# How does digital government become better government?

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Building a better working world

# The Digital Disconnect

Digital technologies are revolutionizing the way people live, work and interact. Governments must harness these technologies to completely reinvent their operating model and enable experiences for their citizen and business stakeholders.

Digital technologies have the potential to deliver enormous benefits in the public sector, helping governments to:

- Understand their citizens better and deliver better outcomes;
- Provide services more effectively and efficiently;
- Find new solutions to policy challenges;
- Engage with external partners to develop new delivery models;
- Commercialize some public services and develop fresh sources of revenue;
- Impact on economic growth.

Governments that exploit digital technologies are also in a much stronger position to compete on the world stage, as Arnauld Bertrand, EY Global Advisory Leader, Government and Public Sector, points out. "Being at the forefront of digital government is a badge of prestige that can raise the global profile of a country or city and help create an economy that is a magnet for talent, enterprise and investment," he says.

And yet, despite all these opportunities, governments are lagging behind the corporate world in harnessing the power of digital. A recent report from the World Economic Forum (WEF) labels governments "the dinosaurs of the digital age: slow, lumbering and outdated." Even where governments do make attempts to exploit digital technologies, many do not realize the intended benefits from their investments, and there are as many examples of costly implementation failures and cost overruns as there are tangible successes. The question is: if the gap between individuals and public services widens further, will the relevance and legitimacy of government as an essential part of functioning societies be irreversibly weakened?

To create a public sector that is fit for the future, government must reinvent itself. Digital transformation is not just about new technologies, but requires an overhaul of organizational structures, governance, work processes, culture and mindset. It also means moving from a narrow focus on 'digital-by-default' and 'channel shift' strategies to a much wider vision of potential relationships and business models that will redesign how public services function. Only then will governments capture the wider benefits that digital transformation can bring to people and society.

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# Five Critical Areas for
# Government Digital Transformation

Governments have a core mission to provide effective services for the people who need them, by making the best possible use of taxpayers' money. They must protect their citizens from harm, make sure workers are productively employed and give both individuals and businesses the 21st-century infrastructure and environment that are essential to success and a better quality of life. They must also mitigate the risk that digitalization could widen inequalities by investing in infrastructure in remote and disadvantaged areas, creating policies to improve digital literacy, and promoting digital inclusion for the most vulnerable.

If they are to deliver on this mission, governments have five critical areas to consider:

# #1 Customer Experience

In the digital age, identifying and solving citizen pain points is not enough. Today's citizens expect public services to be as personalized and responsive as the services they get from the private sector. Governments need to reimagine how digital can be used to enhance the citizen's end-to-end experience of public services across all touchpoints, throughout their lifetime, including all those for which a government has direct or indirect control or responsibility. This requires the adoption of a 'citizen first' culture and mindset in designing policies and delivering services. The goal is to improve service quality, promote transparent and efficient interactions, enhance the level of public trust in government, and drive better citizen outcomes.

Social media and mobile platforms such as smartphones and tablets are replacing traditional channels (mail, phone, and computer) to interact with government, report concerns and provide feedback. Mobile services, such as apps and SMS, enable people to access the services they need in a more convenient and targeted way. These e-participation tools also encourage greater collaboration with citizens by involving them in decision making, policy setting, budget prioritization, problem solving and the co-design of services. In turn, this helps to rebuild trust in government and foster a sense of being listened to.

Innovative governments are using design thinking and customer experience labs to develop digital solutions that make each citizen touchpoint better, faster and more efficient. To create more seamless service delivery, integrated digital platforms can collate data from multiple systems within an agency (or agencies) to provide a more complete view of the citizen, based on their individual needs and circumstances.

The use of advanced analytics allows governments to leverage data continually gathered from people and devices to improve service design and personalize delivery. For example, patients making online appointments with a health service provider could be guided to additional sources of help with their condition, such as a nearby support group or exercise class.

We are now seeing artificial intelligence (AI) being incorporated within the systems that drive these digital experience – a set of tools and programs that make software smarter by analyzing huge amounts of data to solve complex and inter-related problems. Already AI can help deliver services to citizens, using chatbots to complete transactions within government websites. It can help improve urban planning by performing adaptive scheduling and route optimization for transport operators, reducing commuters' journey times; provide educational support to students based on their individual learning needs; and enable online self-referral and screening, signposting citizens to social services based on their needs and eligibility.

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# #2 Public Value

In an environment of low growth and rising demand, governments must find sustainable ways to finance the delivery of public services and infrastructure. Digital technologies offer important ways to reduce costs, improve productivity and optimize public value. They create opportunities to explore new models for providing services in collaboration with the private sector, improve management of resources through smarter spending, and link the money invested in programs and services to the outcomes they produce for citizens, boosting accountability and trust.

Blockchain technology (distributed databases or digital ledgers of transactions that are not maintained by a single entity but shared among a distributed network of computers) can help track how money is spent through the system — for example, from finance ministry to spending department and then delivery agency.

With better visibility of spending, governments can make better decisions about how to allocate public resources and increase accountability.

Robotic process automation (RPA) offers many benefits, including increased speed and efficiency, the flexibility to cope with peaks in demand or backlogs, and the reduction of manually introduced errors. Some governments are already using a virtual workforce to automate routine business processes, relieving the burden of high-volume, repetitive tasks in the back office, and freeing up time and resources that can be focused on frontline services.

Predictive analytics and text mining can make an important contribution to the smart management of public resources by anticipating problems and enabling preventative action — for example, identifying taxpayers at risk of nonpayment. Analytics can also inform policy design and improvement. It provides a more sophisticated understanding of people's needs and behaviors, enabling policymakers to anticipate and manage future demand for public services, easing long-term financial pressures as well as improving outcomes for citizens.

Finally, 3D printing or 'additive manufacturing' has the potential to improve turnaround time and lower construction costs for infrastructure and public transportation projects; establish more efficient and lower-cost supply chains for defense agencies; and facilitate job creation through the introduction of new manufacturing capabilities.

As well as deploying these technologies to boost public value, governments must think differently about their role, becoming a platform for an ecosystem of partners including agencies, private businesses, not-for-profit organizations and social enterprises that together can develop innovative services and business models. Governments should maximize the value of open data by sharing information across departments and agencies, and running crowdsourcing initiatives and co-creation programs with citizens. They can also explore experimental funding approaches such as innovation labs, incubators and partnerships with startups. Digital marketplaces will help governments procure from a diverse range of suppliers, negotiate better contract terms and improve value for money. E-procurement platforms can help to track items, increase transparency and develop new, agile methods of collaboration.

# #3 Citizen Security

We live in uncertain times. The threats from unpredictable states, terrorist groups and other non-state actors are increasing and made more complex through digital technology.

Today, conflicts are waged not only on the battlefield but also on public transport, on social media and in cyberspace. Governments have a responsibility to safeguard their citizens from a whole range of threats including cyber attacks, organized crime, homicide, espionage and terrorism, enabling them to live and work without fear. Digitalization is both a hindrance and a help in this struggle.

On the one hand, as governments embrace digital technologies and become more and more interconnected with partner organizations and smart devices, new vulnerabilities arise that can be exploited by cyber attackers. Terrorists, fraudsters and hackers can jeopardize the delivery of essential public services and the smooth running of civil society, including the election process. No wonder WEF rates a large-scale breach of cybersecurity as one of the five most serious risks currently facing the world.

On the other hand, digital technologies provide a sophisticated means of combating threats. Defense organizations are investing in AI and machine learning; cyber weapons and threat detection programs; cybersecurity apparatus; robotics and digital tools to make them nimbler and more effective.

Police forces are using mobile technologies to reduce incident response times, while data analytics is enabling predictive policing models and better threat analysis planning. Surveillance technology and facial and image recognition software is helping to identify offenders and improve conviction rates.

Citizens are becoming increasingly concerned about the way their data is being used. Recent data breaches have also undermined trust. Governments are considering how to combat the threat to people's privacy and the inappropriate use of their data. Some regulation has started to appear. The EU has taken the lead with its new General Data Protection Regulation (GDPR). This gives citizens significantly more rights and powers over how their data is used and consumed, with large fines imposed for any breaches of the regulation.

Meanwhile governments are introducing information security management systems that meet the cybersecurity challenge, safeguarding the data they keep and increasingly rely on. It is not possible to repel every threat, but resilient organizations know how to protect themselves, how to detect a problem when it occurs, and how to react quickly and effectively in the event of a breach. There is now a good understanding of the most common attack methods and the ingredients of cybersecurity hygiene with which most such attacks can be defeated. Active defense strategies and advanced threat intelligence provide a basis for withstanding more sophisticated attack methods, and while new methods are emerging all the time, good cybersecurity governance and concepts such as security-bydesign give organizations a fighting chance.

As well as developing a rigorous cybersecurity approach, governments must also exploit the power of cloud computing to increase their own computing capacity, support secure biometric identification programs and provide safe payment platforms for citizen transactions.

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# #4 Future Workforce

Economic growth, social cohesion and equality of opportunity rely on a country's workforce being skilled and ready to embrace the needs of 21st-century employers.

Governments need to build the skills and capabilities of their own employees in order to drive greater efficiencies, elevate customer focus and strengthen diversity and inclusion. In a competitive labor market, the public sector has not always been an employer of choice for top talent. Governments need to do more to attract, retain and develop people with the required skills and capabilities across a wide range of areas. They must take steps to build core technical skills such as software development and systems architecture, as well as the new skills that support transformation, such as data science, digital marketing, and user-experience research. As they gradually build a more dynamic and responsive environment, governments will attract younger workers and millennials who are in search of purpose-led roles where they can make a difference to society. Through focused and strategic talent development, governments can also empower employees to be agile, life-long skill developers able to learn and apply new technological advances, thereby "future proofing" government.Creating this new culture partly relies on governments freeing up employees' time to concentrate on more stimulating and value-adding tasks. This can be done by deploying intelligent automation tools to complement and augment human workers.

Reducing the amount of manual and repetitive work leads to higher levels of productivity and satisfaction, in turn helping to attract and retain high-quality candidates and improve citizens' experience with government services.

Mobile technologies can help agencies empower their workforce to do their jobs more effectively. As a high proportion of public sector employees regularly work outside the office, they can be equipped with devices such as smartphones, tablets, and laptops to perform their duties wherever they're located. From census workers and emergency responders to health professionals, social workers and military personnel on front-line missions, employees can access applications in real time, share information seamlessly, and improve productivity, response times, decision-making, and reporting from the field.

While governments need to prepare their own workforces for the digital age, technological changes such as automation and AI have far-reaching implications for the future of work, economies and society in general. Governments must adopt, update and strengthen policies to mitigate any adverse social and economic consequences – such as the displacement of workers in some lower-skilled jobs, and widening social inequality – that could hamper future growth and development. These adverse effects can be offset by policies that ease the transition, including retraining opportunities to equip the workforce with the digital skills and competencies required for the automation age.

Governments must ensure they have an education system that prepares young people to succeed in a competitive world where boundaries between industries are dissolving and technology is rewriting how, where and when people work. And with people living and working for longer, governments also have a responsibility to ensure lifelong learning opportunities are available to all.

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# #5 Smart Infrastructure

Infrastructure investment and development is one of the top priorities for governments globally, imperative for poverty reduction, social progress and inclusive economic growth.

Many of today's most fundamental challenges – urbanization, globalization, pollution, water shortages and climate change – can be tackled with smart infrastructure developments such as connected cars, electric vehicles, smart power grids, energy efficient buildings, Internet of Things (IoT) networks and open data portals.

Governments are facing a strong impetus globally to build and upgrade infrastructure, particularly in urban centers where expanding populations are putting increasing pressure on aging facilities. Many emerging countries need new infrastructure to support their growing populations and increased economic activity, while mature markets must renew deteriorating or inefficient infrastructure in a bid to revive slow growth rates. However, there have been years of under investment in infrastructure, a shortfall that is now catching up with countries around the world. Estimates show that nearly US$100 trillion globally needs to be spent on infrastructure in the next 20 years.

Smart infrastructure offers a way to harness the latest technologies to obtain maximum value and efficiency and create resilience and sustainability. It applies digital technology - such as smart devices, sensors and software - to physical structures, from power plants to bridges. These intelligent devices enable more efficient and effective monitoring and control of energy and water systems, transportation networks, human services, and public safety operations - all core government functions.

IoT can unlock opportunities to improve value in multiple areas. In cities, transport companies can deploy intelligent traffic management systems that use global positioning systems (GPS), sensor information from monitoring cameras, and other sources to monitor population movement and ease traffic congestion. Other examples of IoT adoption include smart waste and water management techniques, which save water and improve efficiency in waste collection, and the proactive monitoring and maintenance of public infrastructure. Meanwhile smart metering and grid management are used to forecast demand, track usage patterns and prevent power outages.

Governments must also pursue policies to create the enabling environment for a thriving digital economy. To do so, they need to work with private businesses to provide 5G networks, resilient internet connectivity and data centers; create high digital literacy among citizens; promote digital inclusion; and enable secure access to services, through digital identification systems.

The public sector cannot fund every infrastructure project itself; it must find innovative ways of working with other investors. As traditional funding sources dwindle, local governments too must embrace some of the new financing strategies available today. This also raises the importance of city planning and government oversight.

# EY Supporting Governments Worldwide in Digitalization Across All Areas

## Public finance and administration

- Unique digital identification enables secure electronic registration and delivery of government services.
- Self-service portals, mobile platforms and social media improve citizens' interaction with government.
- Integrated Financial Management Information Systems create a common platform to support better decision making and accountability;
- Data analytics enable evidence-based policy making and service design, real-time performance monitoring and evaluation.

## Policing

- Mobile devices enable officers to make decision and solve problems 'on-the-go'.
- Digital case management systems link information from multiple sources to support police investigations.
- Facial and image recognition software can quickly and accurately analyse images to identify criminal offenders.
- AI and advanced analytics enables predictive policing and thread analysis, supporting evidence-based tactical decisions.

## Education

- Management information systems track, record, monitor, analyse and report, for example, on learning outcomes and student attendance.
- Robotic process automation used for basic activities, such as grand applications.
- Intelligent Tutoring Systems (ITS) provide customised instruction or feedback to students.
- Advanced analytics tools predict students at risk of failure and provide real-time feedback to improve education outcomes.
- Smart education ecosystems enhance learning opportunities through smart classrooms, digital content and remote learning.

## Transportation

- Intelligent Transport Systems integrate public transit systems, offer single multimodal interface, and facilitate data gathering and intelligence.
- Predictive maintenance (e.g. sensors in trains) helps to avoid service disruptions.
- Self-service technology (e.g. facial recognition) improves the customer journey at airports.
- Sensors and data analytics improve traffic management by tracking peak hours and hot spots.
- Real-time sensing technology and machine learning enables the development of self-driving cars.

## Infrastructure

- Digital infrastructure (such as sensors and IoT applications) enables advanced health monitoring of physical infrastructure, leading to better performance of assets.
- Big data and analytics enable smarter, proactive asset management decision-making for city infrastructure.
- Predictive analytics helps obtain more accurate business forecasts.
- Smart metering and grid management are used to forecast demand, track usage patterns, and prevent power outages.
- Use of sensor networks and AI facilitate car parking in smart cities.

## Tax and customs

- Integrated digital services, including e-filing and e-invoicing, encourage seamless service delivery and improved compliance.
- Smart portals and mobile apps allow taxpayers to self-manage their tax affairs.
- Advanced analytics enables a shift from 'total audit' to risk management-based approach to compliance.
- AI chatbots interact with taxpayers to help streamline tax processes.
- Blockchain offers a means to combat fraud, trace and match data, and automate reporting.

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# EY Supporting Governments Worldwide in Digitalization Across All Areas

## Defense

▸ Wearable devices, smartphones and other smart technologies enable soldiers to relay information from the field.
▸ Smart military bases employ technologies to improve the quality and speed of their functions and services.
▸ Intelligent automation helps drive efficiency in back office processes such as inventory management, finance and HR.
▸ Unmanned drones are used on the battlefield, for instance, to improve surveillance or disarm explosive devices.

## Social services

▸ Integrated digital platforms collate data from multiple systems within an agency (or agencies) to create a single view of the citizen.
▸ Predictive risk models support early intervention and more effective targeting of services for vulnerable individuals and families.
▸ AI platforms enable online self-referral and screening, signposting citizens to services based on their needs and eligibility.
▸ Digital reporting systems are used to document care plans, risk assessments, health assessments, etc. on the system in real time.

## Healthcare

▸ Telemedicine enables remote diagnosis, monitoring and treatment of patients.
▸ AI enables key word tracking on social media to enable public health agencies to identify and respond to disease outbreaks.
▸ Hospital systems streamline patient monitoring and use smart algorithms to improve care and outcomes.
▸ Advanced analytics is used to mine health outcome data to enable more personalised diagnosis and treatment.

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