff as well. They are users too.

Far too often, public sector staff are expected to use outdated technology that is inefficient (e.g. having to manually re-enter information submitted digitally); demoralising (especially when tools are evidently less effective than those they use in their personal lives); and insecure (old technologies such as outdated web browsers are typically more vulnerable to attack than newer versions).

Ensuring that technologies work for all those expected to interact with them is essential if organisations really want to see digital tools positively enhancing their activities.

Being agile

At the start of many digitally-enabled reform projects, there's rarely a single right answer about how a particular function should be delivered, or what role technology should play in making it happen.

As a result, projects tend not to start with a predefined idea of what should be built or put in place. Instead, they follow a process of rapid and repeated exploring, testing and improving. The most common form of this is known as agile . In an agile project, activity is conducted in weekly or fortnightly 'sprints', where multi-disciplinary teams (i.e. teams made up of people with different skill sets) focus on delivering the highest value activities at that time.

Agile is the preferred way of working for most digital teams. Yet it's proven its worth over almost two decades in thousands of organisations, across many sectors.

The principles behind agile are set out in the Agile Manifesto (2001). The UK's Government Digital Service has a helpful summary and links to resources on agile methods, and have distilled its essence to just five principles that work for digital and non-digital projects alike:[18]

1. **Focus on user needs**

2. **Deliver iteratively**

3. **Keep improving how your team works**

4. **Fail fast and learn quickly**

5. **Keep planning**

Agile projects begin with a discovery phase. The **discovery phase** aims to ensure that the correct problem has been identified, that users' needs are properly understood, and that those who use and will be affected by any new solution are involved in designing it.

This is followed by an **alpha phase** to test and refine one or more basic prototypes of solutions with a small audience. A **beta phase** then follows to test and refine a more advanced version of the solution with a wider pool of users, before rolling out a 'live' version. That live version should itself be subject to continuous incremental improvements based on user feedback.

GDS agile project phase overview
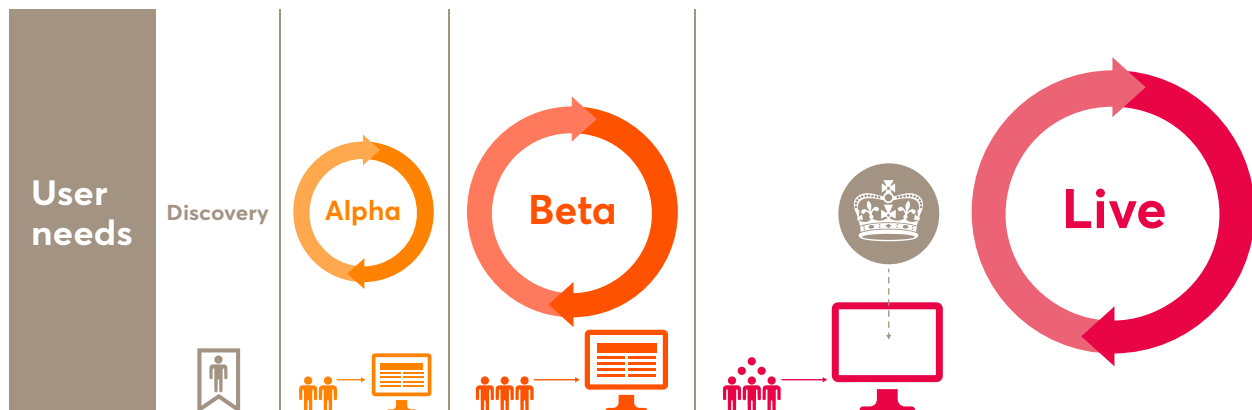
Agile projects are often combined with the Design Council's Double Diamond design approach.[19] The double diamond includes two phases of thinking broadly and then narrowing in on specific points; first regarding the problem to be solved, then the solution to be implemented.

Design Council's Double Diamond design approach

Discover
insight into the problem

Define
the area to focus upon

Develop
potential solutions

Deliver
solutions that work

Problem definition

Problem

Design brief

Solution
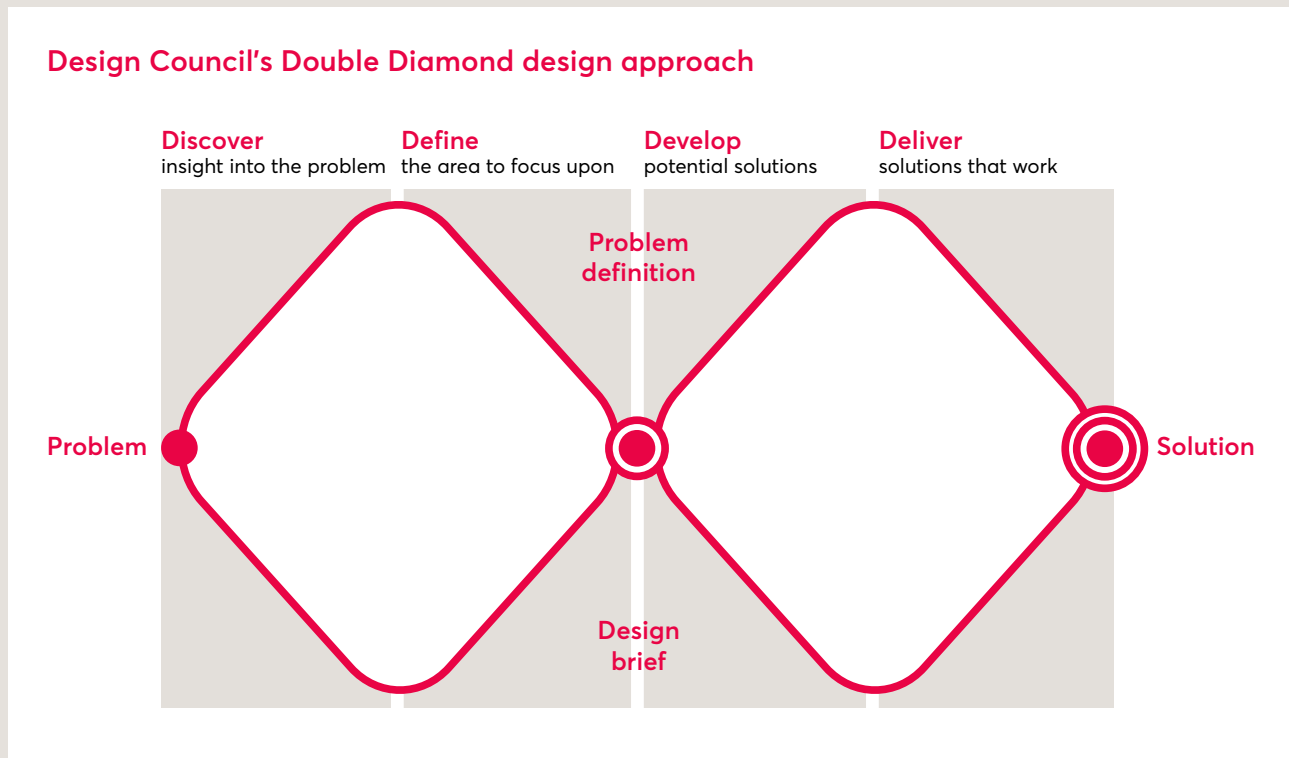
Given that the desired end goal of this kind of technology-enabled transformation is not the technology, the template below prompts teams to think hard about the real-world outcomes they wish to make possible, considering both non-technical and technical elements across each of the Discover, Define, Develop and Deliver stages of the Double Diamond.

Starting with a clear focus on the desired outcome also provides a helpful anchor point. During a genuine process of discovery about the nature of problems and the development of potential solutions, it's highly likely that new things will be learned that will lead to changes in a project's approach. Having an anchor point helps ensure that those changes lead to a process of trial and improvement (i.e. getting better aligned with the desired outcome) rather than endless trial and error.

Starting with the end in mind

Phase	**Problem**		**Solution**		**Outcome**
	2 – Discover	**3 – Define**	**4 – Develop**	**5 – Deliver**	**1 – Motivate**
	Generate / Focus		Generate / Focus		What real-world outcome do we want to enable?
Key questions	What are real problems and what do we know about them?	What specific problem(s) will we try to solve?	What hypotheses do we wand to test by prototyping?	What prototypes perform best?	(This is **not** the solution, tech or data!)
Tech and data	What problems relate to technology and data?		What role can technology and data play in enabling the desired outcome?		
Non Tech and data	What problems relate to people processes and conditions?		Beyond technology, what is needed to achieve the desired outcome?		

What agile means for organisations

Leadership teams need to be aware that if they want agile projects to thrive in their organisations, there are different requirements compared to the way they may have handled more traditional projects, in terms of:

- **Project management and governance**: It's not enough for senior leadership teams to engage with projects solely through periodic status reports and monthly dashboards. Instead, they need to make themselves available for regular progress and 'show and tell' sessions, in which they can actively participate and provide feedback on developments throughout the entire process.

- **Budgeting**: agile working does not lend itself to writing fully-costed business cases that define up-front exactly what will be built. Instead, funds are better released in increments by project phase. While this might appear riskier, the iterative nature of agile , and its focus on prototyping before rolling out finished solutions, reduces budget risks since the development of a new product or process is based on constant feedback from users.

It's a cheap way of learning from failures...

Prototyping

Big bang implementation

Resources spent
Time, money, talent, materials invested to develop and implement the solution

Room for failure
Find out what works and what doesn't

Start — Project journey → End
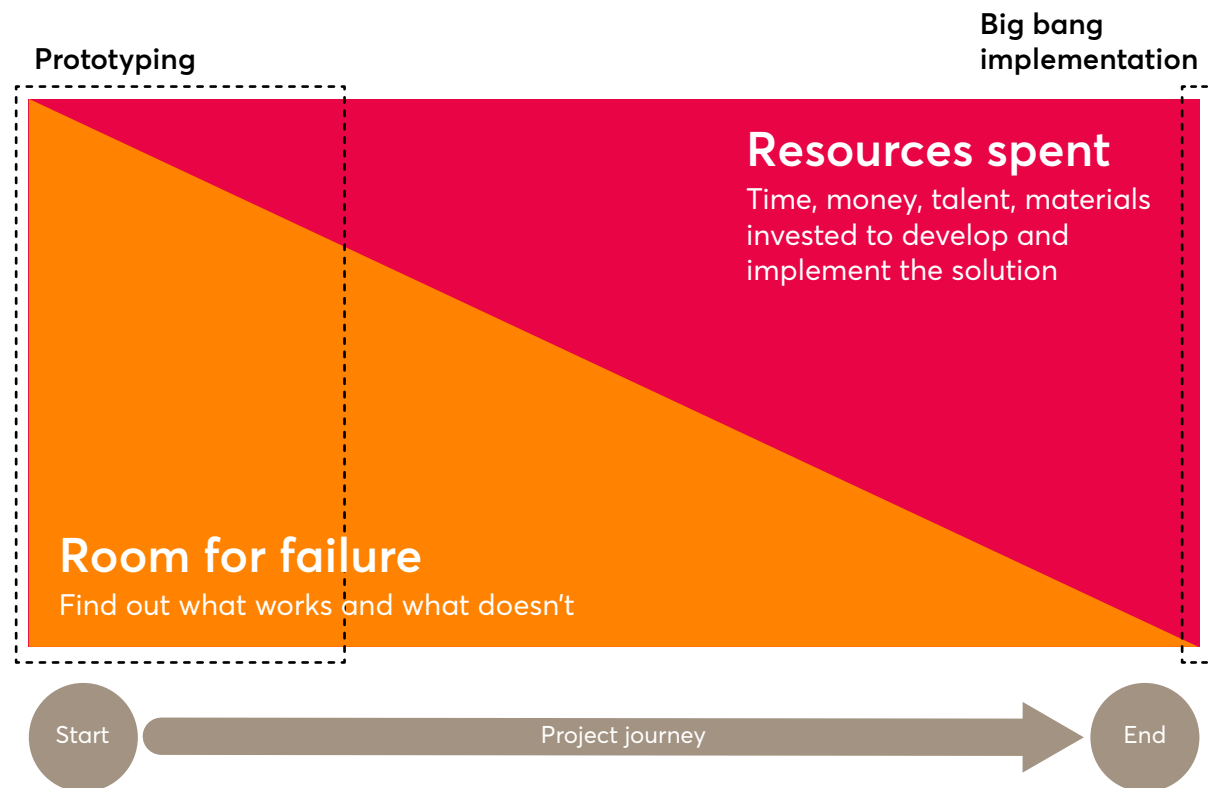
- **Leadership**: Instead of directing activities, the role of leadership teams in an agile process is to set a clear vision for the outcomes they want to enable, then give time, space and resources for teams to get on with it, removing any barriers identified along the way.

Section summary

Let's review the key points we've covered in this section:

Key point 9
When designing a new service or process, organisations should relentlessly focus on user needs, but remember that their own staff are users too.

Key point 10
Organisations will not achieve the full benefits of agile projects if they insist on keeping older forms of project management, governance, budgeting and leadership engagement.

Section 4

Thinking about your technology needs

Let's assume that you've clarified the ways of working you want to enable. How do you then go about thinking about your technology needs?

You may have heard calls for public sector technology to be:

- **Open source**

- **Cloud-based**

- **Interoperable**

- **Built by in-house digital teams**

- **Based on a 'government as a platform' model**

Rather than restricting yourself to having to use certain types of technology, it's perhaps more helpful to understand what we want to avoid.

The fragmentation problem

Consider your experience of the technology you use in your personal life. What do you notice? It's always getting cheaper and better.

So why is it that public sector technology projects are notorious for being expensive and producing poor results?

Part of the answer lies in the fact that, over many years, public sector organisations have each built or procured their own IT systems separately. As a result, the combination of technology that enables them to function (their 'IT architecture') is almost unique to each organisation. Furthermore, public sector organisations have had a habit of commissioning bespoke IT systems that often take years to build, run over budget, are out of date when they're finished, don't easily connect with or share data with other systems, and lead to vendor lock-in.

This has led to the public sector having a rather dysfunctional relationship with technology companies, with a lot of dissatisfaction on all sides.

The fragmented and bespoke nature of public sector technology can be self-perpetuating. Public sector organisations have to rely on even more bespoke technology to plug into the technology they already have. This fragments the IT market further and drives up costs.

The bespoke trap

Organisations have bespoke or different combinations of technologies

Fragmented market raises costs for private sector to develop and sell products to the sector

Vendor lock-in as organisations are dependent on maintaining bespoke IT

Limited number of good off-the-shelf products leads organisations to commission or build own bespoke technology

Organisations pay bespoke prices for bespoke IT

To avoid these problems, some public sector bodies have reacted by building more technology in-house, using their own digital teams.

A potential risk with this approach is that it may simply replace bespoke technology made by external IT companies (with all the problems that entails), with bespoke IT created in-house. It misses the point that technology plummets in cost when organisations can use the same commodity, off-the-shelf solutions used by many other customers.

When each public sector organisation procures or develops its own different technology, it also perpetuates organisational and data silos, making it harder for teams to work together and adopt more collaborative ways of working, like those described in Nesta's *Guide to Public Sector Data Analytics*.

Teams have
different technology

Each system has
specific ways of
recording data

**Fragmented
technology leads
to fragmented
working**

Team silos are
reinforced

Ways of using data
require specific
processes and ways
of working
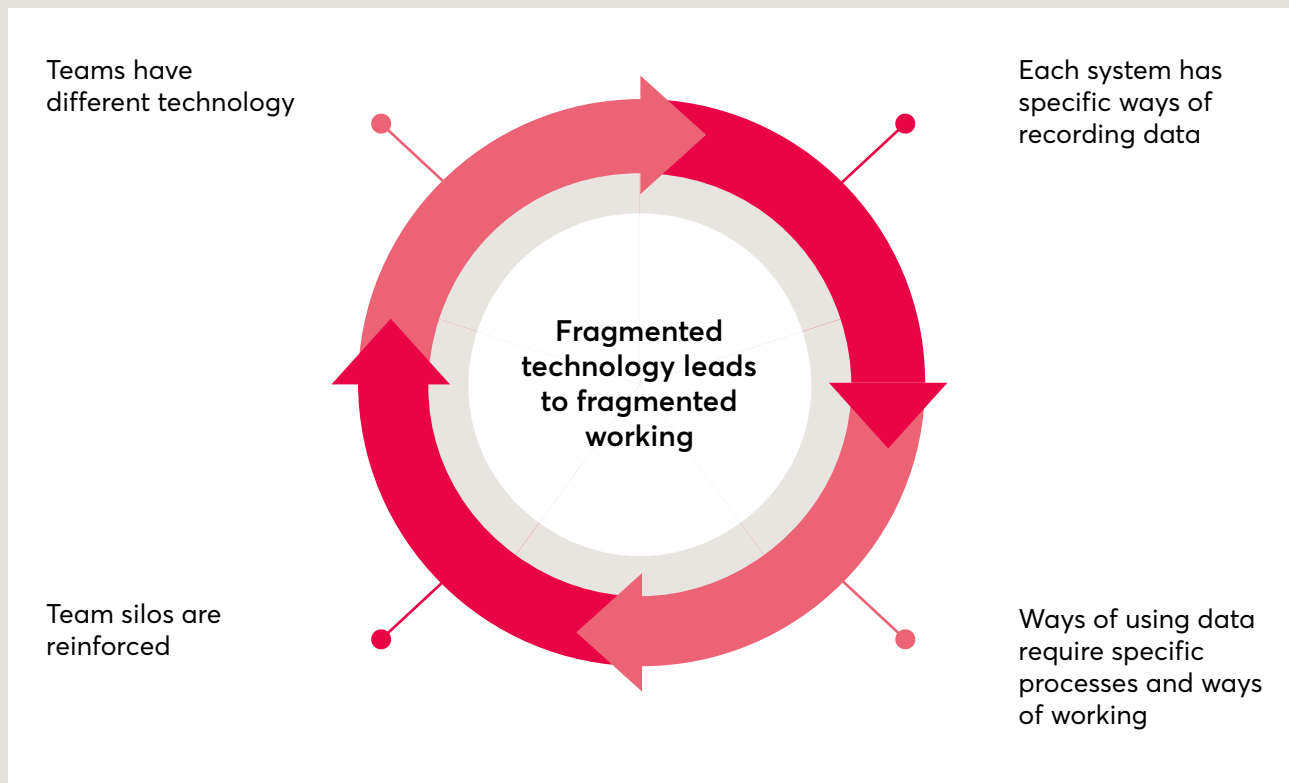
Right problem, wrong solution

The answer to having a dysfunctional relationship with the IT sector is not to build everything in-house. Instead, the preferred option should be for public sector organisations to have access to, and be smart and demanding customers of the best digital tools the market has to offer.

There may still be areas where building tools in-house is necessary (such as where there is a clear market failure to provide a decent product), or desirable (where having complete control in-house over a particular function provides significant extra value to users). But ideally those would be exceptions.

No matter how many excellent developers a public sector organisation has on its payroll, they can never match the resources and expertise that companies dedicated to one niche product area can offer.

However, the public sector has every right to set the rules of the playing field to ensure technology provided by the market genuinely meets their needs and doesn't leave them stuck with a handful of suppliers. Ideally, public sector leaders would work with the wider sector to establish those rules and thereby incentivise the market to respond.

What should those rules be? To overcome the challenges laid out in this section, public sector organisations would ideally:

Avoid systems that...	Give preference to systems that...	So that...
are siloed, standalone, 'stovepipe'	are interoperable	different systems integrate and work with each other easily
are based on proprietary standards	are based on common technical standards	it's easy to swap out and replace systems (just like apps on smartphones) to avoid being stuck with one vendor
are bespoke	are standard/off-the-shelf	organisations can avoid the bespoke trap and enjoy the price decreases seen in other areas of computing and electronics
are hosted on in-house servers	are cloud-based	staff can work from anywhere on any device with an internet connection, while also reducing costs of IT hardware
do not allow data to be extracted	have Application Programming Interfaces (APIs)	data can easily be shared between different systems, making it easier for teams and organisations to collaborate
do not have clear security built-in	are cyber-secure and privacy aware by design	systems are well protected from hacking and abuse of personal data

Section summary

Let's review the key points we've covered in this section:

Key point 11
Public sector organisations should focus on being smart, demanding customers of the best innovations the market can provide and set clear standards for the technology they will buy or develop.

Key point 12
Public sector organisations should avoid being dogmatic about their technology needs. Instead, they should give preference to systems that are interoperable, off-the-shelf, cloud-based and allow easy access to their data.

Section 5

Who needs to do what?

What capacity and capabilities do organisations need to make the most of digital government? And what's the role of leadership teams?

Cross-functional teams

To answer that question, public sector organisations need to reflect carefully on what kind of organisation they wish to be.

For example, in your organisation, do you want:

- To completely own and have full control over your interactions with your users?
- To be a leading innovator or follow others?
- To use technology to explore radically different operating models or make tweaks to your existing ways of working?

The greater the level of ambition against each of these points, the greater the diversity in skill set and the larger the number of resources you will need in-house.

Whatever the scale of your ambition, organisations must recognise that making good use of digital technologies isn't just a job for digital teams. Digital experts should work together in multi-disciplinary teams that bring a variety of different skills and perspectives to bear on reform. This might include policy specialists, service designers, frontline staff, managers and researchers, to name just a few.

Viewed like this, the skills, competencies and attitudes needed to innovate with digital tools are essentially the same as those needed to be good at innovating more broadly. With this in mind, the Nesta Competency Framework (see next page) covers the skills, competencies and attitudes that need to be present within a public sector team, for experimenting and effective problem solving to become business as usual.

The framework can be used to help inform decisions about recruitment criteria for new staff, objectives for existing staff, and how to form effective teams to work on digitally-enabled transformation projects.

Citizen and stakeholder engagement

Actively involving citizens, stakeholders and unusual suspects

Creative facilitation

Creatively processing different perspectives and deliberating multiple options

Building bridges

Orchestrating interaction to find common ground and create shared ownership

Brokering

Mediating contrasting interests and reducing friction between multiple stakeholders

Political and bureaucratic awareness

Operating political dynamics and bureaucratic procedures to ensure strategic support

Financing change

Understanding the many ways to liberate and use financial resources for innovation

Intrapreneurship

Being insurgent and use business acumen to create opportunities

Demonstrating value

Articulating the value of new approaches and solutions for decision-making purposes

Storytelling and advocacy

Using narratives and media to articulate vision and information in compelling ways

Public sector innovators combine key attitudes and skills to successfully drive innovation in government and solve public problems

Working together

Engaging with citizens and stakeholders to create shared ownership of new solutions

CORE SKILLS
KEY ATTITUDES

Empathetic

Understanding others' experiences and frames of reference

Resilient

The perseverance to deal with resistance

Action-oriented

Biased towards action and learning by doing

Agile

Responding to changing environments with flexibility

Curious

The desire to explore multiple possibilities

Competencies for

Experimenting and public problem solving

Imaginative

Exploring and envisioning new possible futures

Reflective

Habit of critically reflecting on process and results

Courageous

Willingness to take risks

Outcomes-focused

Strong commitment to real world effects

Accelerating learning

Exploring and iterating new ideas to inform and validate solutions

Future acumen

Connecting long-term vision with short-term achievable tasks

Prototyping and Iterating

Testing ideas and systematically improving them

Data literacy and evidence

Using different kinds of data effectively to accelerate sense-making

Systems thinking

Combining micro and macro perspectives to grasp complexity

Tech literacy

Understanding technological developments and use their potential

The role of digital teams

All this is not to diminish the importance of having effective digital teams working within the public sector. There is still a need for people with deep expertise in digital technologies, who can advise on what's technically possible and then help design and implement those tools effectively.

Building on the advice set out in Sections 3 and 4 of this guide, digital teams working in the public sector can best serve their organisations by:

1. Adopting a user-led approach to designing services and determining which technologies best enable the desired ways of working.

2. Being smart and demanding customers of the best technology products the market has to offer.

3. Wherever possible using commodity, cloud-based, off-the-shelf technologies.

4. Only building technology where the market doesn't provide a satisfactory solution, or where a customised product offers significant additional value to users and/or control to staff.

5. Insisting that all technology – whether purchased or developed in-house – is based on common standards that make it interoperable and therefore replaceable.

6. Ensuring all systems – including those used by outsourced providers – give full access to their data: preferably with Application Programming Interfaces (APIs), which allow different IT systems to talk to each other.

7. Ensuring all technology is secure from cyber attacks and protects personal data.

The role of leadership teams

What does all this mean for public sector leaders? Quite simply, responsibility for creating an environment in which digitally-enabled projects can thrive sits squarely with leadership teams.

To do this, they should consider:

1. Educating themselves, at least in broad terms, about what digital tools can do so they understand the opportunities and constraints of this type of innovation.

2. Taking proactive steps to avoid the five pitfalls outlined in Section 1, for example by ensuring that priority is given to thinking about desired ways of working, rather than to technology.

3. Developing and maintaining project management, governance, team and budget structures that enable agile projects to succeed.

4. Committing their own time to actively participate in the regular cycle of activities that agile projects entail, such as 'Show and Tell' sessions.

5. Creating a safe space in which multi-disciplinary teams are allowed to operate with some uncertainty and trial and learn from creative problem solving and prototyping, without being penalised if things don't work the first time.

6. Coordinating with leadership teams at partner organisations to facilitate collaboration on the creation of common standards for technology that might benefit the whole sector.[20]

Section summary

Let's review the key points we've covered in this section:

Key point 13
The skills, competencies and attitudes needed to innovate with digital tools are essentially the same as those needed to be good at innovating more broadly.

Key point 14
Digital experts are important but should work as part of multi-disciplinary teams that bring together many different skill sets.

Key point 15
Responsibility for creating an environment in which digitally enabled projects can thrive sits squarely with leadership teams.

Summary of key points

Key point 1

A technology-driven approach risks leading to technology-only reforms.

Key point 2

Technology is best understood as an enabler, not the driver of public sector innovation.

Key point 3

There have been exponential levels of innovation in the technologies available to the public sector, but much less innovation in the processes to which they are applied. It's the latter where most thought is needed.

Key point 4

Most organisations will achieve the greatest improvements by focusing on putting in place better policies and processes rather than better tech.

Key point 5

Leadership teams should focus on what reforms are possible in the age of digital.

Key point 6

Digital tools can enable more streamlined versions of what organisations already do, or completely different operating models.

Key point 7

When optimising an existing function, organisations should look at how digital tools can improve the entire end-to-end process, rather than bolting on a nicer front face to an old way of working.

Key point 8

The level of transformation that digital technologies can enable is primarily down to how much of a process or way of working organisations are willing to change.

Key point 9

When designing a new service or process, organisations should relentlessly focus on user needs, but remember that their own staff are users too.

Key point 10

Organisations will not achieve the full benefits of agile projects if they insist on keeping older forms of project management, governance, budgeting and leadership engagement.

Key point 11

Public sector organisations should focus on being smart, demanding customers of the best innovations the market can provide and set clear standards for the technology they will buy or develop.

Key point 12

Public sector organisations should avoid being dogmatic about their technology needs. Instead, they should give preference to systems that are interoperable, off-the-shelf, cloud-based and allow easy access to their data.

Key point 13

The skills, competencies and attitudes needed to innovate with digital tools are essentially the same as those needed to be good at innovating more broadly.

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Digital experts are important but should work as part of multi-disciplinary teams that bring together many different skill sets.

Key point 15

Responsibility for creating an environment in which digitally enabled projects can thrive sits squarely with leadership teams.

Endnotes

1. See: https://www.nesta.org.uk/blog/new-operating-models-local-government/ for more discussion on the range of parameters that public sector organisations can adjust to improve a service.

2. https://twitter.com/tomskitomski/status/729974444794494976?lang=en

3. https://www.gov.uk/

4. See: https://www.ukauthority.com/articles/oxford-city-council-launches-chatbot-project/ and https://www.ipsoft.com/wp-content/uploads/2017/11/Case-Study-Enfield-Council_PDF.pdf

5. https://www.aylesburyvaledc.gov.uk/ask-amazon-alexa/

6. https://www.gov.uk/government/publications/introducing-govuk-verify/introducing-govuk-verify

7. https://www.buurtzorg.com/about-us/buurtzorgmodel/

8. https://www.goodsamapp.org/

9. See: https://www.trustontap.com/ and https://www.equalcare.coop/

10. https://beam.org/

11. https://www.paris.fr/participez/proposer-et-debattre/madame-la-maire-j-ai-une-idee-3971

12. https://www.lgiu.org.uk/wp-content/uploads/2017/03/Crowdfunding-for-local-authorities.pdf

13. As defined by the UK Parliament: "A citizens' assembly is a group of people who are brought together to discuss an issue, and reach a conclusion about what they think should happen. The people who take part are chosen so they reflect the wider population – in terms of demographics (e.g. age, gender, ethnicity, social class) and sometimes relevant attitudes (e.g. preferences for a small or large state)" - https://www.parliament.uk/business/committees/committees-a-z/commons-select/housing-communities-and-local-government-committee/citizens-assembly-faq-17-19/

14. http://www.citizensparliament.org.au/

15. For more discussion on the potential for citizens' assemblies to use digital tools, see: https://www.nesta.org.uk/blog/three-ideas-blending-digital-and-deliberative-democracy/

16. For more discussion on how digital tools can help public sector organisations getting better at preserving institutional memory, see: https://www.nesta.org.uk/report/can-government-stop-losing-its-mind/

17. https://www.gov.uk/service-manual/service-standard

18. https://www.gov.uk/service-manual/agile-delivery/agile-methodologies

19. https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond

20. For example, the 32 Scottish Local Authorities have come together as the Digital Partnership, supported by the Local Government Digital Office. Similarly, the London Office of Technology and Innovation will enable London boroughs to collaborate on technology- and data-enabled projects.

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