Five enablers for governments to serve today’s digital citizens

Government services in the digital world
Government services in the digital world

As citizens no longer live in an analog world, they expect their government agencies to provide not analog but digital services — in an always-on, self-service, personal, proactive and secure way.

However, most government IT solutions fall short of those expectations. The technology solutions were created in the past with the intention of automating the back office and focusing on efficiency. Typically, requirements were gathered from back-office users and converted into functionality. IT solutions were mostly focused on increasing efficiencies in internal operations.

Although much has improved, some government websites for citizens still project a government agency’s internal way of working: Citizens must navigate services based on the agency’s logic, often resulting in a poor user experience as it requires the citizen to invest effort in working through the imposed process.

In today’s digital world, public sector organisations need a better approach — one that centres on providing a good experience to citizens in all interactions. This means government agencies must engage intelligently with all stakeholders involved in each interaction. Citizens are key, of course, and so is observing their behaviour in the real world before designing new processes and solutions – which should now be viewed as designing services.

In the digital approach to designing services (Figure 1), requirements are derived from the behaviour of the citizen as a client or customer, not from the agency’s organisational structure. This also means that whatever channel the citizen is using, the government needs to ensure seamless and transparent interactions. The organisation adapts its operating model to provide better service to the citizen-customer.

From an IT perspective, there is no time to develop a different application for each service. IT organisations need to think in terms of platform models, where new services can be introduced quickly on top of existing services and use a standard approach to building applications. This requires an agile approach with business and IT working together.
Based on our experience in working with government organisations all over the world, we incorporate five key enablers in digital transformation programs for our customers (Figure 2).

The purpose of these enablers is to help organisations design and deliver better services, often iteratively and repetitively. This requires new capabilities, processes and technology to be applied in both the business and IT areas of the government agency (agencies).

**Five key digital enablers**

1. **Services redesign using design thinking**
   - Design thinking, also known as “human-centred design,” is a creative problem-solving process that puts the user (i.e., the citizen) at the centre to ensure a good experience that fulfils the user’s (citizen’s) needs. Originally developed and used by designers and architects, design thinking has gained traction in governments worldwide.
   - Although different schools of thought and terminology exist, the main pillars of the process include demonstrating empathy for, listening to and connecting with citizens, experimenting through rapid prototyping, and constant iteration.

   To assess needs, DXC Technology applies the two-diamond model, which has two distinct phases: Problem Space and Solution Space (Figure 3).

   **Figure 2. The five key digital enablers**

   **Enabler 1: Services redesign using design thinking**

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   **Figure 3. DXC applies design thinking’s two-diamond model, with its two phases: Problem Space and Solution Space.**
**Problem Space.** The Problem Space helps organisations come to a shared understanding of the problem. User-centricity starts with understanding your citizens, which is the first step toward design thinking. The better you understand your citizens’ problems, the greater your opportunities for innovation and improving the customer experience. This requires demonstrating empathy as a core skill. You need to fully understand the experience of the citizen for whom you are designing. Key techniques for achieving this include observation, interaction and immersing yourself in their experiences.

The next step is to define the process and synthesise the findings from your empathy work to form a citizen-centric point of view. This will create a clear customer journey — or as we prefer to call it — a happy flow.

At this stage, you must decide on the possible designs for implementation. The technique used in this step is called ideation. To *ideate* is to explore a wide variety of approaches by generating a large quantity of diverse possible solutions, allowing you to step beyond the obvious and explore a range of ideas.

Ideation is often done through a sketching exercise — working together to produce a whiteboard-style sketch of the ideal customer journey. At the end, some decisions will have to be made about which sketches you take forward. Decisions in design thinking should address basic questions, such as:

- **Desirability:** Do the citizens really want it? Will it help resolve their concerns or issues?
- **Feasibility:** Is the technology readily available at a reasonable price? Is it mature enough?
- **Viability:** Does the solution have a reasonable chance of making the desired difference? For example, will the back office be able to cope with the new way of working that the solution brings?

**Solution Space.** Now that we have defined a customer journey and have narrowed down the sketches into opportunities, it is time to start working on the second phase of design thinking, the Solution Space.

One important point to keep in mind here is that innovating for the citizen should put the citizen’s needs ahead of digital possibilities. Too many people in the technology space get more excited by what a technology can do than by what the citizens’ needs are. When you start a design thinking project, you need to stop thinking as an engineer and start thinking as a designer.

The primary goal is to design an experience that makes a difference for the citizen. This ensures that the application will be driven as a customer journey that adds value with each step. It starts from observing behaviour in the real-life situation.

**Enabler 2: Experiment in an agile way**

Remember that we are positioning this journey as becoming a digital organisation that delivers better services — often, iteratively and repetitively.

Traditional approaches such as waterfall development are often no longer viable. The path to value and implementation simply takes too long — certainly for digital systems that need to release new features once or twice per month (*Figure 4*). Bottlenecks and constraints in this approach prevent rapid innovation cycles that digital organisations need.
This second enabler introduces an iterative approach to allow **experimenting** for the purpose of innovating processes (and applications) with new technologies.

Experimentation is a vital component of any digital journey and must be endorsed to get people, processes and technology aligned to optimise the workload. Introducing digital technologies exposes organisations to increased risk, so we also need a new digital governance approach to cover the value and risk of experimenting before going live. In other words, experimenting is not a technical playground; it must become an essential part of the organisation’s culture — people must get used to testing, and even to failing, when exploring new ideas.

As shown in (Figure 5), we propose the following overarching approach for experimenting:

**1. Discover.** In the Discover (Discovery) step or phase, we create service use cases and do an early validation of their potential value, envision what the new process might look like, and what the new technology will contribute to optimising and/or automating the workload.

Use cases are thoroughly researched, internally and externally, and must demonstrate the anticipated value and benefits. Only when this is clear can the management team decide to make the team and funds available for the next step. The management team must keep an open mind about innovation at this step, as risk aversion will kill any idea. It is up to management to promote this culture in the organisation.
2. Prototype. The Prototype step uses techniques to work on the use case with the new technology. Prototypes should be used when you have a hypothesis about a solution but face uncertainties about how it will look, feel and work.

This is particularly useful when we innovate the process and the operating model of the organisation, acknowledging that the technology can automate or autonomously drive a large part of the workload. As such, capabilities (such as people skills) will also be impacted.

Based on the prototype findings, the team can now prepare or update the business case with reduced risk for funding. A minimum viable product (MVP) can then be developed and extended to early adopters. From there, you can build on the MVP using an iterative approach that helps teams learn from their failures, but without having invested too much effort or put operations at risk.

We also advocate bringing in IT architects and security experts early in this step, triggering a discussion to find the right circumstances to allow the technology to be used in the organisation’s production environment.

3. Pilot. The Pilot step implements new processes and technologies in a test environment to enable small-scale validations in real-life situations. Selected people are trained to adapt their way of working and be assisted by technologies such as artificial intelligence (AI) for automated decision making.

In the pilot step, new capabilities, processes and technologies are incorporated into the organisation’s operating model and validated to improve the end-to-end experience.

The final revision of the business case should then be reviewed to measure anticipated benefits in the pilot stage. There is nothing wrong with stopping the pilot, starting a new pilot or even going back to an earlier step, as long as the decision is justified and the change occurs quickly.

4. Scale. Next, the Scale phase moves the solution into production in an agile and controlled way, with an eye toward change management and transforming the operating model.

These changes require follow-up steps and, most likely, the launch of an agile implementation project (or even program) with its own team, budget and specific methodologies such as scrum of the Scaled Agile Framework (SAFe).

In addition to the methodology, people and processes also must be considered. Focusing early on change management and keeping people in the organisation informed about anticipated changes will help create advocates for change.

Some governments have externalised this approach, seeking the help of external partners to innovate the operating model. This can be done by setting up an ecosystem of stakeholders that contribute to each step.

For example, universities and research institutes can contribute to the discovery phase. IT partners can help introduce new technology in the prototype and pilot phases. Start-ups can bring in innovation, while hackathons might trigger new ways of working. This is already a well-established approach for cultivating an open data culture. In fact, externalising these processes brings extra transparency in the transformation journey.
In any case, DXC advocates institutionalising this approach in the organisation’s culture while also being open to partners participating in building out the digitalised experience or optimising the back office. Even if politicians or government officials are risk averse, given the right focus, all stakeholders can reach consensus.

This step-by-step approach and the concept of experimentation can be used in both front and back offices. Whether used to design a better experience, renew legacy applications or explore the use of new technologies, small iterative steps will generally bring faster benefits and results.

**Enabler 3: Invest in new technology to drive automation**

Technology is playing an increasing role in the way we live our lives, do business and interact with others. Governments can greatly benefit from introducing new technologies to improve the citizen experience across all interactions with the organisation.

A key technology enabler is automation of administrative tasks, but technologies such as the internet of things (IoT) also provide a unique opportunity for governments to interconnect and dynamically manage public infrastructure.

The following technologies are mature enough to improve the experience in the front office:

- **Chatbot technology** makes your agency available 24×7 to answer the most common questions. This technology serves as a personal digital assistant to handle citizens’ requests.

- **Advanced analytics technology** allows you to provide a personalised dialogue with citizens, using their data to get to know them and propose the best possible dialogue.

- **Natural language processing/understanding** — the application of computational techniques to the analysis and synthesis of natural language and speech — is often used as an extension of chatbot technology.

- **Using an existing IT platform** to offer your services. This may sound odd, but by integrating government services into other platforms, citizens might be able to discover the services faster and more seamlessly, e.g., job availability, learning opportunities, permit information.

- **Automated, outbound notices** allow you to offer immediate information on events or alerts. These notices can provide citizens with information directly targeted to their daily lives, e.g., a road closure in the neighborhood, changed timings of a child’s park program, a delayed school bus, or the impending expiration of a recycling centre permit.

Meanwhile, other new technologies can greatly improve the efficiency of the back office, for example:

- **Robotics technology**, including robotic process automation (RPA), can be used to automate repetitive administrative tasks.

- **AI and machine learning** can be used to automate decision making without losing transparency (i.e., by understanding how the AI model came to a decision).

- **Advanced analytics** can empower you to become a data-driven organisation.

- **Blockchain technology** enables data sharing and has many potential applications for managing contracts, transactions and records efficiently and in a verifiable and permanent way. Blockchain offers a new approach to enhancing transparency and collaboration between governments, business and citizens.

"The disruption caused by the key technologies — namely artificial intelligence, IoT, big data, behavioural/predictive analytics and blockchain technologies — offers the greatest potential in the public sector to transform the way governments engage with citizens, make policy decisions and manage the national infrastructure."


The list goes on and continues to grow. But investing in new technology also means setting up an innovation governance program that enables an organisation to safely experiment. It is wise for an organisation to invest in an innovation lab where new technologies can be tested against real processes.

**Innovation lab**: An innovation lab cannot be a playground for technical people. First, we need to make it a place where it is easy for an agency’s business and IT people to collaborate and contribute to innovation. Tools and technology should be made available without much discussion, although they must contribute to realising an organisational goal. Do not tell people what exactly they must innovate; give them freedom, including a percentage of time they can devote to this. People who contribute should be rewarded for their efforts. Finally, make it clear that failure is acceptable.

In addition to addressing the cultural side of innovation, organisations also need a process to help cultivate, capture and manage the stream of new ideas. Like any other business function, innovation is a business function that needs to be managed.

Every government organisation also needs to be able to measure innovation, including investment costs and the outcomes. Measuring innovation should be part of the process, driven by the innovation leader. Ultimately, measuring innovation will help produce better results and keep management (and even politicians) happy.

Organisations also should consider placing restraints on the use of private citizen data, fairness of algorithmic decision-making practices, transparency of public operations, accountability for damages caused by computer-assisted processes, and the impact of potential job losses.

Finally, start small — but do start. You can always increase the maturity, scope and impact of your innovation lab over time.

**Potential use cases to improve citizen-facing interfaces include:**

- **Intelligent virtual assistants.** These “robo-advisors” answer questions or act as a pass-through to case experts. For example, a citizen might first consult with a virtual assistant that then passes the query to a human advisor, when specialist help is required.

- **Automated form filling and registration.** For example, when a citizen logs onto a secure zone, all of that person’s data is available for reuse as part of the service request. The ability to ask for data only once and then reuse it helps free the citizen from having to repeatedly enter basic data such as home address, etc.

- **Being proactive.** For example, a citizen might be proactively offered advice on potential benefits [e.g., tax credits, disability allowances, retirement, energy efficiency], services [e.g., health checks, housing], and registrations [e.g., fishing permit, parking permits], etc.

- **Gathering public opinion to drive policy.** The use of sentiment or behavioural analysis can measure reactions on policy communications.

- **Enabling citizen-to-citizen community engagement,** even at policy level.

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“The digital technology revolution has pushed us to the edge of a fundamental reform of government service delivery. Interesting times lie ahead.”

— Alan Brown


White Paper
Potential use cases for improving efficiency in the back office include:

- **Automated payments to citizens.** When a service involves payments to citizens, governments can automate the allocation of funds, which could potentially also be registered in a blockchain register.

- **Detecting abuse of public services and fraud.** For example, the manipulation, ordering and analysis of data using optical character recognition (OCR) and natural language processing (NLP) can help identify potentially fraudulent activity. Workers can also monitor transaction patterns and flag anomalies. They can then put the account on hold and report suspicious behaviour to a civil servant.

- **Increasing efficiency for virtual workers.** For example, a virtual worker can take the name of the citizen in question and search the name across multiple databases. The information obtained from this search can inform case workers if this person is eligible for extra services or even poses a threat, such as owning a firearms license, having a criminal history or substance or alcohol abuse issues; this, in turn will help workers prepare their responses accordingly.

**Enabler 4: Get new digital capabilities**

Having the right capabilities and people with knowledge and experience is key to executing a digital transformation program. No organisation will be able to introduce new technologies and change the operating model if it doesn’t have the right capabilities among its workforce. Management needs to ask: “What capabilities do we need? What capabilities do we have? How do we fill the gap?”

Let’s start by presenting a list of new capabilities (Figure 6) that will be needed over time as a government organisation matures in its transformation journey:

<table>
<thead>
<tr>
<th>Area</th>
<th>Capabilities</th>
</tr>
</thead>
</table>
| **Strategy and leadership**       | Digital business strategy  
Digital business leadership  
Digital governance  
Business engagement and alignment  
Digital innovation  
Business model agility and evolution  
Business process digitisation and reinvention |
| **Business**                      | Product and service design/development  
Business analytics and reporting  
Data-empowered decision making  
Service-cost analytics |
| **IT**                            | Digital technology architecture and modular IT platforms  
Big data and information asset management  
Cloud business  
Enterprise information architecture  
Cyber security and risk management  
Vendor management  
IT platform experts |
| **Governance**                    | Digital investment portfolio management  
Business ecosystem management |
| **Others**                        | Innovation leadership  
Transformation program leaders  
Change managers |

*Figure 6. New capabilities needed for transformation, by area*
When we bring this back to a classic front- and back-office model, we can start by introducing the following capabilities into the organisation (Figure 7), at a minimum:

<table>
<thead>
<tr>
<th>Area</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front office</td>
<td>Customer experience management</td>
</tr>
<tr>
<td></td>
<td>User interaction design</td>
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<tr>
<td></td>
<td>Experience-driven designs</td>
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<td></td>
<td>Design thinking</td>
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<tr>
<td>Back office</td>
<td>Advanced analytics</td>
</tr>
<tr>
<td></td>
<td>Automation, RPA</td>
</tr>
<tr>
<td></td>
<td>Decision making, AI</td>
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</tbody>
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Figure 7. Additional transformation capabilities, by area

Some of the skills needed are not so traditional. The Organisation for Economic Co-operation and Development (OECD) recently defined the following capabilities and associated maturity models specific to government innovation:

- **Iteration.** Incrementally and experimentally developing policies, products and services
- **Data literacy.** Ensuring that decisions are data driven, and that data is not an afterthought
- **User centricity.** Having public services focused on solving and servicing user needs
- **Curiosity.** Seeking out and trying new ideas or ways of working
- **Storytelling.** Explaining change in a way that builds support
- **Insurgency.** Challenging the status quo and working with unusual partners

Our five digital enablers (the last one is described below) are well in line to support these skills. To keep up with changing user expectations and new technologies, organisations need to:

- Attract, keep and develop staff with specialist digital skills
- Improve the digital literacy of senior leaders
- Ensure that existing staff have access to the tools and resources they need to deliver better digital services

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We define data-driven government as an organisation “where actionable information (data that can be used to make specific business decisions) is available for all critical decisions. The benefits include sound governance and control; optimised fraud and error detection; and improved services.”

— F. El-Attrash (2015)


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White Paper
Enabler 5: Become a data-driven organisation

Most government organisations aspire to become data driven, meaning that they will embrace all kinds of data to transform services.

Becoming a data-driven organisation means that you can enhance your service delivery to:

- **Become predictive.** What trends can you see in data, and how can these trends affect service delivery? Can you predict where the need will shift, and adjust budgets and workloads accordingly?

  One interesting case is that of the Department of Public Roadworks of the Flemish Government, which created an algorithm that — based on various input datasets from different sources — can predict when and where the next traffic accident is likely to occur. This can trigger preventive actions, such as broadcasting speed reduction orders for that highway or sending dedicated traffic messages via radio or GPS.

- **Become proactive.** If you have all the data available, you can proactively send out a proposal to the citizen.

  For example, the Department of Education of the Flemish Government has been proactively sending out proposals for granting scholarships. Parents receive a letter and only have to acknowledge that they received the proposal.

- **Become preventive.** Based on data, you can spot an early warning and take precautions to keep situations from arising or to minimise them.

  For example, drones and real-time data can monitor geographic areas at risk of flooding and trigger the opening of floodgates or river locks.

- **Be personalised.** Equipped with the right data about citizens, their situations and behaviours, governments can provide personalised service.

  In the public sector, citizen services may be subject to a discount depending on their family or personal situation. In Flanders, Belgium, for example, the bus company discounts ride subscriptions based on family situation. Depending on the number of children in a family and their ages, the citizens get a certain discount. Instead of holding information on family situation, the bus company has an agreement to have consult access to the Flemish Government’s master databases. The data is limited to the fields necessary to feed into the discount formula. As such, the bus company provides a personalised offer that fits the family situation without the citizen needing to provide family details.

  A far larger amount of data is needed to personalise a citizen’s experience. Also, data about interaction history, behaviour, location and preferences is key to creating personalised experiences. This data will come from different sources and channels, such as social media or mobile apps. The value of personalised services is based on the analysis of all of these sources.

Apart from providing benefits to citizens, becoming a data-driven organisation also brings internal value to a government organisation. For one thing, greater efficiency means better utilisation of resources. It also brings innovation, as data analysis generates new ideas, processes or services to transform ways of working.
Most of all, it brings value to citizens’ experiences by allowing **better understanding** of their behaviour and engaging them in meaningful interactions. The same standards used for retaining customers in the private sector are also needed by governments, where citizens now demand more personalised and proactive government behaviour. Understanding citizens holistically requires combining digital, behavioural, sentiment and predictive analytics. This knowledge needs to be applied to treat each citizen as an individual, based on recent actions and unique relationships with government organisations.

### How do these five enablers drive better business outcomes?

Now that we have discussed the five enablers, let’s consider what value they bring to the government and citizens and how the enablers drive better outcomes for all.

There are two core sets of values relevant to better business outcomes:

- **External value** represents the benefits that transformation provides to citizens.
- **Internal value** represents the benefits that transformation delivers to the organisation.

**Figure 8** summarises the value of the enablers by stakeholder group:

<table>
<thead>
<tr>
<th></th>
<th>Internal value</th>
<th>External value</th>
</tr>
</thead>
</table>
| **For citizens** | • Making it easier for citizens to request services online and get direct results | • Proactive and outcome-driven processes  
• Personalised experience, through all channels  
• Service requests just a few clicks away  
• Guided processes to request the service, with minimal data input |
| **For the organisation** | • Improved efficiency in operations  
• Better management of workload through automation  
• Lower administrative burden due to automation  
• More insights into the behaviour of citizens  
• Contributions to business objectives  
• Reduction of risk | • Automated delivery of services by automated decision-making algorithms, including transparency as to how decisions were made  
• Better understanding of citizen needs and behaviour (related to services portfolio)  
• Knowing when to present citizens the right offer at the right time |
| **For politicians** | • Increased quality of service delivery | • Faster transformation of decisions into actions |
How can DXC help?

DXC Technology helps government agencies improve the quality of services for citizens and government officials, lower the administrative costs, and reduce fraud and abuse. DXC has established a competence centre for digital technologies that helps institutions better collect and analyse data, resolve issues of legacy transformation and deliver new citizen experiences. Our deep experience helps government organisations strategise, plan and execute their journey toward becoming digital organisations.

About the author

Yves Vanderbeken, chief technologist for DXC Technology in Belgium, focuses on delivering innovative approaches to digital services transformation, deriving public and business value from data, and helping governments at all levels realise benefits from consolidated platforms and shared services in the drive toward “everything as a service.” He holds two master’s degrees from the Antwerp Management School; one in IT Management (2018) [his thesis focused on how to create value with data in a government organisation], and the other in IT Governance and Assurance (2020) [this thesis focused on how to design the perfect business platform model for governments].

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