Agents of change
How government CTOs can drive digital transformation
Government & Public Sector Insights
With digital technologies proliferating and advancing at a rapid clip, it is important to consider the role of the government chief technology officer (CTO) in leading change. The shift in citizens’ expectations, and government mindsets, to “digital by default” underscores the role of the CTO in transforming the public sector. The CTO is increasingly an executive leadership role, driving the overall strategy and structure of government, as opposed to an implementation-focused, or technical, role. How the CTO uses digital platforms and analytics, introduces effective data governance and organizational structures, and builds in-house skills in digital are critical to this process.

The role of the government CTO is set to elevate

The rapidly evolving digital landscape opens up a significant new role for the government CTO. With digital increasingly ubiquitous in the economy and society, IT leadership has been recast in government, from the implementation and technical-focused realm of the CIO to the newly minted, strategic CTO position. As a change agent and leader of digital transformation, the CTO is front and center in government decision-making and strategy.

This is an executive position, tasked with guiding the introduction of cutting-edge innovations and technology through policy and program initiatives. For example, in the US Government, the role of Chief Technology Officer has been elevated to the Executive Branch with a direct reporting line to the President. In Australia and the UK, the position is an executive role within Cabinet departments. The post can have the broad scope of improving the functioning of government and the well-being of citizens through technology. As such, it is highly visible and instrumental to advancing the objectives of the government’s own leadership. Focusing on digital transformation and functional aspects of technology, and working to enable significant change, the government CTO can be expected to take an increasingly influential role in policy in the coming years.

Five key questions for the government CTO in driving digital transformation

To drive the policy agenda forward through technology, CTOs can ask five key questions to focus investment and programming decisions.

1. **How can the public sector leverage new analytics to make better decisions?**

The government CTO can unlock significant decision-making power by using data analytics effectively. Governments are the original “big data” entities and manage technologies that provide services to billions of people across the globe. The critical issue is how policymakers can best use new, big and dynamic data sets to make policy decisions, from designing policies through to monitoring and evaluating them. For the CTO, supporting better decisions involves several key considerations.

First, tackle how data is designed and collated. Greater processing power and the extensive reach of digital platforms mean the CTO has access to increasingly high-volume, frequent and high-value information. This suggests that the CTO will need to drive a comprehensive data strategy informed by the government’s overall economic and social agenda. Key considerations include the types and sources of data needed to support policy priorities. For example, with the proliferation of mobile and social media, governments could need to access new types of data, and more frequently, to provide the services their citizens demand. This could mean that data in unconventional formats, including web and text mining, and from unconventional sources, including private vendors and web pages, is increasingly central to the CTO’s data strategy. Open data and crowdsourced information will likely have an important part to play in the big data landscape, including “small data” sets in specific communities, and strategies to incorporate these are expected to be essential. It also means developing integrated data sets to truly gain from the power of big data analytics.

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Second, integrate data sets fully into the policymaking process. New data analytics enable a complete rethink on the policy issues that government services need to address. For example, predictive analytics on everything from law enforcement to cybersecurity and health are suggesting new approaches to policy issues, and new issues altogether, which administrations need to address. The CTO can support government departments in applying new data sets and powerful analytical tools, such as predictive analytics and also behavioral economics in policy. This is from the investigation and policy design stages through to monitoring, evaluation and reform of activities. The ability to develop and use customized metrics supports specific policy design and more accurate measurement. Custom metrics can also feed into budget appropriations and forecasts. As result, the CTO could encourage, or mandate, the use of data and analytics techniques through the policy process, in conjunction with the treasury and other executive functions. Big data has brought value to public policy decision-making, including in health, education, public sector efficiency and how tailored services are provided to citizens. In the US, the Centers for Medicare & Medicaid Services are using an integrated data repository to make their services more effective and uncover fraud and waste in the system. This involves using several years of historical data to support data-driven decisions on many activities, including health care costs, medical trends and usage, policy analysis, and program integrity. The What Works Cities Initiative in the US is also an important example of how governments are using data analytics. These cities are deploying “innovation teams” to focus on data-driven idea generation and solutions development, including for economic development and crime.

Third, invest in innovation. Leveraging new analytics also means catalyzing breakthroughs in big data, and also new analytical tools, to support better public policymaking. Government investment in R&D and new technologies would be critical here. South Korea’s Government 3.0 Strategy is a key example. The strategy aims to harvest government data, turning it into big data that can provide new insight and then inform government policy. A cloud-based “big data analysis support center” is designed to transform policy governance and ultimately decision-making, including the development of new industries.

**Defining digital government**

The Organisation for Economic Co-operation and Development (OECD) defines “digital government” as the use of digital technologies, as an integrated part of governments’ modernization strategies, to create public value. It relies on a digital government ecosystem composed of government actors, nongovernmental organizations, businesses, citizens’ associations and individuals, which supports the production of and access to data, services and content through interactions with the government.

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**Key takeaways: New analytics for better decisions**

- New, big and dynamic data sets are valuable where they make decisions faster and more accurate. Design and collate data sets that use new sources and formats.
- Drive data and analytics through the policymaking process. Support the introduction of custom metrics and analytical tools in policy design, monitoring and evaluation, and budgeting decisions.
- Invest in new analytical tools to maximize the value of new, granular information. Public R&D and innovation teams are important.

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2. What is the most effective way to use digital platforms to transform government programs?

Along with increased decision-making power, digital platforms also offer significant opportunity for governments to make their activities more relevant to their citizens and address changing policy challenges. The key issue for the government CTO is how to use digital to make “citizen-centric” services more effective, including through enabling more complex offerings. It’s also critical for the CTO to increase the efficiency of operations. In a nutshell, how can governments disrupt their core activities for the better? This will mean a government is that lean, responsive, adaptive and capable of rapid response to societal shifts. Government programs and services use and generate huge amounts of data, with increased processing power and digital technologies providing new channels for disruption. In practice, the CTO has several focal points.

First, ensure citizen engagement. A disrupted government model is one centered on digital platforms to enable citizens to connect, and it engages citizens by developing a new, digital approach. The UK Government’s Digital Transformation Programme is a best-practice example of a citizen-centric approach, with a digital by default strategy for major services. Similarly, in South Korea, under the “National Action Plan for Open Government Partnership,” the Government is using digital to provide customized services to target groups of citizens. This program aims to identify new services the public needs. Engagement can also mean co-creating with citizens, working together to determine public service needs, deliver them, and share data. For example, the US cities' open data initiative encourages the private sector, nonprofits and the general public to collaborate on developing solutions. Citizen-centric development and engagement is also about reallocating government spending to end-user development and applications and away from straight “commodity” IT investment. For the CTO, this includes investment strategies for risky initiatives, or experimental digital platforms and programs. For example, the US Government’s Digital Government Strategy includes a “customer-centric” approach as a strategic principle. With this, it emphasizes a new approach to data, as information rather than documentation, as well as shared platforms for development. This is to ensure customer needs are the focus of how the government creates information, manages it, and organizes and presents it.

OECD open government data

Government data is any data and information produced or commissioned by public bodies. “Open” data means anyone can use, reuse or distribute it for free, subject only to (at the most) the requirement that users attribute the data and that they make their work available to be shared as well.

Second, rethink policy issues from citizens’ perspectives, and see how digital platforms can repackage, or realign, government services to meet these issues. These tasks are at the foundation of the Republic of Korea’s National Action Plan for Open Government Partnership, which is a best-practice example. The partnership aims to drive a service-oriented government, and administrators are making significant use of mobile technologies in service delivery. They have also started to combine related government entities, including local and central government agencies, which contribute to a common end-user service for citizens, such as disaster management or welfare services.12 The e-government model in Estonia is another example of an effective way a government has transformed its operations through digital. An e-government portal provides access to some 3,000 services for citizens. This required all agencies to put their data online, and also the use of mandatory digital citizen identification. This has streamlined services and also provides citizens with the ability to track the composition and use of their data.13

Third, take an immersive approach to the design of proposed reforms and new offerings. The CTO can take advantage of the powerful information and insights digital can provide, to model outcomes and ultimately decide on effective policy. This means rethinking how to design and test new policy, with new emphasis on experimentation. Digital platforms allow for frequent feedback from citizens on their experiences, enabling the CTO to run program trials and make purposeful changes in real time. For example, path analysis of citizens’ use of a digital platform, like that used by private companies, can provide the CTO with information on how customers are actually engaging with services and tools. This provides solid and timely evidence for specific changes to a program or service and supports the development of better-tailored, quality solutions for citizens. This would be an extension of existing public sector policy innovation strategies, such as the use of randomized control trials for policy changes in the UK, and the government “Concept Lab” in Australia, which focuses on performing trials of and evaluating welfare and family services prior to full deployment.14

Key takeaways: Digital platforms for effective government programs

- Use digital to make government services increasingly citizen-centric. Collaborate with citizens to identify needs, and organize information to promote collaboration on solutions development.
- Digital platforms allow governments to break down silos and reorganize operations and delivery around policy issues.
- Take advantage of the rapid implementation and real-time feedback digital can provide to experiment with the design and reform of public services.

3. How can the CTO structure a strong governance framework to optimize the value of new and open data?

New and open data creates new digital governance challenges for the CTO. As governments build digital tools and platforms to provide access to troves of public data, actively solicit input from citizens and collect information from businesses, it’s more important than ever to protect these assets while optimizing their use. The policy challenge is to balance the need to promote trust, transparency and accountability on user information, against user experience and open development of digital solutions. There are two critical pillars for the CTO to address.

First, ensure privacy and security. The governance of open, digital platforms must incorporate sufficient privacy, security and data protection throughout government systems. With increased use of these platforms, the CTO faces challenges to protect devices and data from security and privacy breaches and provide transparent rules to citizens about personally identifiable information. This means the CTO will need to establish a common approach to privacy and security across government entities and produce data privacy and security solutions for all of government, including in areas such as identity, authentication and monitoring. The Federal Government’s digital security strategy in the United States, under the stewardship of the CTO, offers a best-practice example of integrating privacy and security measures in digital government. The strategy involves developing a government-wide mobile and wireless security baseline, which is a set of standardized security requirements for the adoption of mobile and wireless devices in Federal Government. The standards focus on security and privacy by design while allowing different agencies to tailor them to their needs. The whole-of-government privacy and security strategy in New Zealand is another best-practice example. Here, a central governance group, including a Chief Privacy Officer, is charged with continually improving the privacy and security of state services, including tools, advice and guidance, as well as developing standards and assessments. Leading government CTO offices are also piloting and rapidly scaling new approaches to privacy, mobile security and identity management, backed by standards on digital privacy controls. For example, the Australian Government is investing in digital identity management frameworks, including experimentation with new forms of smartphone-phased identification.

Second, use an open, digital model to enable access to the information and support its integrity. Government-civic collaboration through social media, crowdsourcing and other two-way information flows are potentially powerful. With digital technologies opening up systems of information, “open governance” can support a more responsive, transparent government, as well as reduce costs and increase effectiveness, if there is a clear framework for access and data integrity. Public access to data is the default in this model. The focus for the CTO is to drive change in government, from providing document-based information to data-centered, interactive mediums. This means that open source, machine readability and interoperability are the new core standards for government information and open data. Governments, including the US and the UK, have adopted quality control and access standards for public data and large, unstructured sets of government information through application program interfaces (APIs), which allow third parties to query a data set at a granular level and build a specialized, structured set of information. As governments loosen control of information and more data is accessible, increased attention must be paid to the integrity of open-sourced information, public databases and bulk data sets. Independent quality reviews of methodologies, digital formats and statistical outputs are essential. For example, the UK Government’s Code of Practice for Official Statistics has set a high bar for regular quality reviews to challenge the underlying measurement concepts and the relevance of data sources and methods in its bulk data sets. The UK’s operating standards include an independent regulation function that enhances the quality of official statistics, which maintains a regular schedule for auditing the quality of administrative data used for statistical purposes.

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Key takeaways: Effective governance for digital government

- Whole-of-government standards on privacy and security, and clear rules on personally identifiable information, are critical for migration to digital government.

- The governance of information is changing with open data and open development. Data standards and interoperability share power with citizens. Accordingly, governments will need to monitor and manage the quality of new data and solutions.

- The vast amounts of information published by governments need high standards of quality. Independent review of methodologies, digital formats and data-set outputs to ensure data integrity are essential.
4. What does effective organizational architecture look like for a digital government?

Digital government demands a new organizational structure for technology to support the transparent, citizen-centric services it aims to provide. For the CTO, the challenge is to design the most efficient, functional and operational platform to enable digital transformation. This ultimately means a government that is structured as a series of connected, digital platforms, which are data-focused and organized around user needs. New organizational architectures based around common technology needs, alongside intra-agency coordination, are key drivers.

First, share resources across departments. The platform-based approach to digital government shares technology services across departments and also procurement. This helps to significantly reduce IT bureaucracy and duplication across government and improve cost efficiencies. For example, the UK Government Digital Service took a platform approach to the UK digital government redesign, providing a design manual to government departments that mapped technology needs into four areas — mission IT systems, digital public services, infrastructure and back-office functions — to identify common user needs across government. From here, the CTO office could group common activities and needs across departments, identify common services and redesign these as “digital first.” This requires comprehensive central oversight from the CTO office; the office has holistic supervisions of digital strategy, back-end implementation and front-end user experience. In the UK model, the CTO has a role in working with agencies to co-deliver projects, sponsor initiatives and supervise cost reduction programs. Procurement is also centralized under a platform-based model. For example, under the UK model, there is now a government-wide cloud program, where all agencies can shop for cloud services on the one exchange. In the US, the digital strategy includes provisions for enterprise-wide mobile and wireless services, central services for orders, inventory and expense management, and a government-wide platform for privacy and security management. Embedding open-data and other standards into common exchanges or procurement plans is another way this structure can reduce costs further and drive efficiencies.

Second, coordinate decisions across government organizations. Tight intra-agency coordination — the other component of effective architecture for digital government — is essential for this platform-based model to function. CIOs at the department or agency level typically remain responsible for the IT services and information security in their organization, and they ultimately deliver digital services to citizens. Cross-agency coordination on web portals, supporting infrastructure, cost control, and performance monitoring and evaluation are therefore essential to deliver on the CTO’s overarching vision. For example, in Canada national, provincial and local governments have developed a centralized, network approach to delivering integrated digital services to citizens. Governments have been successful in sharing costs and prioritizing a common framework for technology infrastructure, identity management and leadership collaboration. Under the guidance of the CTO, agencies can establish KPIs for service quality, cost, technology adoption, mobile delivery and other targets to ensure their digital strategy is executed effectively. The CTO office can drive coordination on policymaking and management of interdependencies through specific mechanisms. For example, this could include an advisory arm, such as the federal Digital Services Advisory Group in the US, to support individual agencies in promoting connectivity and in harmonizing to common standards.

Key takeaways: Organizational architecture for digital government

- A platform approach to digital government, organized around user needs and data, is most effective.
- Centralized management oversight from the CTO office is essential for digital transformation under this model, including on service design and procurement.
- Intra-agency coordination is critical to deliver on the CTO’s overarching strategy. The CTO can drive connectivity and shared standards through the digital government model.

22. J. Langford and R. Roy, “Integrating service delivery across levels of government- cases studies of Canada and other countries,” University of Quebec, 2008.
5. How can CTOs grow capabilities in the public sector to support the transition to digital government?

For governments to effectively execute on the CTO’s high-level strategy, departments and agencies need to right skills to deliver. In-house technology skills in government are often flagged as the biggest challenge in transforming government to a digital model, suggesting the CTO will also need to drive recruitment and capacity-building initiatives to support the success of their plan.

First, recruit external expertise to the CTO office, or into government departments, to bring relevant skills in-house and support knowledge transfer. This could mean engaging technology experts to work directly with government departments. For example, the UK’s Government Digital Service (GDS) is composed of small, agile teams of digital experts, including product and project delivery managers, developers, designers and content creators. The GDS has also led the recruitment of digital leaders into positions across UK Government, mainly from the private sector. Establishing a new government office with specific digital competencies can also be an important way to diffuse the CTO’s objectives through government. For example, New York City’s Office of Data Analytics was launched in 2013 to work together with city objectives through government. For example, New York City’s Office of Data Analytics was launched in 2013 to work together with city agencies and show how data can solve city problems.

Second, promote collaboration, including through performance incentives, to cascade expertise through government. Technical experts hired into government can be expected to work together and share lessons learned, as is the case in the UK. In Estonia, the Government will approve funding for digital projects that overlap across departments only if the proposal promises cross-department collaboration. Furthermore, in South Korea, the Government’s Knowledge Sharing Programme (KSP) is a robust platform of government best practices and collaboration. The KSP incentivizes collaboration by pooling resources across agencies and increasing budget allocations based on successfully implementing deliverables. The CTO can also establish international relationships to collaborate on best-practice learnings. For example, the newly created “D5” group of digital-driven governments aims to strengthen the links between the public and private sectors among alliance member countries in technology and the digital economy. Members include the UK, Estonia, South Korea, Israel and New Zealand, with expansion expected in the coming years.

Third, create knowledge-sharing platforms as another key means for the CTO to build capacity for digital government. This can include online portals of case studies and best practices, to disseminate learnings from early adopters, as well as online communities and coordinated training and development specific to digital (such as for the development of mobile applications). The Digital Services Innovation Center in the US is designed to perform these functions under the US digital strategy, including through sharing solutions and training for digital services and infrastructure, such as user experience and security architecture.

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Answer the critical questions on new data, analytics, governance, architecture and people to power digital transformation

Within the rapidly evolving digital landscape, the role for the government CTO as a strategic leader for the public sector is set to elevate. Digital technologies and capabilities offer significant opportunity to improve public sector performance and drive a new generation of service delivery. This landscape puts the CTO in the driver’s seat for major change, working as chief designer and leader of major change, rather than an IT implementation manager.

To move up the digital maturity curve and enable the transformation to digital government, the CTO should address five key questions.

First, how can new analytics and data processing power be used to get to decisions quickly, and with greater accuracy? Second, what is the most effective way to use digital platforms to transform government programs? Third, how can the CTO use data governance frameworks to optimize the value of new and open data? Fourth, what does effective organizational architecture look like for a digital government? And finally, how can the CTO cultivate the right talent for an effective digital government? Focusing on the questions can support the CTO in leading the charge to digital.

Why EY: Our public sector digital transformation services

<table>
<thead>
<tr>
<th>Digital program delivery</th>
<th>Assisting governments in cost control initiatives</th>
<th>Public sector information management</th>
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<tbody>
<tr>
<td>EY has developed comprehensive strategies for digital transformation strategies for governments. The solutions support governments in improving service delivery, enhancing citizen engagement and linking IT through all corners of government.</td>
<td>EY has developed a framework that contains both strategic and operational components to identify opportunity areas to reduce costs. EY’s services are augmented by its results-oriented approach and extensive experience in delivering cost reduction projects.</td>
<td>At EY, our Government &amp; Public Sector practitioners can implement digital information management initiatives through data platforms and build open-government programs.</td>
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<tr>
<th>Major program transformation</th>
<th>Helping authorities deliver public services</th>
<th>Large-scale IT implementation</th>
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<tr>
<td>Practitioners at EY support governments in the IT areas of major program transformations by managing projects, developing independent architectures and assessing risk for a high focus on the engagement.</td>
<td>EY works with a number of public sector organizations at various stages of the public services commissioning journey. From this experience, EY can provide a spectrum of tried-and-tested approaches.</td>
<td>EY works with all levels of governments across the globe in managing large-scale IT implementations, including national identity programs, city-wide IT systems development and job training programs.</td>
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<tr>
<th>Delivering a digital-first strategy for governments</th>
<th>Sector-level solutions across government</th>
<th>Productivity improvement</th>
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<tbody>
<tr>
<td>Our digital advisory teams evaluate the public sector’s position across customers, technology, capability, culture and knowledge management, and they devise strategies for transformation.</td>
<td>Customized digital solutions and IT advisory for governments are a focus for EY. We work across public sectors, including economic development, education, finance, government administration, health care, social services and transportation.</td>
<td>The EY digital government program enables public sector leaders to increase productivity by delivering digital tools, empowering workers with training and expertise, and streamlining government programs.</td>
</tr>
</tbody>
</table>
The EY Digital Government Maturity Curve

In this report, the EY Digital Government Maturity Curve presents maturity models for digital transformation in government across the five key questions for the government CTO. Maturity levels are defined in three stages: developing, established and leading. Example core characteristics of each level, for each of the five questions, are shown below.

1. How can the public sector leverage new analytics to make better decisions?

The EY Digital Government Maturity Curve: New Analytics

Data analytics is the lifeblood of government services. As digital maturity progress, administrations can expand their use of new external data sources, unstructured data and customer journey data, as well as existing sources to add value to the digital product and customer life cycle.

<table>
<thead>
<tr>
<th>Key indicators of maturity stage</th>
<th>Sample strategic solutions</th>
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<tbody>
<tr>
<td><strong>Leading</strong></td>
<td><strong>Sample strategic solutions</strong></td>
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<tr>
<td>• Predictive analytics helps the business to harness big data (very large stores of unstructured data), drive the business strategy and provide deeper customer insights</td>
<td>• Smart meter analytics: planning, consumer behavior, policies and regulations</td>
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<tr>
<td>• The business utilizes new technologies to enable real-time analytics</td>
<td>• Predictive asset maintenance: managing MRO (maintenance, repair, operations) for critical assets</td>
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<tr>
<td>• Security: integration of different information, including in areas such as crime, banks and telecommunications, to generate intelligence through analytics</td>
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<tr>
<td><strong>Established</strong></td>
<td><strong>Sample strategic solutions</strong></td>
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<tr>
<td>• The business has identified data requirements and has methods for historical reporting and analytics</td>
<td>• Development of data sets and analytical tools to detect tax fraud, improve tax compliance and perform taxpayer analysis</td>
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<tr>
<td>• Performance management through dashboards and balanced scorecards</td>
<td>• Social media analytics</td>
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<tr>
<td>• Supply chain and logistics optimization</td>
<td>• Demand forecasting</td>
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<tr>
<td><strong>Developing</strong></td>
<td><strong>Sample strategic solutions</strong></td>
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<tr>
<td>• The business makes the most of the internal data that is available. It considers the need for additional information</td>
<td>• Integrated business intelligence based on key performance indicators (KPIs)</td>
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<td>• There is limited capability to process unstructured data</td>
<td>• Identity management: data quality assessment, standardization and de-duplication of entities</td>
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<tr>
<td>• Performance management through dashboards and balanced scorecards</td>
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2. What is the most effective way to use digital platforms to transform government programs?

The EY Digital Government Maturity Curve: Digital platforms

Customer demand, cost reduction and services transformation objectives are driving digitization in public services, and governments need to engage actively with customers throughout the service life cycle to help ensure their digital services deliver meaningful value. Governments can also disrupt their core activities through new technologies, with the customer firmly at the center of their new approach.

Strategic solutions for the CTO across the maturity curve

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<tr>
<th>Key indicators of maturity stage</th>
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<tr>
<td><strong>Leading</strong></td>
<td>• Design of enterprise architecture to help ensure scalability, integration, interoperability and manageability</td>
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<td></td>
<td>• Strategy for social, mobility and cloud-based solutions</td>
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<td></td>
<td>• Mobile dashboards</td>
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<td></td>
<td>• Social media analytics</td>
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<td></td>
<td>• Enterprise IT transformation strategy</td>
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<td>• Continuous improvement and project management unit for implementation of digital services</td>
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<tr>
<td><strong>Established</strong></td>
<td>• Enterprise resource planning implementation</td>
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<td></td>
<td>• Information integration and collaboration services</td>
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<td></td>
<td>• Business intelligence applications</td>
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<td>• Social media analytics</td>
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<td></td>
<td>• Defined and established processes for implementation of IT transformation programs</td>
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<tr>
<td><strong>Developing</strong></td>
<td>• Advisory services for business requirement definition and IT design</td>
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<tr>
<td></td>
<td>• Project management services for implementation initiatives</td>
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<tr>
<td></td>
<td>• KPI-based based management information systems and reporting</td>
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<tr>
<td></td>
<td>• Basic processes set up to run an information technology function</td>
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</tbody>
</table>
3. How can the CTO structure a strong governance framework to optimize the value of new and open data?

The EY Digital Government Maturity Curve: Data Governance

Digital platforms enable “open government” and “open data,” and they open significant opportunity for governments, business, the general public and other stakeholders. At the same time, privacy concerns are increased. Digital services expose governments and their citizens to new cybersecurity risks. Governments need to monitor and manage these digital risks effectively, including through appropriate data governance, while maintaining a streamlined digital service for their stakeholders.

**Strategic solutions for the CTO across the maturity curve**

<table>
<thead>
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| **Leading**                     | • Open government initiatives enabling access to citizens for government proceedings and documents  
                                 | • Big data management  
                                 | • Enterprise-level governance  
                                 | • Risk and compliance strategy and implementation of related applications  
                                 | • Regulatory compliance management |
| • Security infrastructure and policies allow new networks and services to be configured quickly  
  • Adaptive infrastructure and policies enable the business to overcome the challenges of evolving sector and country regulatory requirements |   |
| **Established**                 | • Established cybersecurity strategy  
                                 | • IT security audits  
                                 | • Vulnerability assessment and penetration testing  
                                 | • Risk management tool implementation and mitigation strategy  
                                 | • Regulatory certification  
                                 | • Governance risk and compliance strategy  
                                 | • Business continuity planning and disaster recovery plan  
                                 | • Standard meta data/data model definition |
| • An appropriate security infrastructure protects the organization’s assets (e.g., firewalls, authentication, encryption, monitoring)  
  • The business understands and adheres to compliance, regulatory and privacy needs  
  • Customers trust the business’s approach to data privacy |   |
| **Developing**                  | • Definition of security metrics and compliance standards  
                                 | • Confidentiality integrity and availability principles  
                                 | • Information security policy  
                                 | • Backup and recovery plan |
| • There are firewalls in place  
  • Basic-level security protocols are in place. The detection controls are operational  
  • Security is incumbent on the individual employee |   |
4. **What does effective organizational architecture look like for a digital government?**

**The EY Digital Government Maturity Curve:**

**Effective organizational structure**

To successfully deliver a digital transformation, an organizational structure is needed that supports these objectives. Digital development demands a simpler, more flexible and lower-cost IT architecture than exists in most governments.

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### Strategic solutions for the CTO across the maturity curve

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</tr>
<tr>
<td>• Adaptive infrastructure and policies enable the business to overcome the challenges of evolving sector and country regulatory requirements</td>
<td></td>
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<tr>
<td>• The business uses the cloud to connect the entire value chain, delivering reduced costs and exceptional client service</td>
<td></td>
</tr>
<tr>
<td>• Mobile is used for collaboration and is part of the service offering</td>
<td></td>
</tr>
<tr>
<td><strong>Established</strong></td>
<td>• Implementation of cloud-hosted business applications</td>
</tr>
<tr>
<td>• Cloud is used for applications (e.g., HR, ERP, finance and CRM solutions)</td>
<td></td>
</tr>
<tr>
<td>• Mobile is used to access core applications</td>
<td></td>
</tr>
<tr>
<td>• The driver is speed-to-market</td>
<td></td>
</tr>
<tr>
<td><strong>Developing</strong></td>
<td>• Implementation of SharePoint and other collaboration solutions</td>
</tr>
<tr>
<td>• Cloud is used for storage-oriented applications (e.g., email, messaging and collaboration)</td>
<td></td>
</tr>
<tr>
<td>• Mobile is predominantly used for communications</td>
<td></td>
</tr>
<tr>
<td>• The driver is cheaper and lower capital</td>
<td></td>
</tr>
</tbody>
</table>
5. How can CTOs grow capabilities in the public sector to support the transition to digital government?

The EY Digital Government Maturity Curve:
Digital transformation and knowledge sharing

Governments need an innovative, risk-tolerant culture; an agile and collaborative development approach; and an organizational structure that supports knowledge sharing if they are to successfully deliver a digital transformation.

<table>
<thead>
<tr>
<th>Key indicators of maturity stage</th>
<th>Sample strategic solutions</th>
</tr>
</thead>
</table>
| **Leading**                      | • Lean IT organizational structure  
                                 | • Social, mobile, analytics and cloud capabilities augmented within the IT function  
                                 | • Implementation of integrated reports and dashboards leading to information collaboration  
                                 | • Enablement of self-service capabilities for functional users  
                                 | • Development of training, competency management and change management capabilities |
| **Established**                  | • IT organization structure definition aligned to business strategy  
                                 | • IT function augmented with strong technical capabilities around cloud, enterprise resource planning and customer relationship management solutions  
                                 | • In-house management capability for cloud and mobile solutions |
| **Developing**                   | • IT organizational structure definition aligned to business functions  
                                 | • Outsourcing strategy and vendor selection for cloud solutions |
How EY's Global Government & Public Sector can help your organization

Around the world, governments and not-for-profit organizations are continually seeking innovative answers to complex challenges. They are striving to provide better services at lower costs and to create sustainable economic development, a safe environment, more transparency and increased accountability. EY combines private sector leading practices with an understanding of the public sector’s diverse needs, focusing on building organizations’ capabilities to deliver improved public services. Drawing on many years of experience, we can work with you to help strengthen your organization and achieve lasting improvements. Our Global Government & Public Sector brings together teams of highly skilled professionals from our assurance, tax, transaction and advisory services. We are inspired by a deep commitment to help you meet your goals and enhance public value, for today and tomorrow.

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