



Government
Digital Service

Digital Government Exchange Working Group: Digital Maturity

Digital Maturity Framework MVP

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Introduction

The Digital Government Exchange (DGX) Working Group on Digital Maturity was established in 2019 in response to the global challenge, at both the national and sub-national level, for governments to become digitally mature.

The working group is currently chaired by the UK's Government Digital Service (GDS), and is composed of members from China, Finland, Japan, Singapore and the World Bank (representing Republic of Korea).

The initial objectives of the DGX Working Group on Digital Maturity were to:

- develop a common framework to measure digital maturity
- leverage the framework to benchmark participating countries' digital maturity
- share best practices and challenges in public sector digitalisation

In 2020, the group proposed 7 elements of digital maturity, to help any government to reimagine and redesign their digital estate for the 21st century. These elements tackle complex and interlocking factors that a digital government must overcome to undertake long-term and sustained digital transformation.

They are:

1. User-centered design
2. A culture of digital by design
3. A data driven approach
4. Appropriate technology and infrastructure
5. Senior leadership buy-in and appropriate governance
6. Appropriate institutional funding and capacity
7. Digital capability

Together, these elements can be used by governments to understand their digital maturity. They include commonly cited areas in multilateral and public sector focussed maturity models. They have also been highlighted as important elements in successful digital responses to COVID-19.

The approach: progress in 2020-2021

The group decided to approach this project in an agile way, using user research methods to understand the experience of DGX working group members and iterating the framework based on feedback.

GDS conducted user research interviews with candidates from each member country. The information gathered from these interviews validated the 7 maturity elements. GDS then synthesised existing research from countries it had worked with previously. Finally, desk research was carried out, looking at academic and multilateral papers on digital maturity frameworks and country case studies on digital transformation.

Executive summary

This paper sets out the analysis and conclusions from the information collected through the user research process and desk research process outlined above.

We have created a [Minimum Viable Product](#) (MVP) framework for understanding and categorising different levels of digital maturity. This MVP includes questions that a government should ask itself if it wants to increase its level of digital maturity.

We have outlined 4 main categories of digital maturity in government:

- a government that is not digital and non-responsive
- a government that is technology driven and reactive
- a government that is becoming digital and responsive
- a government that is digital and proactive

This paper divides each of the 7 elements of digital maturity into these 4 categories and lists potential qualities that define the maturity level within that element. Governments can be at different levels of maturity for each element.

Conclusions

There will be no final state when it comes to a government's digital estate. Rather it will need ongoing curation and investment to ensure that evolving technology, security and

privacy concerns are addressed through the delivery of new (or improved) services and the technology used to underpin those services.

Those in charge of digital systems, policies and governance need to constantly improve the quality and quantity of digital services, systems and infrastructure. They also need to have the ongoing ability to renew the digital estate through reforms of business processes such as procurement and recruitment.

This means digital leaders must be proactive when it comes to collaboration, ensuring that they have built the relationships across government, so departments and other public sector bodies agree on what good looks like for government and can mutually agree on new priorities. They must also be knowledgeable about existing and emerging risks, but not be afraid to experiment, improve and adapt their approaches to mitigate those risks.

Advancing digital maturity requires government to manage the balance between maintaining stability now and iterating for the future, from a multitude of angles like finance, technology, capability and security. It also means understanding the weaknesses and strengths across government and iterating processes as the maturity across departments and public sector bodies change.

As a government becomes more digitally mature, there is a wider understanding that 'being digital' is not just about building services, or websites, but transforming government to be more open, transparent and to build trust. At a basic level, it is about involving users in the design of an individual service, ensuring that it meets their needs. However, maturity develops as those services are understood as end-to-end user journeys that involve a different way of working across departmental silos. Being digital also means that those involved in service delivery can collaborate with policy, to ensure digital by design throughout a policy cycle, engaging users throughout. Finally, it means that building a better digital government can help build trust in democracy and enable a digital society.

The scope of what constitutes 'digital' grows larger as a government matures, moving from solely technical considerations to enabling a wide range of functions to deliver cross-government ambitions.

Using the MVP Framework

At the end of each digital maturity element, there are questions that a government or central government digital agency can ask itself about its progress, such as current processes, culture and governance around digital government.

With these questions in mind, a government can start to determine where they might need to strengthen existing mandates, invest in capability or build better governance processes to improve their management and iteration of the government digital estate.

User centered design

A mature digital government has moved from ad-hoc processes and being technology driven to being proactive, accessible and user focused. The government has invested in tools to help enable consistent design across services. Design practices are used to tackle complex issues and problems, rather than being the last part in a sequence of technical implementation.

Characteristics of a non-digital / non-responsive government

A non-digital government does not recognise the value of design when delivering digital services. There are no processes, capabilities or time for user centered design processes. The main characteristics of a non-responsive government are:

- there is no time included in the product development cycle for design, or the government believes design processes can be detached from building services
- accessibility and inclusion needs are not considered, or regulations on accessibility are not considered or met as part of the service design process
- data is not used for making decisions about what services need to be created
- there is no engagement with users either through any formal mechanisms such as consultations, or processes such as user research

Characteristics of a technology driven / reactive government

Technology driven governments are concerned with government needs and creating efficiencies. They lack user centered design capability, agile decision making and coordination mechanisms. The main characteristics of a reactive government are:

- there is a focus on integrated systems and technology driven solutions that are procured without understanding broader needs of those who need to use or interact with them
- there is a reliance on templates or tools over processes that help build user centered services (this includes using regulations and guidance without enforcement mechanisms)
- often the focus is building new things, rather than improving existing technology (which can lead to the abandonment of existing services and infrastructure and the creation of legacy technology)
- there is only consideration of government needs and the government communicates in ways that are useful to it or established practices, rather than how users want to interact
- feedback is reactive, gathering information in an ad-hoc or infrequent manner, rather than proactively engaging and incorporating feedback in an iterative way
- a focus on 'one-stop-shops' to cover the lack of end-to-end service delivery, the lack of services, or to reduce corruption by limiting face-to-face contact with government departments
 - high volume services may be digitised, (for example, a digital form) but still require offline steps such as getting an official stamp or signature
- there is a hands off approach to design with strategic decisions left to suppliers, which can lead to inconsistent design patterns across government
- there is a lack of end-to-end service delivery with services replicating paper forms or being relatively simple, with users expected to navigate complex journeys

Characteristics of a government that is becoming digital / responsive

Governments that are becoming digital have adopted a user driven approach to services and delivery. They focus on solving complexity and improving the quality of services being provided. The main characteristics of a responsive government are:

- a user driven approach to service delivery - government is responsive to users, embedding user research, regularly using user feedback, and ensuring users are informed
- recognition that prioritising digital transformation objectives is important (the government may not be able to tackle all problems at once, but it has a roadmap that can help them deliver strategic objectives that they can build on)
- an understanding that the complexity involved with service delivery requires design thinking or systems thinking to achieve policy goals

- an emphasis on the quality of services being provided, not just the number
- an emphasis on the need to overcome departmental silos to implement end-to-end service delivery
- cross-government collaboration to enable whole-of-government solutions to problems (this is a regular rather than ad-hoc process)

Characteristics of a digitally mature / proactive government

A digitally mature government will have systems of collaboration in place, and tools and standards that help align digital delivery. It will understand their contribution to a larger digital ecosystem, such as digital economy or digital society goals and strategies. The main characteristics of a proactive government are:

- there are tools such as a Design System or Design Standard to implement standard approaches to design across government (these will be accessible and be based on research and data)
- Agile, multidisciplinary teams are the default when it comes to digital delivery
- there are structures that help improve collaboration and coordination, such as spend control mechanisms, central digital teams, communities of practice, sector specific bodies or coordination bodies (or government teams will organise themselves so that teams look after user journeys, rather than products)
- service teams understand emotional and psychological needs of their users, alongside the needs of users to complete a service
- accessibility considerations are embedded within the design processes for services and are widely understood
- digital agencies contribute to a culture of trust and transparency in government, including working in the open and with non-government actors
- digital agencies understand their role and contribute to wider government goals, such as building a digital society or digital economy.

Questions that governments need to consider

1. Is user centred design part of the government's strategy and widely understood across the central digital agency and wider government?
 - a. Is this approach supported by senior leaders across government?
 - b. How difficult is it to get access to tools to practice user centered design (for example, code repositories, prototyping or user research software)?
2. Are there cross-government tools, guidelines and frameworks to help implement standard approaches to user centered design practices across government?

- a. Are there communities of practice to support the development of user centered design practices across government?
 - b. Is there a Design System or way to implement consistent design patterns across government?
3. Are services designed and built in an iterative manner, testing regularly with users to ensure the finished product meets user needs?
 - a. How difficult is it to practice user centered design during a project?
 - b. How difficult is it to recruit users to practice user centered design?
 - c. Are there data ethics and privacy guidelines to conduct user research?
4. Are services designed and built to solve whole problems and end-to-end user journeys?
 - a. Are user needs considered or just government needs?
 - b. Are backend processes transformed alongside user facing services?
 - c. Are notifications, payments and digital identity part of the user journey?
5. What mechanisms and processes are put in place to gather analytics, user feedback and other data to continually iterate services?
6. Are accessibility considerations embedded within the design processes for service design and widely understood?
 - a. Can services be designed and tested for accessibility and inclusion?
 - b. What considerations are in place for the complexity of the user base (such as digital capability, neurodiversity, disabilities or language)?
7. How involved are policy and operations teams involved with helping product teams on scoping, designing and delivering new digital services?
8. How does the government measure trust when interacting with government?
 - a. Can service teams work in the open?
 - b. Does the government collaborate with other organisations outside government, especially to help ensure privacy and data protection?

A culture of digital by design

Mature digital governments have a culture of collaboration, with cohesive digital delivery across organisational boundaries. End-to-end service delivery approaches are standard, with transformation including content, transactions and internal processes. There are risk management and mitigation processes in place, using a security by design approach.

Characteristics of a non-digital / non-responsive government

A non-digital government has a lack of interest or ability to build digital systems and services. It lacks cohesion between different public sector organisations with siloed ways

of working. There is widespread duplication of services, for example multiple websites or ways to pay government. The main characteristics of non-responsive government are:

- delivering digital services is not seen as the responsibility of government or by key senior stakeholders within the public sector
- there is no organisational capability within the government to successfully implement and manage a digital estate, or to set up an agency with responsibility for digital government
- digital reform initiatives are started and then abandoned due to lack of support
- there is strong resistance to change from central government bodies
- there are large discrepancies in capability across government agencies and those agencies that do not manage services are often the most resistant to change
- there is poor digital infrastructure within the country which presents barriers to access services, including high cost of mobile data and high digital illiteracy rates
- there is a lack of agile delivery (and awareness) which means service teams are not empowered to make decisions about digital and technology
- there is a lack of consistent coordination across departmental boundaries
- trust is undermined by inconsistency in the quality and access to services

Characteristics of a technology driven / reactive government

Technology driven governments tend to be focused on solving problems through increasing efficiency instead of taking an end-to-end approach to transformation. Technology focused organisations will use waterfall approaches, with hierarchical ways of overseeing work. Coordination across government is ineffective at setting standards or meeting user needs. The main characteristics of a reactive government are:

- the government will have appointed an information and communications technology (ICT) Ministry, that usually sits outside of the centre of government (these ministries often suffer from a lack of clear remit and are usually driven by policy creation rather than implementation)
- there is no overarching digital strategy, or supporting operational processes, leading to the widespread duplication of services, content or standards
- government agencies are not aligned to the mission and remit of the ICT ministry, or there is a lack of trust that leads to low levels of engagement
- services that are reformed are internally facing with a focus on increasing the efficiency of government, which does not extend to improving external user experience

- procurement of systems is done through long tender processes with service maintenance contracts instead of iterative and agile development (waterfall approaches are the norm and there is not widespread understanding of agile delivery methodologies)
- there is no focus on changing regulatory or legislative processes to transform service delivery (government digitises existing processes rather than re-design both the back office processes and the digital aspects of a service)
- there is a risk-averse attitude across government with a tendency to 'outsource the risk' through long contract and proprietary systems and overreliance on third-party vendors
- countries are starting to move from short-term interventions to longer-term planning, but there are still issues with getting government to agree on direction

Characteristics of a government that is becoming digital / responsive

A responsive government that is transitioning away from ICT led approaches to being digitally focussed will have created a new digital agency (or reorganised their existing one) with a clear mandate. There will be a focus on producing clear and accessible content alongside services. The government has a better understanding of risk and mitigation of those risks. However, this culture is limited to the central digital agency and larger service delivery agencies in government. There is also wider commitment to working in the open. The main characteristics of a responsive government are:

- there is a new (or reorganised) digital agency with a clearer mandate and alignment with other parts of government
- the central digital agency is the advocate of culture change within government, using agile delivery methodologies and more modern technologies
- the central digital agency can work in the open, for example, blogging about their work or making their code open source
- the central digital agency accepts risks and has appropriate mitigation strategies in place, as well as incident response processes
- adoption of centralised digital tools and standards has begun
- transforming services also means redesigning both the frontend and back office processes to make them more user focussed
- government information and service content is being rewritten to be more clear, transparent and accessible
- the digital agency and those delivering services have access to user centred design skills

- progress on improving culture within government is usually done through partnerships and reform programs

Characteristics of a digitally mature / proactive government

Government will be aligned and collaborate across digital teams and departments. Agile approaches have been adopted, with multidisciplinary and cross-functional teams working on end-to-end service delivery. Experimentation as an approach is supported, with an acceptance of the risks of some failure and with an overall focus on outcomes as opposed to processes. There is usually a good level of trust between users and government services, and this is reflected in strong digital participation initiatives and collaboration with wider society. The main characteristics of a proactive government are:

- there is meaningful collaboration across government, with digital teams aligned in their approach, guided by common standards and processes
- there is a cross-government strategy that has wide buy-in and agreement (if not mandated) across government
- digital agencies are responsible for setting good practice across government
- agile delivery approaches have been adopted with legal, operational and policy skills and integrated into multidisciplinary teams alongside user centered design skills
- digital service delivery is integrated into the policy development cycle
- end-to-end service delivery is the norm, services are redesigned from the point where the user starts the journey to where they have gotten what they need
- there is a culture of experimentation, with well defined processes and safeguards for attempting novel or innovative approaches or technology
- there is a more mature approach to risk, with wide use of risk owners, from both technology and information perspectives (this extends to modelling security threats)
- users trust information and have high completion rates of high quality services
- there are measurements in place to evaluate the impact of digital services that are realistic, related to the policy, and take into account user experience
- government engages with users through co-delivery, user research approaches, and online participation and consultation activities as part of the policy cycle
- public sector organisations can both manage small, iterative experiments as well as large-scale transformation projects

Questions that governments need to consider

1. To what extent does the central digital agency have a mandate to deliver digital transformation objectives in the country?
 - a. To what extent can the central digital agency set standards and policies for digital government?
 - b. To what extent does the central digital agency work collaboratively with other government departments?
2. To what extent does government engage citizens and businesses when designing new policies and services?
3. How do you measure the success of digital transformation across government?
 - a. How is trust and transparency measured and improved through digital services and transformation?
4. To what degree can experimentation happen within the policy and digital delivery development cycle?
5. What is your government's approach to risk management when buying, creating or developing existing digital and technology products and services?
6. Are there government wide processes, standards or agreed practices to support senior leaders in government to understand risks associated with digital initiatives?
 - a. How are these processes and standards iterated over time?
7. Are digital services within departments delivered by multi-disciplinary teams?
8. Are departments designed and structured to support multi-disciplinary teams?
9. To what extent are service teams able to manage end-to-end service transformation?

Data Driven

A data driven government has managed to overcome siloed data policies, frameworks and databases, as well as risk averse approaches to data sharing. Instead, they have consistent approaches to managing data across organisational boundaries, processes for sharing data, default interoperability, and machine readable open data. Trust and privacy is an essential consideration when working with data, with relevant citizen engagement and ethics frameworks.

Characteristics of a non-digital / non-responsive government

A non-digital government has little or no infrastructure to manage data, they rely on manual processes to aggregate and distribute statistical data. The main characteristics of a non-responsive government are:

- there is no data infrastructure or very little data infrastructure (digital service delivery is also very limited)
- data is manually curated
- data sets are incomplete or non-existent, with no clear ownership

Characteristics of a technology driven / reactive government

A technology driven government has many approaches to data management and governance, with potentially no consistency. Data sharing is difficult, either due to technology or the worry of senior leaders about data leaks or classification. Open data may exist, but it's available in non-machine readable formats, or across many different websites. The main characteristics of a reactive government are:

- there is a recognition that data is useful and valuable, so there are initiatives to become more data driven within organisations but wider coordination across government is absent
 - There is a desire to do 'big data' at a senior level, but the infrastructure or data sharing processes can not support the ambitions
- there is inconsistency across organisations as there are multiple different data frameworks or policies, with an organic development of data infrastructure
 - there is no mandate to share data and no single authority who owns data
 - it is difficult to get departments to adopt relevant data tools and processes
 - it is difficult to share data across organisational boundaries and often requires cumbersome offline processes (this can be due to perceived risk or confidentiality reasons by senior leaders, existing restrictive legal frameworks, or an unwillingness to share data by an organisation)
 - data can still be inaccurate and needs a lot of effort to make it useful
- open data is generally available in a digital form, but it's fragmented across different sites or in formats that are not machine readable
- when new suppliers are procured, data interoperability or access is not written into contracts and it becomes difficult to get data from government systems
- service delivery is hampered by the need to consume data outside of an individual silo, which results in duplication of logins or IDs for users

Characteristics of a government that is becoming digital / responsive

A government that is more digital has put in place the standards, frameworks and legal mandates to ensure data consistency and interoperability across core parts of the government. Data has become a key asset for decision making and is treated as a public good, rather than an asset held by an individual organisation. The main characteristics of a responsive government are:

- there is a central data policy, framework or policy for all of the government, though implementation may be inconsistent
 - data is seen as a public asset and not owned by individual departments
 - there are data protection, data ethics and other legislative requirements to ensure privacy and transparency.
 - there is engagement with external organisations (for example, advisory groups) who help scrutinise data decisions
 - algorithmic transparency information is published and user focussed
- there is a data owner or agency with a mandate that regularly coordinates with the rest of government and can enforce data standards
- user needs are considered as part of data systems, including how to use data and analytics to manage operations or develop policy
- security by design factors into operational systems with risk management and mitigation policies and teams in place
- there are wider integration of key data assets that are used to help drive delivery
 - there is up to date documentation to facilitate data sharing
 - data is used more widely to drive operational and policy decisions
- there are single websites for open data, in CSV or more consumable formats (but may not be APIs or directly consumable data)

Characteristics of a digitally mature / proactive government

A digitally mature government continues to iterate their policies and frameworks to adapt to new and emerging technology. It understands the best practices for sharing internal and open data. There is active data stewardship of key data sets in government. The main characteristics of a proactive government are:

- data is of sufficient interoperability and consistency that data lakes, big data and artificial intelligence capabilities emerge (with ethical and transparent safeguards)
- there is a clearly articulated vision or strategy for data interoperability (for example, 'only once') that is used to drive service provision

- there are single sources of truth or registers that have active stewardship
- data is used in a predictive capability and can identify emerging societal trends
- there continues to be a trusted centre of data, where the government collaborates and decides on data policies, frameworks, standards and legislation
- data is of a high enough quality that more time can be spent on training models, and experimentation than cleaning data
 - data science tools and techniques are widespread across government
- open data is machine readable and available more through automated processes (such as APIs) than uploading CSVs

Questions that governments need to consider

1. Does the government have a cross-government strategy, policy or framework which helps it have a consistent approach to managing data?
 - a. As part of this strategy is data publicly available and does the government have an open government data principle, strategy or policy?
 - b. Do government agencies follow it?
2. Does the government use data as a strategic asset? What potential barriers exist for extracting and making better use of data?
3. Are there appropriate analytics attached to digital services and regularly incorporated into iteration of existing products and processes?
4. Does the organisation responsible for data have the ability and means to analyse, share and visualise data across the organisation or wider government?
5. Is data used to help with decision making in both policy and service delivery?
6. Does the government have the appropriate data protection measures in place and are they aligned with international standards and best practice?

Appropriate technology and infrastructure

Appropriate technology and infrastructure has allowed a government to move from expensive, unsupported and fragmented technology digital estates to having:

- a common vision of what technology should be deployed in government,
- the ability to maintain and iterate a largely interoperable government technology estate (either through suppliers or through in-house capability)

Characteristics of a non-digital / non-responsive government

A non-digital government lacks infrastructure, both in terms of digital technology but also connectivity. They find it difficult to support existing technology and do not achieve value for money when introducing digital systems or technology. The main characteristics of a non-responsive government are:

- there are chronic connectivity issues for organisations within government
- there is low use or implementation of broadband or mobile data infrastructure in the country, which generally means low digital literacy in the country more widely
- users are required to visit a government office or citizen contact centre for most or all government services
- if systems have been deployed within government, not all departments or organisations are using them
- digital and technology investments are not enough to support wider digital transformation ambitions
- digital and technology projects tend to be expensive and unsupportable in the longer term, either because of costs or lack of capability
- there is a lack of a technology strategy or vision for government architecture

Characteristics of a technology driven / reactive government

A technology driven government has managed to create user facing services and many Civil Servant facing applications to create efficiencies. However, there is no strategic direction when it comes to technology, which leads to interoperability challenges. Technology estates can be monolithic and often based on older technology frameworks which can not support modern digital practices or technology. These systems are often fragile and under-resourced. The main characteristics of a reactive government are:

- there is a focus on short term goals versus long term establishment of coherent systems, architecture or funding
- there is no common technology policy and departments will have their own technology approaches and data frameworks, leading to interoperability challenges
- existing systems are inflexible and can not adapt to changes
 - there can be a disconnect between government strategy and the existing infrastructure, capability and funding for that strategy
 - existing infrastructure can be fragile and organisations do not want to risk changing it due to its potential to fail, which stifles the ability to change and deliver on transformation ambitions

- there is an over reliance on older technology, whereas users expect more responsive systems and access (for example, responsive mobile design)
- the maintenance of systems is costing more and more, leading to long term unsustainability (despite costs, they do not deliver expected benefits)
- there is no support or mandate to upgrade or transform backend infrastructure
- there is a reliance on a small pool of suppliers or state integrators that are not responsive to the needs of the government and do not have enough time to deliver what is needed
- there is a lack of capacity within the relevant organisations to create or maintain the infrastructure
- governments can also be distracted and pulled in too many directions by the promise of emerging technology at the expense of maintaining existing infrastructure or building the basics needed to support transformation ambitions
- user needs are not considered when building new infrastructure, leading to the inability of departments to use new systems effectively
 - single portals may exist, but departments do not have the capability to integrate systems and provide a user centered experience
- there is inconsistent connectivity which exacerbates the digital divide (for example, between rural areas and urban centres)

Characteristics of a government that is becoming digital / responsive

Governments that are becoming more digital are working on processes that allow them to improve resiliency and scale their infrastructure. They have cross-government standards but progress may still be slow due to the legacy infrastructure that exists. Security and data protection are core elements of building new systems and evolving the infrastructure. Common components are being used across government, which are well documented and interoperable. The main characteristics of a responsive government are:

- there is an adoption of cloud (either public or government) to allow the infrastructure to scale in order to meet the demand, but use across government may be inconsistent
 - cloud and other technology standards incorporate cybersecurity, data protection and data security principles
- there is a focus on ensuring technology meets user needs, rather than assuming people will use existing technology (for example, ensuring accessible design) and

there is greater engagement across departmental boundaries, including private sector and NGOs

- regardless of architectural approach (service oriented architecture, federated but integrated, or enterprise architecture), the systems are well documented and working on interoperability based on common and agreed frameworks
 - there is an emphasis on reuse of components across government, such as digital signature, PKI, data exchanges, registries or other services (however, take up is still difficult without sustained engagement)
- digital delivery is recognised as the primary delivery channel for government services, though the processes underpinning digital delivery have not been substantially changed (for example, business case development or how projects are funded), which emphasises siloed approaches to architecture development
- remote working is possible, though access to the relevant systems is inconsistent across different government departments or services
- there is a wider range of government suppliers, using modern technology systems. There may be strategic supplier relationships to help with critical but difficult-to-get skills. Suppliers are actively managed to avoid duplication
- there is a wider understanding of the variety of systems and architectures used across government, with the ability to disaggregate contracts and improve systems from outside the department that owns them
- there is a good relationship between those who build technology and the policy makers that affect how technology can be used in government, for example through regulation

Characteristics of a digitally mature / proactive government

The government can make strategic decisions about its architecture, which are underpinned by the right capability and funding. There is a recognition of the need to continue to support and maintain infrastructure. Many interoperability challenges have been overcome, with widespread and easily obtainable documentation to use data and common components. There is a well established relationship with those that maintain government systems and cybersecurity centres or teams. Infrastructure is resilient and scalable, with most of the fragile elements replaced or scheduled to be replaced. The main characteristics of a proactive government are:

- there is a good understanding of the variety of systems and architectures used across government, with a long term view of what contracts and systems are up for renewal or reinvestment

- strategic decisions can be made to allocate funding and responsibility for building cross-government systems
- there are strategies and systems in place to avoid vendor lock-in or the monopolisation of particular elements of the infrastructure to certain suppliers (government has ownership of all data and code where possible)
- there is an understanding that technology evolves and systems and architecture will have to continually evolve
 - business cases and other government processes allow for continued evolution and iteration of systems, with strategic funding for replacement of remaining legacy components
- there are multiple common components that are owned and supported that can be used by a wide variety of public sector organisations
 - they are trusted, well documented and easy to use for teams in other departments to adopt
- interoperability between systems is easy, documented and able to effectively be used in service delivery and policy development
- infrastructure is scalable, resilient, supported and secure.
 - security is by design with widely understood mitigation strategies
 - there is a strong relationship with cybersecurity centres within government and those who manage infrastructure
- systems are optimised for user needs, reducing the amount of points of friction where users interact with it (both citizen facing and the administration side)
- there is widespread logging and analytics that allow for traceability, incident reporting and fixing bugs and errors
- new parts of the infrastructure deliver the benefits outlined in business cases
- government retains domain expertise on how systems work and the business processes that underpin them even if elements of the architecture are outsourced
- there is sufficient capability and capacity to maintain infrastructure, allowing for continual iteration of systems, platforms and infrastructure
- there may be international elements to the system, allowing for cross-border service provision or data exchange

Questions that governments need to consider

1. Is there a technology strategy or policy for the government that helps it make decisions on its core infrastructure needs?
 - a. Is there up to date guidance and documentation for government agencies to understand and implement the technology direction?

- b. Does the central digital agency or finance agency have a good understanding of the state of government infrastructure?
 - c. To what degree can the central digital agency or finance agency influence technology spend and improvement across government?
 - d. How many government suppliers are there for digital and technology, and is there any risk of monopolisation by single suppliers in any one area?
 - e. Does government understand or own the business processes for outsourced systems and services?
 - f. To what degree do business cases and spend controls reflect digital development (for example, are there agile development business cases)?
2. How does the government assess spend on older systems to ensure value for money?
- a. Are there processes in place to regularly review and replace contracts to get the best value from the market, for example cloud hosting providers?
 - b. To what degree do core services and technology adopt modern technologies and languages?
3. How robust is government technology?
- a. How old are core infrastructure components and systems?
 - b. Are there workarounds to deal with problems/inflexibility with your existing services rather than fixing the issues?
 - c. Can it be iterated to meet changing demands (for example, increasing use or changes of policy affecting services)?
 - d. Can services scale to meet demand?
 - e. To what degree is government using cloud services and hosting (either government or public cloud)?
4. Do core components of the infrastructure have a risk register and mitigations in place for downtime or breaches?
- a. To what degree do service delivery and technology teams work with cyber security agencies and professions in government to ensure systems and services have a high level of security?
 - b. How do services manage incidents and are there incident review processes across government?
 - c. How does government diagnose issues, for example how does logging, reporting and traceability work?
 - d. Are there appropriate support teams in place to manage technical issues across services (both internal to the Civil Service and external to users)?

- e. Are there appropriate Service-Level Agreement (SLAs) and Service-Level Indicators (SLIs) for services (both internal to the Civil Service and external to users)?
5. How interoperable are government systems (both for internal Civil Service systems and those affecting users)?
 - a. To what degree are there reusable services or components that can be implemented by service teams (for example, payments, notifications, identification and authentication)?
 - b. Is there up to date documentation and guidance for integrating components or data into new services and systems?
 - c. To what degree can services and data be used for international transactions?

Senior leadership buy-in and appropriate governance

For governments to become digital successfully, there needs to be senior leadership buy-in for digital transformation. Once this is established, digital leadership needs to create support structures through governance and policies that can maintain good digital foundations and allow for consistent progress as technology and the needs of government and its users change.

Characteristics of a non-digital / non-responsive government (lack of leadership)

A government that lacks committed, appropriate digital leadership cannot make real progress towards digital transformation. Digital growth will be piecemeal at best, and subject to whims or personal interest rather than user needs or government strategies.

The main characteristics of a non-responsive government are:

- the government is unable to function and deliver policy, for example because of ongoing political instability
- the government lacks interest in digital or, due to a high level of risk aversion, deters it from investing in something new like digital
- there are no standards, ownership or governance of digital services and systems in government

Characteristics of a technology driven / reactive government (passive leadership)

As countries become digital, their early stages of transformation are more reactive, though policies, standards and assurance mechanisms, collaborative frameworks start to be developed. As each country's context varies widely, what constitutes a government's digital best practice needs to be iteratively developed and takes time and engagement to establish. The main characteristics of a reactive government are:

- policies supported by strong senior leadership underpin both government's early digital work and with future planning that helps the government prioritise
- the government has started to research, create and iterate standards that are applied to enable improved technology products and services
- there is support for digital collaboration across government, within the private sector, universities and the wider start-up ecosystem
- there is wider government support to buy-in for the country's digital agenda, as well as understanding of where digital fits within government delivery
- government is actively working to discover, establish and scale up digital good practice within their appropriate contexts, often building off of exemplars or pilots

Characteristics of a government that is becoming digital / responsive (active leadership)

A government that is more digital has become active in the management and planning for digital transformation. Digital agencies not only have a more strategic approach, but also have authority, relationships and self awareness to know their current maturity and what they have to do to advance their transformation agenda. The main characteristics of a responsive government are:

- there is a clear, strategic direction for digital, that departments buy into and can realistically act on
- there is an empowered government body that ensures standards in the planning and delivery of digital products and services using standardised mechanisms, though they may lack some enforcement powers
- digital government authorities have a functioning relationship with the Finance Ministry that allows for specialist input into government's digital spend
- there are growing collaborative relationships between the digital agency and departments that deliver digital projects, with a common understanding of what good looks like
- cross government services are a central part of government long term digital service planning and provision, actively addressing and preventing silos

Characteristics of a digitally mature / proactive government (proactive leadership)

Proactive digital leaders have embraced the opportunities that digital can provide and have ambition to shape the technology used across government. Digital government agencies have a strong understanding of where they want to be as a digital government with a priority on wider societal impact. This understanding shapes the investment they put into reforms including policy (legislation and regulation), capability (for Civil Service and wider user base), governance (business processes), data (including interoperability) and procurement. The main characteristics of a proactive government are:

- focus is on wider societal impact that aligns external user expectations with social and organisational factors beyond technology and services
- there is appropriate investment and consultation on legislation and regulation that the digital agenda requires, allowing the government to capitalize on opportunities
- investment in capacity building and bringing in new skills and talent to support digital aims of the government
- the governance of the digital business processes is aligned with wider government culture change (such as accommodating adoption of agile ways of working, user-centred design, standards and assurance)
- there is an understanding of the value of data at a senior level and the need to reform data across government
 - data reform covers how services and products are delivered based on how data is delivered, consolidated, used and made interoperable
- there is ongoing procurement reform that is underpinned by regulation and positive relationships built by the government and the wider private sector
- there are established governance mechanisms between the central digital agency and financial ministry and accommodate agile ways of working allowing for changes in priority during the development process
- government is an intelligent customer, working with the available market to procure the right products, skills and services for delivering digital transformation, and positively feeding into the market's growth and direction

Questions that governments need to consider

1. To what degree are senior leaders supportive of digital transformation goals, including tackling the reform of non-digital areas (such as procurement)?

- a. Does the senior leadership have the appropriate knowledge and skills to make decisions (or people who can advise them)?
 - b. Does the senior leadership have a clear unified vision for digital transformation aligned with an overarching public administration reform or economic vision?
 - c. Do senior leaders help secure funding for digital projects or teams?
2. Is there an agency or unit which monitors and maintains strategic oversight of the digital transformation vision or strategy?
 - a. Are there barriers to digital transformation reform (governance)? If yes, what are they?
 - b. To what extent does the central digital agency have a mandate for digital transformation?
 - c. To what extent can the central digital agency set standards for services, content, technology and other things across government. To what degree does the government follow these standards?
3. What are the processes for developing or buying new technology, and is there strategic oversight?
4. Is there a cross government forum where strategic digital, data and technology related topics can be addressed by senior digital officials across government?
 - a. How often does this forum meet?
 - b. How effective is it at coordinating digital across government?
5. Are there appropriate processes for ensuring the quality of digital services that are built or procured?
 - a. To what extent is implementation of new digital services and systems effective (for example, do they keep to budget and timeline, and deliver promised benefits?)

Appropriate institutional funding and capacity

A digital government has managed to reform cumbersome processes and procedures from a non-digital era. They have positive and collaborative relationships with their finance ministry to effectively scrutinise government spend, ensure there are enough people to deliver projects, and fund innovative and experimental ideas to solve complex problems. Important digital systems and architecture are seen as core parts of national infrastructure with long term, stable funding. It understands the ability of government spend to support digital economy ambitions in the country.

Characteristics of a non-digital / non-responsive government

A non-digital government has neither the capacity nor funding to carry out digital projects. They lack strategic direction, senior leadership or project management capability. Projects are not well governed and do not deliver value for money. The main characteristics of a non-responsive government are:

- Civil Servants are often asked to deliver projects without sufficient capacity
 - Civil Servants are often overworked due to the lack of adequate skills, training or equipment
 - there is a lack of project management capacity, leading to a high failure rate of project delivery
- an inability to pay Civil Servants, especially those with digital skills, a reasonable rate compared to the market
- a lack of basic equipment needed to carry out projects, including lack of internet (Civil Servants may also lack basic digital skills)
- a lack of coordination across government when it comes to funding strategic digital projects and new investments are not enough to meet transformation objectives
- a lack of scrutiny when it comes to digital spend to ensure value for money or to prevent poor technology choices

Characteristics of a technology driven / reactive government

Technology driven governments are better able to fund digital projects, but there are still problems. Capacity is still difficult, with relevant skills in short supply in government and the private sector. There is an inability to plan for the future due to the need to constantly deliver or maintain existing infrastructure. Unreformed procurement processes are difficult, slow and do not allow for agile delivery. The main characteristics of a reactive government are:

- there is recognition of the need to fully fund digital projects
 - where the government can not afford the full cost, they look for funding from donor programmes
- there is not enough funding to build everything that is demanded by the government
- processes for getting additional project funding can be long and burdensome
- government does not understand the current market and can not budget effectively for digital projects (or the market for digital skills is very limited in the country)

- there is still no cross-government scrutiny of digital spend, with projects still not delivering value for money (or not releasing all the potential benefits)
- funding depends on being able to prove short-term economic return, which reduces the potential for further digital transformation with longer-term benefits
- there may be greater capacity to deliver digital projects, but the ongoing maintenance and monitoring lacks proper funding and capacity
 - information and services stop being updated and users no longer trust the government services or websites
- capacity is entirely spent on project delivery or operations, with no ability to prioritise for the future, innovate or create strategic direction
- there is not enough capacity in the market to make up for the lack of capacity in government
- it is still difficult to get the right digital skills in government, with an overreliance on purely technical roles
- if central digital agencies exist, they are generally under-resourced and not organised in a way that helps them deliver on transformation goals
- procurement processes are difficult (even when digitised) and not compatible with agile delivery processes

Characteristics of a government that is becoming digital / responsive

A country that is becoming more digital will have appropriately costed and resourced programmes for digital transformation or digital programmes. There are methods to ensure cross-government coordination and scrutiny of budgets to avoid duplication and the potential for failure. There are enough staff within the government or the market to ensure that programmes can be staffed with the skills needed to deliver digital and technology projects. The main Characteristics of a responsive government are:

- there is dedicated funding for digital transformation programmes that are appropriately costed for what they aim to deliver
- there are appropriately funded central digital teams that can deliver cross-government transformation priorities, they also have capacity to deliver the prioritised strategic goals or projects
- there are processes in place for central digital agencies or finance ministries to scrutinise disaggregated digital and technology spend and be intelligent consumers of digital and technology
- departments need to follow agreed standards to secure funds for digital and technology

- there have been some modifications to processes and systems to allow for digital delivery, but it can still be difficult to secure long term funding for maintaining systems and infrastructure, managing technical debt or redeveloping legacy systems
- there are enough digital skills in government or the private sector to create the capacity for digital transformation, without burn out of existing staff
- prioritisation is an important part of making decisions around digital and technology, to match both capacity and funding availability
- core elements of business processes that support technology (for example, understanding how the underlying systems work, having sufficient technical depth, getting the best out of suppliers) are owned by digital teams, even if elements of delivery and development are outsourced
- the ability to manage design thinking and user centered design practices are accounted for within capacity planning
- there is flexibility within the government to surge capacity onto different projects in emergency or urgent situations, without negatively impacting the day to day running of services and infrastructure

Characteristics of a digitally mature / proactive government

A digital government has reformed pre-digital processes for the digital era, including recruitment and procurement. Digital agencies have a strong relationship with the ministry of finance to ensure standards and value for money and contribution to the wider digital economy. Elements of the digital estate are considered core infrastructure for the country and have long term stable funding to maintain and iterate the technology. Staff have appropriate learning and development opportunities to ensure their knowledge remains current with the market and technology trends (and government is able to retain these staff). The main characteristics of a proactive government are:

- digital agencies and the finance ministry have a cooperative and coordinated approach to spend on digital and technology, iterating policies to account for innovation and changes in the market
- digital agencies or finance ministries can direct spend to cross-government priorities that they have determined through scrutiny of digital and technology spend
 - digital agencies or the finance ministries consider wider digital economy and digital society goals when scrutinizing digital and technology spend

- decisions on spend consider the entire government digital ecosystem and not siloed needs of individual organisations
- core parts of digital infrastructure are recognised as key parts of national infrastructure and have stable, long term funding for their iteration and maintenance
- there is a managed approach to finance the replacement of legacy technology
- seed capital exists to run pilots and innovate, especially for complex policy or technology areas where experimentation is needed
- business processes have been redesigned to address the need to be agile, innovative and experimental (such as procurement reform and streamlining recruitment)
- there is adequate learning and development funding and capacity so those with digital skills can continue to improve and adapt to new techniques and technologies
- there are wider programmes to ensure non-digital professionals understand the digital and technology processes of wider government and how it affects them

Questions that governments need to consider

1. Is there a specified authority to scrutinise digital and technology spending for all of the government?
 - a. Can this authority direct or stop spending on projects across the government?
 - b. To what extent is there strategic funding for the replacement of legacy systems?
 - c. To what extent is there available seed or experimental funding for novel or experimental projects?
 - d. To what extent is digital government spend aligned with wider policies or strategies, for example a digital economy strategy?
2. To what extent do the finance agency and digital agency work together?
 - a. Do they agree on digital spend policies and processes?
 - b. Do they consider wider digital economy and digital society goals?
3. Does the procurement process for digital and technology reflect modern digital delivery methodologies (for example, agile)?
 - a. To what degree has procurement been reformed to meet both supplier and buyer user needs?
 - b. To what degree are procurement processes digital?
 - c. To what degree are procurement processes open and transparent?

4. To what degree is core digital infrastructure supported with long term funding?
5. To what degree are user centered design practices factored in when budgeting?
 - a. To what degree is long-term iteration and support of services considered as part of the budgeting process?
 - b. Does the government allow for iterative development (for example, agile) business cases to deliver services?
6. To what degree is there funding for maintaining the digital skills needed in government?
 - a. Are there strategic pay frameworks for digital skills (if needed)?
 - b. Are there opportunities and funding for learning and development?
 - c. Are there funded programs for increasing the digital capability across government or career change?

Digital capability

A digital government has overcome capability gaps found ways to recruit the skills they need to continuously improve the government digital estate. While this may be through strategic partnerships or suppliers, the government still has the capability to get the best value for money for their technology spend. They recognise the need to build long term pipelines of talent and collaborate across education ministries to build the skills needed for the future as technology evolves.

Characteristics of a non-digital / non-responsive government

A non digital government has difficulties recruiting and retaining staff in general, let alone those working in digital. There are weaknesses with senior management when it comes to understanding digital, risk management and providing strategic direction. There is poor performance management, a lack of relevant skills and an inability to pass on knowledge. The main characteristics of a non-responsive government are:

- no understanding of digital at a senior level, which leads to a lack of strategic direction for digital and technology recruitment in government
- a lack of senior digital and technology roles in government, such as Chief Information Officer, Chief Technology Officer, Chief Digital Officer or Chief Security Officer (or if they exist, they do not have a mandate to set policies or standards)
- there are no learning or development programmes or funding in government to improve skills of Civil Servants

- Civil Servants do not have digital expertise or existing skills are out of date (they may be using old technology frameworks, tools or project management and delivery methodologies)
- there are no programmes to build digital skills within the country
- there is no knowledge transfer when Civil Servants leave their existing roles
- it is difficult to recruit into the Civil Service, especially in digital and technology
- there is no active performance management of Civil Servants to help them improve their role or develop into a more senior role.
 - length of service rather than performance may be a deciding factor during appraisals, increasing apathy amongst Civil Servants
- there is a negative perception of Civil Servants or working for the Civil Service

Characteristics of a technology driven / reactive government

Technology led governments struggle to find the skills they need, often due to lack of talent in the market or not being able to match salary or other expectations. They can face significant challenges to get new skills accepted as relevant to the Civil Service. There is often a huge disparity between those working in digital and technology and those working in the rest of the Civil Service when it comes to knowledge around, and use of, digital technology. The main characteristics of a reactive government are:

- there may be some digital and technology training available in the country, but it's not coordinated, strategic, or well funded
- the government's ICT Ministry will usually be made up of officials with either project management skills, contract management skills, technical or enterprise architects, but they lack wider digital capabilities
- there is a continued lack of capability either in government or in the private sector suppliers to government, (or digital skills are concentrated in very few places such as a central digital team)
- there is an overreliance on purely technical roles (enterprise architects, network engineers) with a lack of digital skills (designers, user researchers)
- there are significant problems with how the Civil Service manages people, which makes it difficult moving departments or hiring new skills into government
- budgets to hire relevant professions are too far from the market to be realistic
 - attempts to increase salaries for technical skills are seen as a threat by the private sector who also have difficulties recruiting skilled staff

- there may be problems with retention of staff with relevant skills and high turnover, or an over-reliance on contractors for critical business as well as delivery functions, leading to lack of institutional knowledge
- wider project management and delivery capability and experience may be lacking, which affects the ability to deliver complex projects and programmes (this includes a lack of skills around communication and stakeholder engagement)
- Civil Servants depend heavily on a small number of people with the right skills from the private sector, making updates and progress slow

Characteristics of a government that is becoming digital / responsive

A digital government has established digital teams across some parts of government, but needs to improve skills across all of government. There is ongoing management and development of digital professions, including developing pipelines of talent, especially for strategically important roles. The main characteristics of a responsive government are:

- there are growing pipelines of talent, especially for those skills that are difficult to hire from the market (for example, cybersecurity).
- digital agencies work with the Ministry of Education to include skills in the school curriculum and with universities to build programmes for relevant careers, private sector courses and ongoing training
- there is sufficient capability within central agencies and departments that manage public facing services, but it can still be weak outside of those areas, which can limit the ability for cross-government transformation or service delivery
- there are programmes to improve the general digital skills of the Civil Service
- there is a strategy for managing capability, for example through insourcing or a mixed insourcing, outsourcing model
- there are recognised professions within government that are needed for maintaining the government estate and it is easy to recruit relevant skills
- there are grassroots approaches to communities of practice to join up professions across government
- there is enough capability available in the market or in government to ensure regularised user centered design processes

Characteristics of a digitally mature / proactive government

A digital government has managed to overcome issues with pay and processes to ensure a steady flow of digital talent within government. Barriers to join the Civil Service or to

join the private sector and return to it are low, encouraging staff to continually gain new experience and skills. Senior Civil Servants are expected to have strong digital and risk management capabilities. The main characteristics of a proactive government are:

- there is a culture of investing in capability, including learning and development (both digital and non digital), to ensure Civil Servants keep up with latest developments in digital and technology
- there are strong digital capability and risk management elements for senior Civil Servant competencies and there are established senior digital and technology leaders (for example, Chief Data Officer) with relevant mandates
- there is a strong relationship between digital agencies, education agencies, universities and the private sector to ensure a pipeline of talent into the future
- the process of joining the Civil Service is comparable to the private sector and it is easy to spend time in the private sector and return to the public sector
- digital is an established function within the Civil Service, with clearly defined and transparent career paths (from both inside and outside the Civil Service)
- there is a strong emphasis on recruiting for diversity, to ensure that teams represent and develop systems for all of society
- the strategy to continually recruit and retain staff is well documented and understood across government (regardless of strategy to insource or outsource) and there is still institutional knowledge of business processes and architecture to ensure that the government can continually iterate the digital estate
- there are supported communities of practice, which provide learning and development opportunities as well as promote consistency cross government

Questions that governments need to consider

1. To what degree does the government explicitly state what capabilities are needed to manage its digital and technology strategy or direction?
 - a. Are these capabilities defined as a skillset expected in government or as a function in government?
 - b. What mechanisms for continuous digital skills development exist and are there cross government frameworks, platforms or Communities of Practice for digital roles?
 - c. Is there a cross-government framework, platform or communities of practice for digital roles?

- d. Is there existing capability to implement user centered design practices (either internally or through suppliers), such as design, analytics, content and user research capabilities?
 - e. How difficult is it to get these capabilities into government?
- 2. Is there a strategy to improve capability across the government?
 - a. Are there strategic retraining opportunities for long standing Civil Servants?
- 3. How well do government organisations' use of internal and outsourced digital skills support delivery of digital objectives?
- 4. How easy is it to recruit digital skills into the government?
 - a. How easy is it to join government from the private sector?
 - b. Are application processes similar to that of the private sector or very different?
 - c. How easy is it to leave the public sector and return later?
 - d. How easy is it to move around the public sector?
- 5. How well does the government attract talent and facilitate HR and recruitment?
 - a. Does the government have or need to create a pipeline of talent, for example apprenticeships, partnerships with universities or graduate schemes?
- 6. How close to market rates can the government pay for digital talent?

Next steps

The next steps for the work is for the Digital Maturity Exchange Working group to review and provide feedback on the MVP framework.