United Nations | Department of Economic and Social Affairs

Training Toolkit on "Capacities for Digital Government Transformation"

Acknowledgments

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The Training Toolkits incorporates key findings and selected cases from the 2020 and 2022 editions of UN E-Government Survey, and practical tools from the Curriculum on Governance for the Sustainable Development Goals including the toolkits of DiGIT4SD: Digital Government Implementation, Changing Mindsets in Public Institutions to Implement the 2030 Agenda for Sustainable Development, Innovation & Digital Government for Public Service Delivery and the Handbook on Digital Government Capability Assessment.

Table of Contents

List of Tables

List of Figures

Executive Summary

The Training Toolkit provides national and local governments with a set of comprehensive frameworks, practical strategies, and tools to understand the importance of a holistic approach to digital government transformation in pursuit of sustainable development and to develop required capacities for digital government transformation at the institutional, organizational, individual and societal levels.

The first two chapters give an overall introduction on the importance of promoting and accelerating digital government transformation through a holistic approach. Chapters Three to Six elaborate on four steps and the building blocks of implementing digital government transformation include: (1) situation analysis, (2) envisioning, (3) strategy, roadmap, and capacities development, and (4) monitoring, evaluation, and improvement. The *situation analysis* helps define the general development objectives and how digital technologies can support the overall vision and strategy of nation development. The *envisioning* is aimed to develop shared goals reflecting interests, needs and skills. The *national strategy and roadmap* introduces the overall purpose of digital government for the country, how it relates to the country's SDG priorities, its key development objectives, and how it will benefit people through aligning with subnational-level strategies and placing emphasis on both "leaving no one offline" and "leaving no one behind". Capacities at institutional, organizational, individual, and societal levels all need to be developed for digital government transformation. The continuous *monitoring and evaluation* of digital services, as a part of cyclic policy process, help to evaluate progress in the medium term and measure what is happening in relation to what was planned. Finally, Chapter Seven wraps up the whole programme with the action plan exercise and training evaluation.

The Training Toolkit also provides concrete methodologies and innovative cases from across the world to support capacity development efforts of Member States in digital government transformation. Each chapter also includes a set of quiz, exercises, lessons learned and reflections, which can be utilized as self-assessment tools or assisted-assessment tools.

Abbreviations

3As	access, affordability and ability
3D	three dimensionalities
5G	Fifth generation wireless technology for digital cellular networks
A4P	Agenda for Prosperity
AI	artificial intelligence
AR	augmented reality
CIO	chief information officer
CO2	carbon dioxide
COVID-19	Coronavirus Disease 2019
DEG	digital-era governance
DEWA	Dubai Electricity and Water Authority
DGCA	Digital Government Capability Assessment
DGRA	Digital Government Readiness Assessment
DiGIT4SD	Digital Government Implementation Toolkit for Sustainable Development
DPIDG	Division for Public Institutions and Digital Government
EGDI	E-Government Development Index
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
GovTech	Government Technology Department
GPS	Global Positioning System
HCI	Human Capital Index
HR	Human Resources
ICT	information and communications technology
ID	identity/identification
IoT	Internet of Things
IT	information technology
ITU	International Telecommunication Union
IEC	International Electrotechnical Commission
ISMS	information security management system
ISO	International Organization for Standardization
KPIs	key performance indicators
LDC	least developed country
LED	light-emitting diode
M2M	machine to machine
MSQ	Member States Questionnaire
NDP	National Development Plan
NGO	non-governmental organization
NPM	new public management

OECD	Organization for Economic Cooperation and Development
OSI	Online Services Index
PESTEL	political, economic, social, technical, environmental and legal factors
PRIDA	Policy and Regulation Initiative for Digital Africa
SDGs	Sustainable Development Goals
SWOT	strengths, weaknesses, opportunities and threats
TII	Telecommunications Infrastructure Index
UAE	United Arab Emirates
UCLG	United Cities and Local Governments
UK	United Kingdom (of Great Britain and Northern Ireland)
UN	United Nations
UN DESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
VR	virtual reality

Overview of the Training Toolkit

Introduction

"Information and communications technology enabled breakthroughs in Government, including the provision of public services, education, health care and employment, as well as in business, agriculture and science, with greater numbers of people having access to services and data that might previously have been out of reach or unaffordable"[1]. In an era when the world is facing interlinked and cascading crises with far-reaching implications for public health, jobs, social equity, climate change, and environmental protection, digital government plays an increasingly vital role in accelerating the realization of the 2030 Agenda for Sustainable Development and ensuring that no one is left behind.

Governments around the world are using digital technologies to innovate the way they operate, share information, make decisions and deliver services, as well as to engage and partner with people to solve policy challenges of public concern. Yet, many countries remain ill-equipped to effectively leverage digital technologies and provide accessible, reliable, fast, personalized, secure and inclusive services and empower people through open and participatory mechanisms.[2] In this context, while realizing the importance and benefits of digital government transformation, many countries especially those countries in special situations are confronted with a multitude of challenges notably in technological, governance and institutional dimensions. UN DESA supports Member States in strengthening their capacities for digital government transformation for achieving sustainable development.

The Training Toolkit provides national and local governments with a set of comprehensive frameworks, practical strategies, and tools to embrace a holistic approach and develop required capacities for digital government transformation. It also provides step-by-step guideline on how to conduct a situation analysis, undertake a visioning exercise, and devise a strategy and road map. It examines how to develop capacities at institutional, organizational, individual, and societal levels.

The Training Toolkit provides concrete methodologies and collect innovative cases from across the world to support capacity development efforts of Member States in digital government transformation. Each chapter includes a set of quiz, exercises, lessons learned and reflections, which can be utilized as self-assessment tools or

[1] UN General Assembly, Outcome Document of the High-Level Meeting of the General Assembly on the Overall Review of the Implementation of the Outcomes of the World Summit on the Information Society, available at https://unctad.org/system/files/official-document/ares70d125_en.pdf

[2] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020

assisted-assessment tools. The framework illustrated are based on the research and capacity development work that UN DESA has carried out over the past several years.

Why a Training Toolkit on "Capacities for Digital Government Transformation"?

Government leaders have been making all endeavours to transform the public sector by leveraging innovation, digital and frontier technologies to effectively deliver services and engage society for achieving the Sustainable Development Goals (SDGs). Digital technology applications can provide users with quick and easy access to public services and programmes, and they can facilitate building participatory governance mechanisms that allow people to become involved in decision-making, and the design, creation and production of services. Digital technologies also foster greater government openness and accountability and can be leveraged to increase public trust. Yet, the government and public sector workforce have to be equipped with necessary capacities for implementing multi-dimensional and government-wide digital transformation strategies while promptly adapting to the challenging situation of the "New Normal" in the Post-COVID-19 Era with agility. Strong leadership and innovative and digital mindsets are also critical for setting the vision, priorities and strategies for digital transformation for the COVID-19 recovery.

However, digital transformation – which goes beyond digitalization and harnessing digital technologies – has created many challenges for governments. In particular, the use of digital technologies in the public sector poses risks and threats to security, including widening digital divides within and across countries and potentially undermining human rights, individual privacy, and security. Not all countries are sufficiently prepared to promote innovation and leverage digital technologies to provide accessible, reliable, fast, personalized, secure, and inclusive public services, and empower people through open and participatory mechanisms. Many are not prepared to identify and address the risks associated with digital technologies.

Digital government transformation is not just about digitalization of public services. It is, above all, about public governance transformation, creating a digital ecosystems and innovation as part of overall national development vision and strategy. Developing capacities for digital government transformation is essential. It requires a holistic approach that is value-driven and institutionalized across all levels of government and society. It entails fundamental changes in the way public institutions collaborate with each other and in the mindsets of civil servants as well as other relevant stakeholders.

This Training Toolkit presents a holistic approach to digital government transformation in support of sustainable development and providing the users with a comprehensive framework for change, including key pillars for digital government transformation.

What is the purpose of the Training Toolkit?

The Training Toolkit is aimed to equip users with a better understanding on i) why a holistic approach to digital government transformation is important, ii) what capacities are required for digital government transformation and iii) how to develop capacities for digital government transformation. It offers a set of comprehensive frameworks, practical strategies, and tools on how to develop digital government capacities for effective, inclusive, and accountable service delivery in support of sustainable development.

Who are the Training Toolkit's intended users?

The Training Toolkit is primarily intended for national and local governments, and public institutions at all levels. International organizations, business groups, private sector, civil society organizations, NGOs, academia, and the media may also find the Training Toolkit useful.

What methodology was used in developing the Training Toolkit?

The Training Toolkit is primarily developed through desktop research. Most insights have been drawn from the 2020 and 2022 editions of United Nations E-Government Survey, as well as other reports by UN DESA, International Telecommunication Union (ITU), UNDP, the World Bank, and OECD, and other scholarly articles on digital government. Case studies included in the Training Toolkit are mainly extracted from the 2020 and 2022 editions of United Nations E-Government Survey, complemented by additional sources. They are representative of all the regions of the world. They were selected mainly because they exemplify relevant building blocks of the digital government transformation. The cases included in the Toolkit are by no means exhaustive of the diversity of digital government transformation implemented in countries across the world.

How can this Training Toolkit be used?

The Training Toolkit can be used to enhance the understanding of digital government transformation by conveying the message that the transformation is not only about technology, but more importantly, about governance transformation. It can also be used to learn member countries' digital government transformation experiences. Users can use the toolkit with a staged approach to developing government capacities towards digital transformation from situation analysis and envisioning to developing national strategy and roadmap. The Toolkit is also highly interactive with a set of exercises for users to reflect and practice.

Chapter 1 General introduction on the importance of promoting and accelerating digital government transformation for realizing the 2030 Agenda for Sustainable Development

In line with the Decade of Action for the implementation of the 2030 Agenda for Sustainable Development, science, technology, and innovation hold the potential to resolve some of the most complex challenges the world facing today. Digitalization in the public sector provides opportunities to achieve SDGs through its growing role in delivering sustainable, inclusive, and equitable services to everyone and everywhere, and ensuring to leave no one behind.

The global outbreak of the COVID-19 pandemic emphasizes the need for digital government transformation and catalyzes its development. Member States and particularly sub-national governments are embracing digital and no-touch solutions to better serve citizens. Public-sector leaders expect digital transformation to improve internal operations, such as the ability to work remotely and streamlined workflows. Digital government transformation not only creates more convenience for citizens, but also plays a key role in helping governments prepare for future crises.[3] However, challenges also arise along with the rapid and assertive digital ambitions and efforts of moving towards digital government transformation. This has immediately tested the digital government national visions, tools, and applications that countries have invested in over the recent years. This guidebook provides a comprehensive understanding and practical tools for digital government transformation.

1.1 Key definitions

- **The definition of digital government transformation**

  - ✧ Digital government transformation can be defined as the process of transforming governance models and interaction mechanisms between government and society and innovating government policymaking, organizations, services, and programmes by leveraging digital technologies.

  - ✧ It refers to a process of fundamental change requiring a holistic approach that puts people first and revolves around the needs of individuals, including those left furthest behind, and the mitigation of risks associated with the use of technologies.

[3] Here's How the Pandemic is Accelerating Digital Transformation, available at https://papers.govtech.com/Heres-How-the-Pandemic-is-Accelerating-Digital-Transformation-136582.html

- ✧ Digital government transformation is not just about technologies. It is, above all, about public governance transformation and innovation as part of a country's overall national development vision and strategy. Developing governance capacities for digital government is essential.

- ✧ Digital transformation is a continuous journey, not a final destination of constant improvement in service of society's well-being, peace and prosperity, bringing about fundamental change.

- **The definition of digital government transformation capacity**

At the systemic level, a holistic approach to digital government transformation requires building deep capabilities and capacities.[4] The United Nations Sustainable Development Group defines capacity as "the ability of people, organizations, and society as a whole to manage their affairs successfully" and capacity development as "the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt, and maintain capacity over time" to achieve their development objectives.[5]

Digital government capacity reflects the ability of Governments and society to transform policies, programmes, processes and services by leveraging innovation and digital technologies. Comprehensive digital government capacity development is needed to ensure the delivery of accessible, reliable, fast, personalized, secure, and inclusive digital services and the engagement of people in decision-making processes and service design and delivery.

For effective design and implementation of a holistic approach to digital government transformation, broad capacity development is needed at the institutional, organizational, and individual levels in government as well as at the societal level. Political commitment at the highest levels of government is an essential precondition, as is a clear vision of the purpose of government transformation guided by a set of core values that are aligned with the 2030 Agenda for Sustainable Development. Capacities to engage in transformational leadership and change mindsets at the national and local levels and across all sectors in society are equally important. Digital government transformation also requires building digital capacities in government by attracting and retaining the best digital talent in a country.[6] Capacities to put in place a comprehensive institutional and regulatory framework for digital government is critical. It is necessary to strengthen capacities to develop integrated approaches, effect

[4] International Telecommunication Union, New initiatives to support digital literacy for seniors in Singapore, Digital Inclusion Newslog (22 December 2018), available at http://digitalinclusionnewslog.itu.int/2018/12/22/new-initiatives-to-support-digitalliteracy-for-seniors-in-singapore/.
[5] United Nations Development Group, UNDAF Companion Guidance: Capacity Development, available at https://unsdg.un.org/sites/default/files/UNDG-UNDAF-Companion-Pieces-8-Capacity-Development.pdf.
[6] Ibid.

organizational change, and enhance people's participation in public affairs. Capacities to mobilize resources, manage data, promote effective public communication, and address issues related to technology access and ICT infrastructure and affordability are also part of a holistic approach.

- **The capacity, output and impact of digital government transformation**

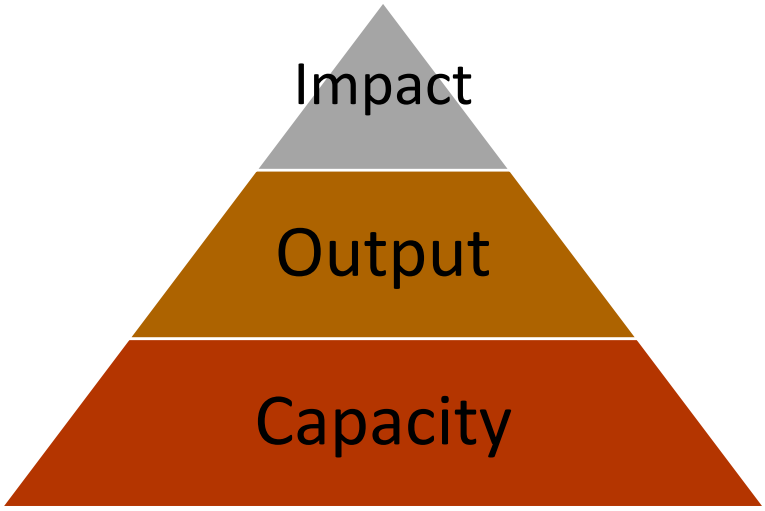


Figure 1.1 The relationship among capacity, output and impact

The capacity is the basis of digital government transformation. When the capacity of digital government transformation is improved, the outputs of digital government transformation, such as service applications, will be increased. Furthermore, it will bring good impacts; for example, service applications could bring convenience to the public. In this toolkit, we focus on capacity building for digital government transformation.

Developing capacities for digital government transformation requires a holistic approach that puts people first and revolves around the needs of individuals, including those left furthest behind, and the mitigation of risks associated with the use of technologies.

- ✧ The central feature of a holistic approach is the alignment of institutions, organizations, people, technology, data, and resources to support desired change within and outside of the public sector for the generation of public value.

- ✧ Digital government transformation should be based on an ecosystem approach that leverages systems thinking and integrated approaches that can address the interlinkages among the SDGs in delivering services.

- ✧ A holistic approach requires building deep capability and capacities in systemic, institutional, organizational, and individual levels in government as well as in the societal level.

1.2 Digital government transformation for SDGs

Digital government transformation, as an effort to promote society's well-being, peace and prosperity, support the achievement of the 2030 Agenda and the Sustainable Development Goals (SDGs). By enhancing the efficiency and effectiveness of public service delivery and by reaching those left behind, digital government transformation can promote all 17 SDGs.

Specifically, digital government transformation is related to Goal 4, 8, 9, 11, 16.

- **Goal 4: ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

  - ✧ **4.4. By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship**

    - ➢ Being able to reach everyone and everywhere, digital government transformation can bring education services and engagement opportunities directly to people in remote or underprivileged communities, providing them with access at home or through digital kiosks in villages.

    - ➢ **[Case 1.1] Rwanda's efficacy in strengthening the provision of inclusive, user-centric online services**[7]

      With financing from the World Bank Group and through collaboration with the private sector, Rwanda has launched several digital inclusion initiatives to help 250,000 households acquire digital devices and to provide 3 million people with the opportunity to improve their digital literacy. As part of its ICT for Governance cluster Strategy 2020-2024, Rwanda is planning to further expand inclusive digital services and ICT-enabled empowerment.

[7] World Bank, World Bank provides $100 million to accelerate Rwanda's digital transformation, press release, 30 November 2021 (Washington, D.C.), available at https://www.worldbank.org/en/news/press-release/2021/12/01/world-bank-provides-100-million-to-accelerate-rwanda-s-digital-transformation

- **[Case 1.2] Bhutan's ICT development**[8]

  Bhutan moved up from the middle EGDI group in 2018 to rank highest among the LDCs in 2020, in part due to improvements in its telecommunications infrastructure. The country has extended Internet connectivity to around a thousand government offices, schools and hospitals, allowing the provision of e-government services such as online business licensing and customs- trade approvals. Government officials and teachers have also benefited from ICT through the use of digital platforms to improve their digital skills. International and regional cooperation has also played an important role in the country's improved performance. The World Health Organization and the Indian Institute of Health collaborated on the deployment of an electronic patient information system and a centralized health data warehouse that have helped improve quality and efficiency in the delivery of health services.

✧ **4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development**

- Knowledge about the SDGs can also be spread through online education services provided by digital governments.

- **[Case 1.3] Mauritius's digital development in SDGs activation**[9]

  In Mauritius, the Digital Government Transformation Strategy contains specific recommendations for government agencies on how to activate the SDGs. The strategy proposes a list of best implementation practices for every Goal and encourages cross-sectoral collaboration between public and private entities to holistically address intersectoral issues. The Ministry of Information Technology, communication and Innovation has

[8] M.S. Gurung and others, Transforming health care through Bhutan's digital health strategy: progress to date, WHO South-East Asia J Public Health, vol. 8 (2019), pp. 77-82, available at http://www.who-seajph.org/text.asp?2019/8/2/77/264850.

[9] Mauritius, Ministry of Technology, communication and Innovation, central Informatics Bureau, Digital Government Transformation Strategy, 2018-2022, available at https://cib.govmu.org/Documents/Reports/Digital%20Government%20Strategy%202018-2022.pdf

worked together with the business community to align the Digital Government Transformation Strategy with the Public Sector Business Transformation Strategy. To deal with the organizational challenges of a nationwide process and guarantee successful implementation, an oversight and reporting mechanism called the High-level Digital Government Task Force has been created. This group is chaired by the Prime Minister, who also supervises ministerial committees on digital transformation.

- **Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

  - ✧ Digital government transformation can advance Goal 8 in multiple ways: (a) Through ICT integration, government with greater openness and interaction can better support economic growth. (b) The popularization of digital literacy promoted by digital government transformation will be useful in future employment.

  - ✧ **[Case 1.4] Financial inclusion and empowerment in Bangladesh: Making Digital Financial Services Work for the Poor**[10]

    Bangladesh has shown tremendous growth in terms of digital financial account access through the proliferation of branchless banking, which has taken full-service retail banking to the doorsteps of rural citizens across the country, and soaring mobile financial services (MFS), which have reached a client base of over 100 million. Combining these channels, and in collaboration with the Ministries of Social Welfare, Finance, and Bangladesh Bank, the a2i Programme of the Government of Bangladesh, with support from UNDP, the Gates Foundation and the consultative Group to Assist the Poor, developed the 'citizen's choice Architecture' for digital payments of social safety net programs – such as elderly allowance, allowance for widowed, deserted, and destitute women, allowance for financially-insolvent disabled people. Guided by the 'AIM Principle' (Account + Identity = Mobility), it allows for the disbursement of allowances at accessible cash-out points at the union level (the lowest administrative tier comprising 9 villages), or even at the homes of the elderly or persons with disability. Over 12 million citizen-beneficiaries can now simply walk a short distance to the nearest Digital centre or agent banking booth and using biometrics under the supervision of the local entrepreneur or, business correspondent

[10] Snigdha Ali, Maria May. Bangladesh's COVID-19 Response Is Taking Digital Finance to New Levels, available at https://www.cgap.org/blog/bangladeshs-covid-19-response-taking-digital-finance-new-levels

appointed by an agent bank, cash out their allowance from their own full-service bank account that is tied to their unique national ID number. The whole technology setup requires only an active mobile data connection in order to function.

✧ **[Case 1.5] Some local initiatives in South Africa**[11]

In South Africa, around 150 government services have been consolidated under the national e-government portal to simplify and streamline the flow of information and ensure easy access for users. By increasing the efficacy and cost- effectiveness of the governance structure, the country hopes to be able to promote sustainable economic growth and foster inclusive innovation in accordance with SDGs 8 and 9. In Armenia, digitalization in the agriculture sector has also begun, with the Government using drone imagery and satellite technology to collect real-time data and statistics that can guide decision-making in areas relating to SDGs 2 and 8.

- **Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**

✧ **9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.**

➢ There has been a renewed commitment from regional and international partners to work towards the regional harmonization of legal and regulatory frameworks to accelerate digital transformation in Africa.

➢ **[Case 1.6] Policy and Regulation Initiative for Digital Africa**[12]

The Policy and Regulation Initiative for Digital Africa (PRIDA), a joint programme of the African Union, European Union and International Telecommunication Union, aims to lay the foundation for and thus facilitate the provision of "universally

[11] South Africa, Department of Telecommunications and Postal Services, Notice 886 of 2017, National e-Government Strategy and Roadmap, Government Gazette, available at https:// www.gov.za/sites/default/files/gcis_document/201711/41241gen886.pdf

[12] International Telecommunication Union, PRIDA-ITU Delegation Agreement for Action, available at https://www.itu.int/net4/ITU-D/CDS/projects/ display.asp?ProjectNo=9RAF18089

European Commission, Pan African Programme, Policy and Regulation Initiative for Digital Africa (PRIDA), factsheet, available at https://www.africa-eu-partnership.org/en/projects/policy-and-regulation-initiative-digital-africa-prida

accessible, affordable and effective wireless broadband across the continent to unlock future benefits of Internet-based services". The three pillars of the Initiative (on which relevant activities are based) include efficient and harmonized spectrum utilization; the harmonization of measurable ICT/telecommunications policy, legal and regulatory frameworks; and the active participation of African decision makers in the global Internet governance debate. PRIDA is to be carried out over three years within the period 2018-2022. The ultimate goal is to engage in targeted activities that will result in bringing an additional 300 million people online by 2025.

- ✧ **9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.**

  - ➢ Digital government transformation promotes digital connectivity, which can enable increasing access to information and communication technology.

  - ➢ **[Case 1.7 Smart Africa]** [13]

    The Smart Africa initiative, established in 2013 during the Transform Africa Summit in Rwanda, aims to transform Africa into a knowledge society with wide and affordable access to broadband and ICT infrastructure and services. The initiative is guided by the Smart Africa Manifesto, which was endorsed by all African leaders at the 22nd Ordinary Session of the Assembly of Heads of State and Government of the African Union, held in Addis Ababa in January 2014. The principles of the Manifesto include putting ICT at the centre of national socioeconomic development; improving access to ICT; improving accountability, efficiency and openness through ICT; strengthening the private sector; and more generally leveraging ICT to promote sustainable development.

- **Goal 16: promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**

[13] Smartafrica.org; the Manifesto is available at http://smartafrica.org/new/wp-content/uploads/2019/01/smart_africa_manifesto_2013_-_english_version.pdf

- **16.5 Substantially reduce corruption and bribery in all their forms.**

  - One part of digital government transformation is e-participation, a system where the public can complain and report corruption.

  - **[Case 1.8] Bogotá te escucha**[14]

    Bogotá te escucha (Bogotá listens to you) is a system designed to manage petitions—a virtual tool people can use to submit complaints, claims, requests for information, inquiries, suggestions, concerns about possible acts of corruption, or simple requests relating to issues that affect their own interests or those of the community. Within the framework of the Zero Tolerance for Corruption strategy, Bogotá te escucha offers all individuals the opportunity to complain about possible acts of corruption. A person can report on irregular events that may be occurring within any district entity in order to activate the investigation and sanction mechanisms. The system offers a registration service but also allows people to file anonymous requests and to check the status of their submissions. The requests can be submitted in person or in writing, by email or by telephone, via the web or regular mail, or through social network channels provided by the Mayor's Office in Bogotá. All requests are addressed to the competent entities so that the district authorities can issue a timely response or initiate an administrative action, as the case may be, ensuring a high rate of satisfaction with the services received.

- **16.6 develop effective, accountable and transparent institutions at all levels**

  - E-participation can make for a government that has more responsiveness and accountability by providing easy access to petition, complaint and reports to the public. Proactively sharing information and government data with the public also contributes to building effective, accountable and inclusive institutions.

  - **[Case 1.9] Digitalization of the Court of Appeals in**

[14] Alcaldía Mayor de Bogotá, Servicio a la Ciudadanía, available at https://bogota.gov.co/sdqs/

Belize[15]

Belize is currently updating its E-Governance Strategy and Action Plan; however, many public institutions have already benefited from various multilateral cooperation initiatives. Working together with APEX, the Caribbean Agency for Justice Solutions, the Government is moving forward with the digitalization of the court of Appeals. The project has introduced electronic filing and case management systems to help officers monitor, analyse and report on case trends and to increase the transparency and accountability of the judicial system. The project has integrated the Belize Police Department, customs and Excise Department and Magistrates court into the same system as the Department of Transport, facilitating the sharing of data and investigations relating to accidents and violations.

- **[Case 1.10] Promoting procurement transparency in UAE and Mauritius**[16]

In the United Arab Emirates, the Digital Marketplace / Abu Dhabi Government Procurement Gate - Al Maqta'a Portal has been set up to engage micro, small and medium-sized enterprises in transparent and efficient public procurement processes. All organizations interested in doing business with Abu Dhabi government entities must complete the registration process—a centralized, one-time activity—through the Procurement Gate. Once potential suppliers are registered, their profiles are visible to buyers from all entities operating through the portal. In Port Louis, Mauritius, all procurement-related announcements and results are published and archived to ensure public transparency.

- **16.7 ensure responsive, inclusive, participatory and representative decision-making at all levels.**

Digitalization greatly facilitates two-way interaction and can therefore play a key role in strengthening the relationship between local governments and various stakeholders.

[15] Belize, Press Office, E-Governance and Digitalization Unit supports Belize motor vehicle registration and licensing system, press release, 23 June 2021, available at https://www.pressoffice.gov.bz/e-governance-and-digitalization-unitsupports-belize-motor-vehicle-registration-and-licensing-system/; Belize, Belize Government moves to digital transformation of judiciary, Belize.com, 25 February 2021, available at https://belize.com/news/belize-government-moves-to-digital-transformationof-judiciary/

[16] Department of Economic and Social Affairs of the United Nations (UN DESA), United Nations E-Government Survey 2022, pp.96.

Integrating emerging technologies in e-government processes allows city residents to participate in decision-making, identify local resources, and other aspects of local governance. Their contribution to local solutions is exemplified by the Finding Places initiative in Hamburg, which shows how technological innovations can be employed to help solve societal problems such as refugee settlement. With growing access to social media, an increasing number of people are proactively using networking platforms and opportunities to connect with others and engage in participatory decision-making. This expanded access to direct channels of communication will likely contribute to developing new types of collaborative partnerships between government bodies and local residents. These trends are aligned with the SDG target 16.7 objective of ensuring responsive, inclusive, participatory, and representative decision-making at all levels.

- ✧ **16.9 By 2030, provide legal identity for all, including birth registration.**

  Applying for a birth certificate has become one of the most common digital services offered worldwide. In 2018, there are 83 countries offering online birth certificate services. By 2020, the number grows to 149.

Now, more than ever, government leaders are dealing with the critical question of how best to transform the public sector to effectively deliver services and achieve the Sustainable Development Goals (SDGs). For many countries, the answer is to leverage innovation and digital and frontier technologies. Digital technology applications can provide users with quick and easy access to public services and programmes and can also be used to create participatory mechanisms that allow people to become involved in decision-making and the design and delivery of services. Such technologies can support greater government openness and accountability and can be leveraged to increase public trust. At the same time, the use of digital technologies in government can pose risks and threats, including widening digital divides within and across countries and potentially undermining human rights, individual privacy and security of all kinds.

1.3 The benefits of using digital technologies in government

- **People's needs for enhancing public services, policymaking, participation and people-centric practices**

- ✧ **Enhancing the delivery of public services.** Digital technology applications can provide users quick and easy access to public services and programmes. Providing information, allowing users to apply for official certificates and permits, facilitating the submission of tenders, and accepting electronic payments are only a few ways local government can save residents time and resources through effective and efficient public services provision. Therefore, such technologies can support greater government openness and accountability and can be leveraged to increase public trust.

  [Case 1.11 Fiji expanding the provision of digital services to improve accessibility][17]

  In Fiji, the Digital Government Transformation Programme (digitalFIJI) is being implemented as part of the 20-year National Development Plan and focuses primarily on strengthening public administration, government services, and the telecommunications infrastructure. Aiming to enhance the quality and accessibility of public services, the Government is working to achieve full digitalization by the end of 2022. The digitalFIJI website currently allows users to register births, apply for and retrieve birth certificates, and register companies or businesses. Two digital platforms have been created to facilitate communication and engagement. The Government Directory provides contact information for every public agency and public official, and the myFeedback platform provides users with an online space to discuss issues and comment on governance and government services; the latter project is handled by the Feedback Unit, which is responsible for promptly redirecting messages to the appropriate ministries and agencies for response and timely resolution.
- ✧ **Facilitating people's engagement in policymaking and participation.** Digital technologies can also be used to create participatory mechanisms that allow people to become involved in decision-making and the design and delivery of services, and thusly strengthening the relationship between local governments and various stakeholders.
- ✧ **Addressing the concerns and needs of different groups in society.** Digital technologies could serve as a people-centric approach to service delivery and programme management, addressing concrete problems and needs experienced by different groups in society.

  [Case 1.12 India people-centric services for marginalized groups][18]

  The Government of India is implementing the Digital India initiative to build people-centric services for marginalized groups. The Accessible India Campaign and mobile application has become a nationwide flagship initiative for achieving universal accessibility—one that enables people with disabilities to have access to equal opportunities, live independently,

[17] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2022, pp.75.

[18] Digital India website, available at https://www.digitalindia.gov.in/

and participate fully in all aspects of life in an inclusive society. The campaign focuses specifically on enhancing the accessibility of the built environment, transport system and information and communication ecosystem. The mobile app is a crowdsourcing platform that allows administrators to obtain comprehensive information on inaccessible places across the country and to respond to relevant needs. Through this programme, 1,250 sign language interpreters have been trained, and 588 State government and 95 central government websites have become accessible for persons with disabilities.

- **Promoting agile and risk-informed governance**

Increasing natural disasters and public health emergencies such as COVID-19 context: Digital government transformation has stepped up its central role as a necessary element of communication, leadership and collaboration between policy makers and society during the COVID-19 pandemic. Digital technologies have enabled broader sharing of knowledge, encouraging collaborative research to find solutions and provide transparent guidance to Governments and people. The same technologies have also been used for the rapid dissemination of false or questionable information, leading to concerns about privacy and security. Policy makers have been called upon to collect and process COVID-19-related data in an ethical, transparent, safe, interoperable, and secure manner that protects the privacy and data security of individuals. Overall, however, the benefits of using technology seem to have outweighed their drawbacks.

[Case 1.13] Togo Social protection disbursements through AI[19]

To alleviate poverty and hardship during the COVID-19 pandemic in Togo, AI enabled by mobile data and satellite imagery was used to ensure the quick and efficient distribution of $22 million (in three monthly mobile phone payments of $20 for men and $22 for women) to 600,000 residents in urban areas.106 This programme was made possible through a multi-stakeholder partnership between the Government of Togo, a philanthropic organization, and academia.

1.4 Risks of using digital technologies in government

The proliferation of digital technology and data is moving the world in a positive direction, but it also comes with a whole host of risks and challenges. Digital and data literacy, privacy and ethical issues, as well as data security, are major concerns, and related institutional capacities remain insufficient in many areas, especially in developing countries, transition economies, and countries in special situations. More importantly, people's trust in both government and technology could face challenges, especially in this post-epidemic era.

- **Digital divide and data literacy**

[19] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2022, pp.145.

- ✧ **Digital divide:** Digital divide refers to the gap between those individuals with access to digital devices and content and those without.[20] The development and evolution of new technologies may widen the digital divide between cities. Digital divides arise from broad socioeconomic inequalities, and at the root of both are economic and social disparities between countries, groups and individuals that impact their ability to access and use ICT (Information and communications technology).
- ✧ **Data literacy:** Data literacy, also known as digital literacy, refers to the skills and abilities needed to access and use digital devices and content confidently, safely, and effectively.[21] With the increased sophistication of digital government and the introduction of new or amended data policies in various countries, there is an implicit expectation that public institutions and administrators will invest the time and resources required to become proficient in dealing with new data realities. Public-sector expertise is needed in a wide range of areas, including data access, analytics, visualization, data sharing, interoperability, evidence-based policymaking, data security, and privacy protection. It is important that data capacities be developed early so that a strong foundation exists for future development; as the volume and applications of data increase, so will the complexity of managing data.

  [Case 1.14] Serbia focusing on digital skills and services delivery[22]

  The improved e-government ranking of Serbia may be attributed in part to the Government's renewed commitment to the E-Government Development Programme of the Republic of Serbia 2020-2022 and the Action Plan for its implementation. Although there are still segments of the population that have never used the Internet or a computer, notable progress is being made within the realm of public administration. According to a government survey, only 4 per cent of public sector employees (600 of 15,200) do not have basic computer skills.

- **Individual privacy and digital ethics**

  Ethics can be considered a reflection of society's collective moral understanding.[23] The challenge for Governments is that ethics cannot always be codified in data policies; in cases where this is not possible, judgements on the appropriate use of government data are governed by a wider moral consensus. Ethics questions become more important when advances in technology are pushing the common understanding of the law to its limits or when relevant laws and policies are not in place. To add to the complexity,

[20] Jaeger et al. 2012; United Nations Department of Economic and Social Affairs 2012; Swan et al. 2011

[21] Digital Future Society, Measuring the margins : A global framework for digital inclusion, pp.9, available at https://collections.unu.edu/eserv/UNU:7584/n201219_Report-7_A_global_framework_for_digital_inclusion-2.pdf

[22] Serbia, Ministry of Public Administration and Local Self-Government, and others, E-Government Development Programme of the Republic of Serbia 2020-2022 and Action Plan for its implementation, available at e-Government-Development-Programme-2020-2022-FINAL-2.pdf

[23] Cat Drew, Data science ethics in government, Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, vol. 374, No. 2083 (2016), pp. 20160119, available at http://doi.org/10.1098/rsta.2016.0119

public perceptions around data privacy are diverse within and between societies and can shift over time.

With the rapid uptake of e-services and the increased use of government data in the public sector, a number of challenging privacy and ethics issues have emerged. Governments need to use large data sets (including identifiable data) to create good algorithmic models for policymaking. However, there are conflicting imperatives characterizing government data use and management; demands for greater accountability in the use of data for government programmes in various sectors must be weighed against concerns that the paternalistic approaches of Governments may lead them to trample on personal privacy. The growing public concern and controversy over the collection and use of public data by Governments has coalesced around a series of high-profile incidents. Registered public concerns relate to issues such as the legitimacy of project objectives, the lack of public awareness, and the lack of clarity around possibilities for opting out of data extraction processes. The use of government data is generally deemed unacceptable when it is perceived as an invasion of privacy.

With the increased production and use of government data, digital government transformation routines, interactions and practices are inextricably (though not always visibly) linked to the privacy of individual and business users. There are issues surrounding not only the proliferation of data collected on the public, but also the profiling and surveillance applications used by the public sector to gather information on the population.[24] Government data use is not always perceived to be serving the public interest. Seeking consent for data use can be complicated, as data ownership is not always clear, and the situation becomes particularly convoluted when data management is shared or transferred between agencies, as this often makes it impossible to assign or trace accountability or attribution.

- **Data security**

  Data security refers to the public demands on governments to ensure reasonable and appropriate technical and organizational safeguards are in place to prevent unauthorized disclosure or breach of data.[25] Almost every country has experienced some form of a government data security breach, though this has not always been made public. The number of high-profile cases resulting in consequential economic or social losses is increasing. It is estimated that the average cost of a data security breach in the United States will surpass $150 million in 2020, and the corresponding global figure is

[24] Ed Pilkington, "Digital welfare state": big tech allowed to target and surveil the poor, UN is warned, The Guardian (16 October 2019), available at https://www.theguardian.com/technology/2019/oct/16/digital-welfare-state-big-tech-allowed-totarget-and-surveil-the-poor-un-warns

[25] Data Privacy and Data Protection Principles, available at https://cs.unu.edu/about/data-protection

estimated at $2.1 trillion.[26] Not only do data breaches impair the effective functioning of institutions and impact the economic well-being of key sectors such as health care and social security, but they also affect the safety and security of people, impose intangible social costs, and undermine public trust in the Government.

- **Trust of people**

  People's take-up and sustained participation of digital government transformation depends in part on their trust in government institutions, but also on their trust of Internet in general and of specific components of participation platforms such as social media.

  People will be reluctant to use digital government services and engage in digital government transformation if they do not trust the government, digital technology, and the system that integrates the two. Governments must demonstrate that they can be trusted with the data people provide and that their interaction with the public can produce meaningful change. They need to show that they are credible in terms of providing safe and consistent access to services, promoting digital literacy, and enabling the participation of all groups in society, particularly the most vulnerable.

With the exponential increase in government data and the growing awareness of its enormous potential and attendant challenges, the need for effective data governance and institutions has gained new urgency. Yet not all countries are sufficiently prepared to identify and address the risks associated with digital technologies. This is why it is necessary to develop Digital Government Transformation Capacities.

1.5 Key messages

- ✧ Digital government transformation is fundamentally about governance transformation and innovation as part of a country's overall development strategy and the pursuit of sustainable development. The process tends to be political in nature, with technology playing a facilitative role.
- ✧ Digital government capacity reflects the ability of Governments and society to transform policies, programmes, processes and services by leveraging innovation and digital technologies.
- ✧ A holistic approach to public service delivery that puts people, and their needs first is required to harness the full potential of new technologies for digital government transformation and mitigate the attendant risks.
- ✧ Digital government transformation, as an effort to promote society's well-being, peace and prosperity, support the achievement of the 2030 Agenda and the Sustainable Development Goals (SDGs).

[26] Credit Union National Association, Data breach costs will soar to $2T: Juniper (2019), available at https://news.cuna.org/articles/105948-data-breach-costs-will-soar-to-2t-juniper

- ✧ The proliferation of digital technology and data is moving the world in a positive direction, but it also comes with a whole host of risks and challenges.

Quiz/exercises:

1. What are the major needs and risks of Digital Government Transformation in your country? Please discuss and share your thoughts and comments.
2. What knowledge and experiences can you take from the above successful practices of digital government transformation and adapt them to your national contexts?
3. Which SDGs are most related to digital government transformation in your country?

Lessons learned and reflections:

1. What is digital government transformation?
2. How can Digital Government Transformation contribute to the implementation of SDGs?
3. Why is it important to use digital technologies in government?
4. What could be the potential risks of using digital technologies?

Chapter 2 A holistic approach to digital government transformation

In this chapter, we will introduce the term a holistic approach in governance, and the significance of adopting this approach in digital government transformation. Capacity development at different levels is needed while going through four integrated phases in the process of digitalization of government.

2.1 Introduction to holistic approach

The term "a holistic approach" originally comes from *New Public Management Is Dead—Long Live Digital-Era Governance*[27]. In this paper, the author explained why a needs-based holism is necessarily involved in the transformation from "new public management" (NPM) to "digital-era governance" (DEG).

In contrast to the narrow, joined-up-governance changes included in the reintegration theme, holistic reforms seek to simplify and change the entire relationship between agencies and their clients. The task of creating larger and more encompassing administrative blocs is linked with "end to end" reengineering processes, stripping out unnecessary steps, compliance costs, checks, and forms. It also stresses the development of a more "agile" government that can respond speedily and flexibly to changes in the social environment.

This concept was then discussed and enriched by various scholars and organizations in the following decades. The holistic approach to digital government transformation we are discussing can be explained in four dimensions.

- **Ecosystem**

  A holistic approach correlates with an ecosystem approach. The central feature of a holistic approach to digital government transformation is the alignment of institutions, organizations, people, technology, data, and resources to support desired change within and outside of the public sector for the generation of public value. Digital government transformation should be based on an ecosystem approach that leverages systems thinking and integrated approaches that can address the interlinkages among the SDGs through delivering public services. It should be transformative in the sense that it goes beyond incremental changes and embraces systemic change.

  - ✧ **Systems thinking:** Several governments have advanced a systems-thinking approach to policy making and service delivery by using information and communications technology (ICT) to enhance operational linkages. They have adopted a holistic and integrated

[27] New Public Management Is Dead—Long Live Digital-Era Governance. Patrick Dunleavy, Helen Z. Margetts, Simon Bastow and Jane Tinkler. Journal of Public Administration Research and Theory. 2005(16): pp.467-494

approach to the delivery of services by promoting both organizational and technological interoperability. Systems thinking "is a way for human beings to understand systems. It focuses on how the system's constituent parts act together in networks of interactions as well as on how systems work over time and within the context of larger systems. Systems thinking provides a means of seeing the system as an integrated, complex composition of many interconnected components that need to work together for the whole to function successfully." The integration of public services makes it easier for people to "interact with public administration and get adequate and holistic responses to their queries and needs".

[Case 2.1] Singapore's holistic approach[28]

Singapore has adopted a holistic approach for its Smart Nation programme and digital transformation. It has moved from a silo-based approach to an ecosystem approach in which effective leadership, critical mindsets, and a solid legislative and regulatory infrastructure playing a key role. Initiated in 2014, the Smart Nation programme is taking shape through a series of strategic national projects. The Government is making every effort to integrate public services, pursuing a one-stop-shop approach through initiatives such as the National Digital Identification project, the establishment of platforms such as "Ideas!" that facilitate direct communication between people and government, the Moments of Life initiative, and collaboration with international counterparts for emergency aid and notifications. Buy-in from the public and government departments and the hiring and promotion of the most highly qualified experts have been critical.

✧ **Integrated approach:** The SDGs are highly integrated in the sense that there are complex interlinkages among the Goals and associated targets, and a whole-of-government approach is needed to ensure that organizational structures can coordinate and integrate public service delivery in a way that best serve the objectives of the 2030 Agenda. While there is a general awareness of the need to address the synergies, trade-offs, and interlinkages among the SDGs, the implementation of an integrated approach to service delivery and efforts to strengthen policy coherence have not been identical across countries. In practice, achieving integration and policy coherence is difficult, not least because existing institutional arrangements may impede progress in these areas. Understanding how to adapt organizational structures to effectively address existing linkages among the SDGs is critical to achieving progress. In their voluntary national reviews of progress in the implementation of the 2030 Agenda, a number of countries indicate that they have set up or revamped institutional arrangements

[28] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020, pp.180

for SDG implementation to facilitate integration. For example, Germany has revamped its Council for Sustainable Development; Estonia, Morocco and France have set up inter-ministerial committees or task forces to monitor SDG implementation; and Norway, Samoa and Sierra Leone have strengthened mechanisms for enhanced institutional engagement with local authorities. These new institutional structures should both support and be supported by the integrated use of digital technologies. New and emerging technologies can be deployed to help make better use of enormous quantities of data to identify synergies and trade-offs among different SDGs, which can potentially improve policy coherence and service delivery. Better data mining and machine-learning techniques can help predict the impact of specific policy choices in areas such as climate, land use, and water.

[Case 2.2] Belize's integrated approach[29]

The E-Governance and Digitalization Unit in Belize has improved the management of the entire transport sector using information technology. The project has integrated the Belize Police Department, Customs and Excise Department and Magistrates Court into the same system as the Department of Transport, facilitating the sharing of data and investigations relating to accidents and violations.

- **Contextual**

  Also, a holistic approach should be contextual. It should be home-grown and leverage local knowledge while also taking into account good practices from across the world.

  At the national or regional levels, taking good practices from across the world while tailoring them in a home-grown way, which encourages implementation of road map for digital government transformation that is aligned with and integrated into government's overall development strategy. There should also be alignment with subnational strategies to ensure that local perspectives are incorporated into national development plans.

  At the individual level, it means suits people's needs wisely. According to the *Universal and contextualized public services: Digital public service innovation framework[30]*, in view of the rising social and economic inequalities, public service delivery should be both universal, i.e. independent of the recipients' social or economic status, and contextualized, i.e. able to compensate for different local needs and conditions. Reconciling both

[29] Belize, Press Office, E-Governance and Digitalization Unit supports Belize motor vehicle registration and licensing system, press release, 23 June 2021, available at https://www.pressoffice.gov.bz/e-governance-and-digitalization-unitsupports-belize-motor-vehicle-registration-and-licensing-system/; Belize, Belize Government moves to digital transformation of judiciary, Belize.com, 25 February 2021, available at https://belize.com/news/belize-government-moves-to-digital-transformationof-judiciary/

[30] Universal and contextualized public services: Digital public service innovation framework. John Bertot, Elsa Estevez, Tomasz Janowski. Government Information Quarterly, Volume 33, Issue 2, April 2016, pp.211-222

properties requires various forms of innovations, chief among them innovations in digital public services.

[Case 2.3] SMART Rwanda Master Plan[31]

The success enjoyed by Rwanda in e-government development derives from a long-term vision that was initiated in 2000 and realized in 2020 with the SMART Rwanda Master Plan. The strategy and its focus on digital transformation are intended to contribute to the attainment of the SDGs, in particular Goal 9. Besides significantly increasing access to ICT and striving to provide universal and affordable access to the Internet, the Government has expanded investment to facilitate sustainable infrastructure development and support domestic technology development. By 2024, the Government is committed to making its services available online 24 hours a day and making all citizens and residents digitally literate regardless of their socio-economic or political status.

[Case 2.4] Digital India Initiative in India[32]

The Government of India is implementing the Digital India initiative to build people-centric services for marginalized groups. The following are among the most recent initiatives:

- ✧ The Accessible India Campaign and mobile application has become a nationwide flagship initiative for achieving universal accessibility—one that enables people with disabilities to have access to equal opportunities, live independently, and participate fully in all aspects of life in an inclusive society. The campaign focuses specifically on enhancing the accessibility of the built environment, transport system and information and communication ecosystem. The mobile app is a crowdsourcing platform that allows administrators to obtain comprehensive information on inaccessible places across the country and to respond to relevant needs.
- ✧ Through this programme, 1,250 sign language interpreters have been trained, and 588 State government and 95 central government websites have become accessible for persons with disabilities.
- ✧ The AgriMarket app keeps farmers abreast of crop prices and discourages them from carrying out distress sales. Farmers can obtain crop price information for markets within a 50-kilometre radius using mobile GPS. To date, more than 80 million farm families have been reached through this app.
- ✧ MyGov is a platform created to promote and support public engagement in decision-making processes. The platform has 24.5 million registered users and offers many e-participation tools to facilitate the formation of online groups and thematic discussions,

[31] Rwanda, Ministry of Information Technology and communications, ICT Sector Strategic Plan (2018-2024): Towards digital enabled economy, November 2017, available at https://risa.rw/fileadmin/user_upload/Others%20documents/IcT%20SEcTOR%20STRATEGIc%20PlAN%202018-2024.pdf

[32] Digital India website, available at https://www.digitalindia.gov.in/

polls, surveys, blogs and talks. During 2021 and 2022, the Government has shared its plan for digital transformation with 9.5 million participants.

- **Collaborative**

  It should be collaborative since providing integrated digital services requires a high degree of coordination among ministries and agencies and new mindsets in government and society.

  The digital government transformation should aim to transform the government into a collaborative and interconnected organization structured around an architecture of integrated services. Simplifying processes, reducing administrative burdens, promoting data interoperability, and strengthening data and knowledge management should be part of the transformation process, depending on the national context. There may be provisions for restructuring back-office operations to optimize resource distribution and improve services. This may also include initiatives aimed for facilitating public-private partnerships and enhancing collaboration for co-creation of public value. It is important to specify how resources will be mobilized for the implementation of digital government transformation; there should be a solid interlinkage between institutional mandates, services to be delivered, mechanisms to be employed, channels to be used, and respective budgets.

- **People-centric**

  Generally, a holistic approach is value-driven, which puts people first and revolves around the needs of individuals, including those left furthest behind, and the mitigation of risks associated with the use of technologies.

  Digital government transformation should be inclusive to ensure that any transformation is aimed at creating equal opportunities for all people to access reliable and quality services. It should also be informed by people-centric approaches to service delivery and programme management, addressing concrete problems and needs experienced by different groups in society.

  This approach is in full alignment with the principles of Goal 16 on effectiveness, accountability and inclusiveness: Promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable and inclusive institutions at all levels.

2.2 Significance of adopting a holistic approach in digital government transformation

- **Help to promote both institutional and data interoperability and standards for using technologies**

  Introduction on organizational interoperability and open standards for using technology, and how they can promote delivery of services. Interoperability “is a top priority today as Governments try to integrate services across departments so

as to improve effectiveness as well as efficiency". [33] Governments have approached interoperability in various ways. A number of countries have long enforced specific technical requirements and standards to establish or improve interoperability, some countries have adopted policies on interoperability, and others have taken concrete steps to implement relevant institutional reforms or formalize new arrangements. The Government of Australia, for example, through its 2018 legislation on new data governance arrangements, has made it mandatory for all government agencies to use open standards for interoperability.

The institutionalization of e-participation—the process through which e-participation becomes fully integrated into the organizational culture—is crucial to its success. Understanding the process of institutionalization is crucial from the perspective of fostering digital transformation in public administration, but little headway has been made on this front. Existing studies of the diffusion of technology in government highlight the complementary relationship between the passive observation of practices inside and outside government, peer networks, and institutional guidelines but provide no definitive explanation or analysis of the process of institutionalization.

Many countries have created or modified organizational structures to better support digital government transformation. Among the 193 United Nations Member States, 111 have a chief information officer or the equivalent.[34] New organizational structures need to be complemented by changes in the government organizational culture at all levels and the development of new individual capacities in the public sector and society. Capacities to mobilize resources, manage data, promote effective public communication, and address issues relating to ICT infrastructure and affordability and access to technologies are part of a holistic approach as well. It is also necessary to develop the relevant capacities of capacity developers and of all people, including vulnerable groups.

The growing technological capacities to process ever-larger and more complex data sets can provide policymakers with better insight and foresight and make e-services more efficient, accountable and inclusive. The potential and opportunities surrounding data abound, especially in the context of delivering on complex sustainable development goals. Shifting from "gut instinct" to data-centric policymaking is now a viable alternative and is rapidly becoming a strategic imperative.

In recent years, more Governments have started integrating new technologies, such as artificial intelligence (AI) [35] and blockchain technology in digital

[33] Egidijus Barcevicˇius and others, Exploring digital government transformation in the EU, JRC Science for Policy Report, available at https://publications.jrc.ec.europa.eu/repository/handle/JRC118857

[34] Department of Economic and Social Affairs of the United Nations (UN DESA), United Nations E-Government Survey 2022, pp.120

[35] OECD AI Principles overview, available at https://oecd.ai/en/ai-principles

government strategies. Taking the challenges of COVID-19 as an instance, since Governments have been searching for ways to effectively contain the COVID-19 outbreak and relieve the stress on public services, this trend has further strengthened. Most innovative quick-to-market solutions have originated from the private sector. However, the crisis has exposed the need for increased government leadership in the development and adoption of new technologies such as AI and robotics to ensure an effective provision of public services.

To achieve higher levels of organizational interoperability, open standards for technologies play an essential and fundamental role in this process. Open standards are documented, reusable agreements that affect us every day. Open standards for data make it easier for people and organizations to publish, access, share and use better quality data. When it comes to keeping information assets secure, organizations can rely on the ISO/IEC 27000 family. ISO/IEC 27001 is widely known, providing requirements for an information security management system (ISMS), though there are more than a dozen standards in the ISO/IEC 27000 family. Using them enables organizations of any kind to manage the security of assets such as financial information, intellectual property, employee details or information entrusted by third parties.

[Case 2.5] United Kingdom: Increasing Accessibility by Implementing Standards[36]

The United Kingdom's Digital Inclusion Strategy sets out how government and partners from the public, private and voluntary sectors could collaborate to help as many people as possible become capable of using and benefiting from the Internet. The accessibility standards that the government has adopted mean that public sector organizations are legally obliged to ensure their digital offerings (on mobiles, websites and applications) meet agreed accessibility standards. The Service Manual is a set of guidelines and standards to help service teams develop, build and maintain digital services that will meet the Service Standard and be allowed to live on GOV.UK.

- **Help to promote coordination among different agencies and break silos**

  A holistic approach could contribute to governmental integration vertically and horizontally.

  - ✧ **Vertical Integration**

    The implementation of the SDGs requires the coordination of efforts of different levels of government. Action at the local level is critical to realize most of the Goals. Vertical integration efforts aim to create synergies and enhanced consistency across levels of government through mutually reinforcing and supportive actions.

    Vertical integration at the planning stage is common. In many countries, sub-national governments have been aligning their strategies and plans

[36] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2022, pp.148

to the SDGs, sometimes under a legal mandate. Some national governments have issued guidelines or templates to facilitate these efforts. In some countries, genuine multilevel structures or mechanisms for planning have been put in place, where local and national governments can collaborate. The so-called "SDG localization" effort has been wide-ranging and is supported by international organizations, including UN-Habitat, the United Nations Development Programme (UNDP), the Global Task Force of local and regional governments, and United Cities and Local Governments (UCLG).

Vertical integration at the implementation stage seems less frequent. Lack of capacity at the local level is a one of the main barriers coupled with the lack of clear legal frameworks and unfinished decentralization plans. However, some countries have made efforts to align national and local budgets for SDG implementation. The drive for alignment sometimes comes from the national level, sometimes from the sub-national level. Colombia is an exceptional case of alignment, where multi-level processes enable allocation of budget resources across territories and establish common reporting formats.

Vertical integration at the level of monitoring, evaluation, follow-up and review is not common, but there are innovative examples from different regions. In some countries, the national level recognizes sub-national and local SDG indicators, or supports their development. Some countries also ensure that SDG implementation is monitored at the sub-national level, either through central government efforts, through the establishment of sub-national monitoring structures, or through joint, multi-level structures and mechanisms. Such joint mechanisms are observed in several European and Latin American countries, among others.

- **Horizontal Integration**

  Effective horizontal integration across sectors is critical for addressing the interconnected nature of SDGs, including synergies and tradeoffs across different goals and targets. It is well recognized, however, that overcoming sectoral boundaries to achieve horizontal integration remains a challenge. Nevertheless, governments have concrete opportunities to facilitate integration in their structures and processes and the report identifies some of those.

  An increasing number of countries are mainstreaming the SDGs into their national policies and putting institutional frameworks in place. Some countries have given new mandates to existing mechanisms or are setting up new coordination bodies and mechanisms for SDG implementation (e.g., high-level commissions). Arrangements are being

made to ensure continuing leadership for SDG implementation, which may be coordinated by the heads of state and government or from line ministries.

National strategies and plans provide a long-term vision that functions as a common reference for integrated approaches. This common reference enables a shared understanding across sectoral boundaries of the government's broad policy objectives. It allows different parts of the government to see how various interventions play together towards attaining the SDGs. Many countries have mapped the SDGs into their national development strategies, and especially many developing countries, have explicitly aligned their development strategies with the SDGs. Sierra Leone's integrated strategy within the framework of the Agenda for Prosperity (A4P) 2013-2018 illustrates this approach. Such exercises need to consider the ambition and the integrated nature of SDGs.

Progressing towards horizontal integration will require strong leadership, appropriate strategies, institutional arrangements, processes and enabling cultures, but also understanding and collective commitment. It should be clear across the government that ministries, offices and individuals depend on each other to meet specific targets and the SDGs as a whole. In a sense, achieving the SDGs is not an exercise in achieving a collection of individual targets, but rather an exercise in collaboration and joint efforts within government, to a level that has not been seen before.

Horizontal integration	Vertical integration
• High-level, comprehensive "umbrella" strategy (e.g. national sustainable development strategy) • Cross-sector coordination structures and mechanisms • Budget processes • Existence of integrated planning tools • Incentives for institutions and for staff in those institutions to work cross-sectorally (mandates, charters, rules, regulations, internal accounting, etc.) • Public procurement rules • Awareness-raising, capacity development in Government institutions incl. capacity for systems thinking, planning • Robust science-policy interface, incl. modelling, data	• Processes for "localizing" the SDGs • Legal and regulatory framework for decentralization and related arrangements in practice • Political context at the national and local levels, accountability of local governments versus national government • Budget processes and resources available to local governments • Incentives for institutions and for staff in those institutions to work across levels of government • Local and national government capacity • Existence of integrated planning tools

Figure 2.1 Horizontal integration and vertical integration[37]

- ✧ Inter-agency and intra government data sharing, linking and exchange can increase public sector productivity, improve services, reduce data requests, strengthen evidence-based policymaking and the integration of public services, and facilitate the whole-of-government or whole-of-society responses to public needs and emergencies.
- ✧ There are both direct and indirect benefits associated with sharing government data. Arguably, the laborious act of collaborating through data sharing, linking or interoperability may seem to deliver low return on investment; but the value lies in the intrinsic benefits that such collaboration is presumed to produce. Establishing cross-agency collaboration in data initiatives may therefore require more of a focus on the expected benefits that are people-centric. When agencies are required to review their data and ensure that they are in the appropriate form for release, they are also forced to evaluate the status and quality of their data and to take stock of the data they have in their possession. This often leads to improved data quality within organizations. In addition to this intra-organizational benefit, sharing data encourages communication and partnerships across agencies and sectoral boundaries.
- ✧ **[Case 2.6] The data-centric online-offline integration of digital**

[37] Department of Economic and Social Affairs of the United Nations (UNDESA), World Public Sector Report 2018, pp.10, available at https://desapublications.un.org/publications/world-public-sector-report-2018

government in Shanghai[38]

The sharing, exchange and integration of data across government agencies are often inadequate and challenging. There are readiness gaps among different agencies and a lack of incentives.

Shanghai is the largest city in China, and the resource requirements for providing more than 24 million residents with access to public services are enormous. In order to streamline operations and enhance public services provision, the municipal government has adopted an innovative approach to facilitate the sharing of data across government departments and agencies based on demand and usage. The initiative derives its mandate from the newly enacted Shanghai public data governance and online-offline integrated services policy.

The Shanghai Municipal Big Data Center was established by the city government in 2018 as a one-stop-shop service platform for "cross-level, cross-department, cross-system and cross-service data sharing and exchange for government, industry and social data". The Center is designed to support the data ecosystem, primarily through data governance and coordination. It is tasked with promoting the integration of technology, business and data and helping to build a data-sharing system for the city; it is also responsible for formulating technical standards and developing management approaches "for the collection, management, sharing, opening, application and security of data resources". On the ground, it facilitates the sharing and exchange of data between multiple levels of government and between the Government and users and is engaged in the analysis and application of different types of public data, including geospatial and real-time data, in support of operational and people-centric e-services. More than 1,000 e-services — with a foundation of more than 16,000 data resources and 14 billion data points across 50 agencies — are available through the Big Data Center, which is hosted in the dedicated e-government cloud. In 2019, there were around 540 million data requests (both push and pull). There are substantial operational and maintenance costs attached to the Center; however, the services it provides contribute enormously to enhancing digital government, improving the business environment, and improving the quality of life of all Shanghai residents.

As part of Big Data Center operations, a suite of integrated online-offline government services was launched via mobile services (through WeChat and other apps). More than 13 million users are currently registered on the portal and can access e-services anytime and anywhere. Integrated

[38] Huang Yixuan, Big Data center launched to drive smart Shanghai, ShanghaiDaily.com (13 April 2018), available at https://archive.shine.cn/business/it/Big-Data-center-launched-to-drive-smart-Shanghai/shdaily.shtml

into the online portal is access to over 200 physical government service centres with more than 20,000 employees to help people with offline service requests. The integrated online-offline system offers a one-stop-for-all-services approach that allows users to complete all tasks and processes in a single visit. This is especially convenient for vulnerable groups such as older people, the unemployed, and pregnant women, who often have special needs or requests. In the first half of 2019, the offline service centres in Shanghai received 36.45 million visitors.

2.3 Process of digital government transformation

The process of digital government transformation consists of four steps:

- ✧ **Situation analysis:** undertake a situation analysis to assess digital transformation capacity gaps and opportunities;
- ✧ **Future envisioning:** articulate a shared vision of government transformation and how digital technologies will be leveraged to achieve societal goals;
- ✧ **Digital government transformation strategy and roadmap:** devise a strategy and a digital government implementation road map in which key pillars are identified;
- ✧ **Monitoring and evaluation:** put monitoring and evaluation mechanisms in place to collect feedback that should then be used to inform the subsequent rounds of situation analysis, strategy development and implementation.

Figure 2.2 maps the four stages of implementing digital government transformation and explain the basic logic between each stage, which will be discussed respectively in the following sections. This can be used as a capacity development tool to identify the elements and steps needed to move the digital government transformation process forward.

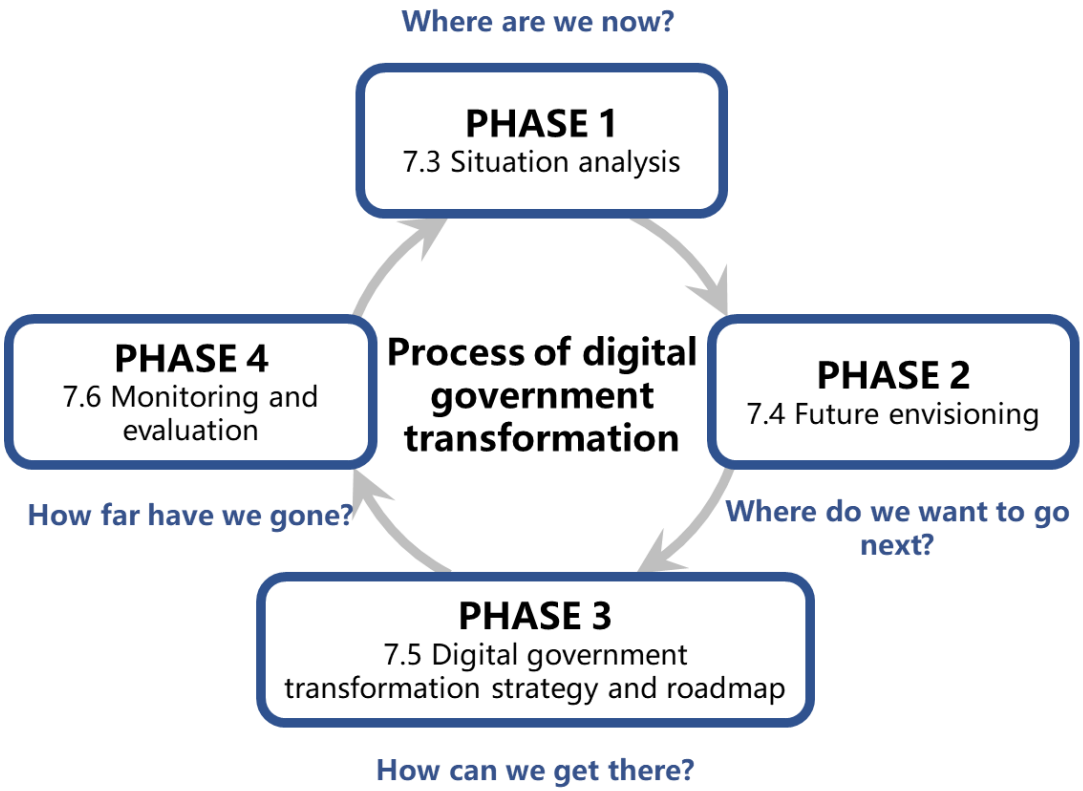


Figure 2.2 Process of digital government transformation

As shown in this graph, each section is aimed at answering a correlated question. Phase 1 focuses on the first step of digital government transformation. By launching a situation analysis, we are able to see where we are, after which future envisioning could help us understand where to go. Subsequently, it is significant for us to think about how we could get there to design a strategy and roadmap for digital government transformation. As for the last step, monitoring and evaluation can help us clarify how far we have gone. Based on all achievements after all these steps, a new circle is then ready for us to go through.

2.4 Key messages

- ✧ Digital government transformation should be implemented through an ecosystem approach that leverages systems thinking as well as an integrated approach to addressing the interlinkages among the SDGs through delivering public services.
- ✧ A holistic approach of digital government transformation should be home-grown with local contexts and solutions while also taking into account good practices from across the world.
- ✧ Providing integrated digital services requires high-level coordination across ministries and agencies and new mindsets in government and society.
- ✧ A holistic approach of digital government transformation could contribute to governmental integration vertically and horizontally.

- ✧ Digital government transformation should be inclusive to ensure that any government transformation is aimed at creating equal opportunities for all to access reliable and quality services. It should also be informed through a people-centric approach to service delivery and programme management, addressing concrete problems and needs experienced by different groups in society.
- ✧ Digital government transformation could be implemented through a four-step iterative process that encompasses *situation analysis* (including an assessment of digital capacities within and outside of government), the *development of a strategy and road map*, *implementation*, and *monitoring and evaluation* for continuous improvement.

Quiz/exercises:

1. In your opinion, how can the holistic approach to digital government transformation be adopted in your country?
2. What most important capacities do you think should be developed in your country? Please share some specific examples and explain the reasons.

Lessons learned and reflections：

1. What is a holistic approach?
2. Why is a holistic approach needed for digital government transformation?
3. What concrete steps are needed in the process of digital government transformation? What is the purpose of each step?

Chapter 3 Conducting a situation analysis to assess capacity gaps and opportunities in digital government transformation across all government levels and society

The first building block of a holistic approach to digital government transformation is a contextual and situation analysis to assess digital transformation capacity gaps and opportunities across all government levels and society vis-à-vis the national development vision and plan. Based on this, we can find "Where are we now?". This chapter looks at what context and situation analysis entails, why leadership is essential to effect change, and why the process should be participatory in nature. It also provides examples of how a situation analysis can be conducted and highlights some existing capacity development methodologies.

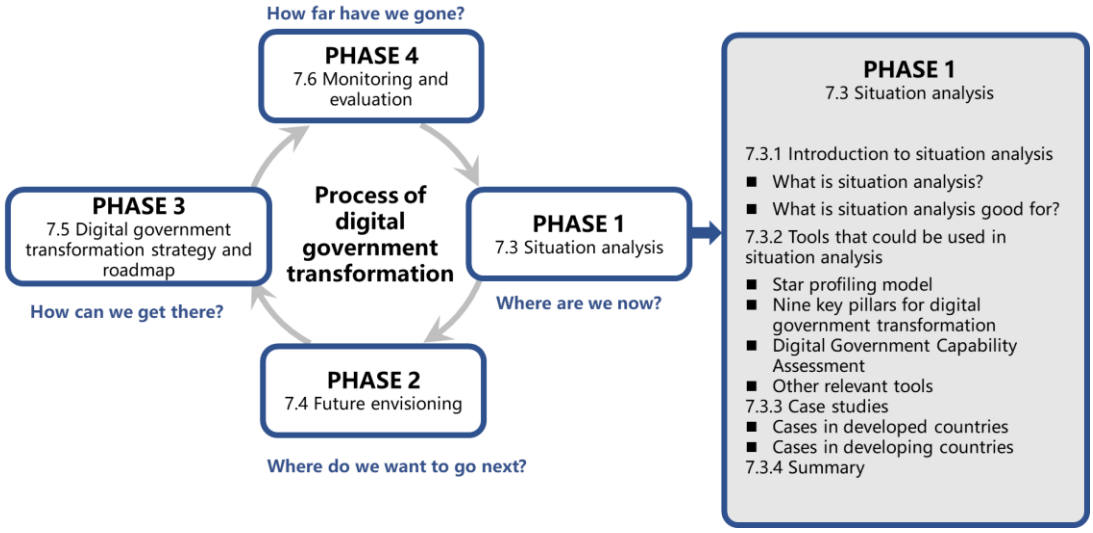


Figure 3.1 The overall structure of Chapter 3

3.1 Introduction to situation analysis

- **What is situation analysis?**
  - ✧ A situation analysis requires an understanding of a country's history, social norms, values, beliefs, and attitudes and of national perceptions surrounding digital technologies. Understanding the values and beliefs of the Government and society is essential for determining how digital technologies can best be used in government for the benefit of all people.
  - ✧ A situation analysis also involves an assessment of the leadership's commitment to digital government and the state of public governance and public administration. It requires a review of relevant opportunities and challenges at the local, national, regional and global levels.
  - ✧ Most importantly, a situation analysis should take into account a country's future development goals. Any government transformation is fundamentally

about political choices and priorities; technology merely plays a facilitative role. How technologies are used by Governments depends on the underlying values and aspirations of a nation. Whether the goal is to provide better services, reduce spending through increased efficiency, strengthen security, or reach vulnerable groups, digital government transformation is political in nature.

- **Why is situation analysis needed?**

  The situation analysis helps to define the general development objective and how digital technologies can support the overall vision of a nation. The analysis should provide Governments with the information they need to identify the motivations for digital government transformation and why it is needed.

3.2 Tools that could be used in situation analysis

To conduct a real situation analysis of digital transformation, a government need to understand how to make use of these tools, which are usually practical and pragmatic frameworks, assessment questionnaires or complete toolkits. These tools can provide a holistic framework and concrete methods for the situation analysis. And also, as for how to collect enough information, there are multiple modalities available for situation analysis. For example, data can be collected through an online government survey administered to all government agencies, businesses, and individuals. Participatory workshops and focused working groups organized by government entities at different levels, preceded by multistakeholder mapping, can also be useful tools.

- **Star profiling model: a framework for analysing government transformation capacities and leadership capacities**

  Before we introduce the concrete tool, it is necessary to understand the concept of transformation leadership. Transformational leadership can be defined as a process in which "leaders and followers raise one another to higher levels of motivation and morality".[39] Leadership does not attach to one single person or an individual institution but is instead represented by the complex system of leadership present in a specific context in all three governance sectors (the public sector, the private sector and civil society).

  Within this framework, digital government is an effective tool for supporting the implementation of a country's development vision and creating public value. The star profiling approach provides a framework for analysing government transformation capacities and leadership capacities—an essential aspect of an effective digital government transformation strategy.

[39] James Macgregor Burns, Leadership (New York, Harper & Row, 1978), pp.20

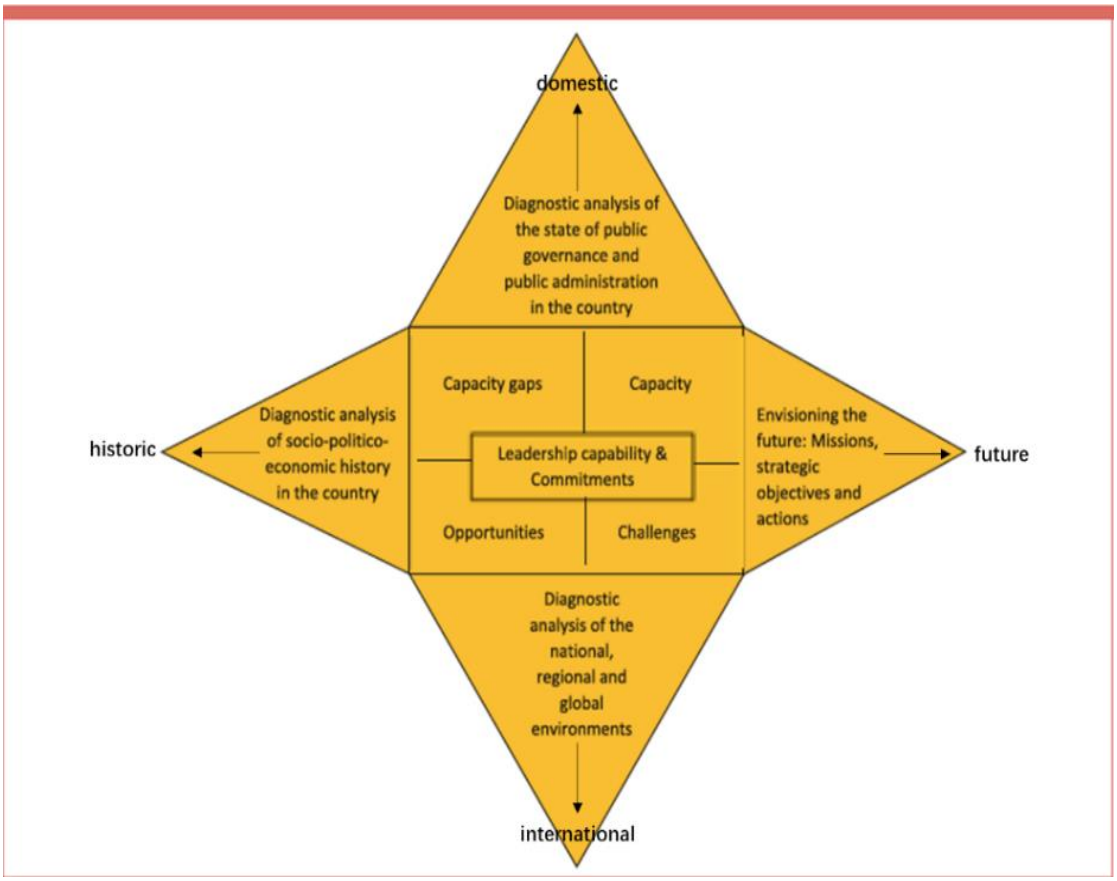


Figure 3.2 Star profiling model: assessing capacities for government transformation

The core of the star profiling model – leadership capacity & commitment –include three sectors, which makes this model comprehensive:

- ✧ The commitment of government leaders at the highest level is critical to the design and implementation of a holistic approach to digital government, as it is needed to overcome resistance to change and empower people to use their talents for innovation and inclusion. Leaders must commit to providing the resources and support needed to create an enabling environment for digital government, including new institutional and regulatory frameworks, organizational capabilities and change management, transformation planning and implementation processes, and the deployment of human, technological and financial resources. Leaders should also allocate resources for developing capacities, strengthening innovation capabilities, and cultivating partnerships. Identifying champions of change within the Government can help mobilize public servants and capacities for digital transformation.

- ✧ To the extent possible, the situation analysis should be participatory in nature and engage a broad spectrum of stakeholders. Each department and level of government has an indispensable role to play in defining a holistic approach to digital government. All political and government leaders—at the local and national levels, from the executive, legislative, and judicial

branches, and on provincial and village boards—should be involved. Local authorities are closest to the people they serve, and their involvement in a situation analysis is critical for digital government transformation and for effective, accountable, and inclusive public service delivery.

- ✧ Involving individuals and members of civil society in the situation analysis is also important. The voices of individual residents, communities, youth groups, women's associations, non-profit organizations, academia and educational institutions, and other non-governmental actors need to be included in identifying gaps and mapping out opportunities for digital government transformation. Though it can be a lengthy and time-consuming process, involving people from different backgrounds can help to ensure that the services delivered by the Government are built around people's needs. ICT industry leaders, innovators in the business community, and others involved in a country's productive sectors must also be an integral and active part of the process. This is also an important reason why academia and educational institutions should be included as important stakeholders as they provide the necessary human resources either through upskilling, reskilling, or preparing new graduates for the productive sectors. Engaging everyone in the situation analysis can enhance trust in public institutions and ensure that digital governance serves society's aspirations and goals. If the situation analysis is not participatory, it might be difficult to ascertain the needs of every sector of society, particularly vulnerable groups, and address them as part of a holistic approach to digital government transformation.

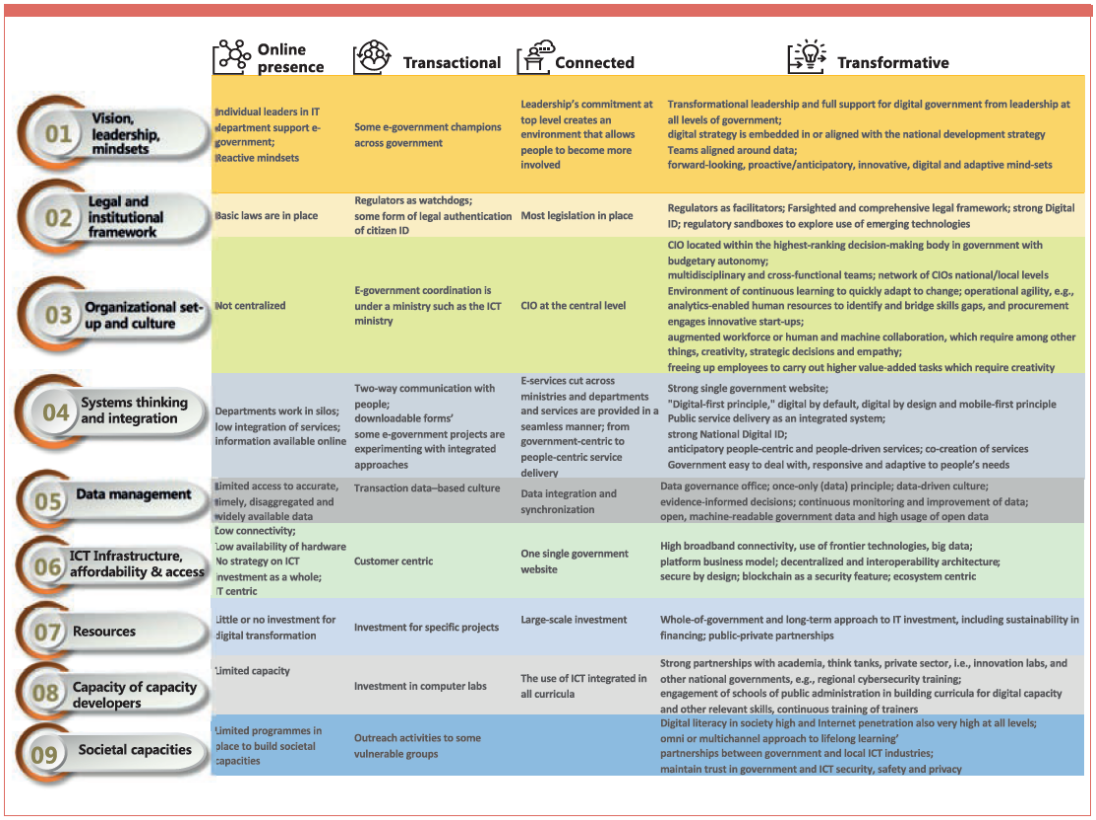
When taken into action, we can consider the star profiling model as a simple framework to help answer the question, "What are the prospects for the government transformation capacities and leadership capacities?" The approach recognizes that digital transformation should be examined for both positive and negative influences from internal and external perspectives. It also prompts you to look in detail at both sides of the coin. That is, the capacity and capacity gaps as internal factors are only meaningful in terms of the opportunities and challenges in the external environment.[40] From the internal aspect, you should collect information and analyse the current capacity of government transformation and leadership, and also face the capacity gaps (perhaps the deficiencies, weaknesses, or so on) of it. Meanwhile, you should not forget that from the external aspect, opportunities and challenges of digital transformation coexist. Through this, you can identify the strengths and weaknesses of the leadership (of course government included) and the environment (opportunities and challenges). The analysis and deliberation are designed to identify ways to take advantage of strengths

[40] Sharon S. Dawes et al, Make Smart It Choices Understanding Value and Risk in Government IT Investments (New York, University at Albany, SUNY, 2001), pp.136-137

and exploit opportunities, as well as minimize the impacts of weaknesses and protect against challenges.

The star profiling model is holistic also because it suggests overall diagnostic analysis. Under this model, self-assessment should include: 1) diagnostic analysis of the state of public governance and public administration in the country; 2) diagnostic analysis of socio-politico-economic history in the country; 3) diagnostic analysis of the national, regional and global environments; 4) envisioning the future which includes missions, strategic objectives and actions. The steps at 2) and 3) can be considered as the external or environmental part of the assessment, and steps at 1) and 4) frame the internal capacity and the gaps.

- **Nine key pillars for digital government transformation**



	Online presence	Transactional	Connected	Transformative
01 Vision, leadership, mindsets	Individual leaders in IT department support e-government; Reactive mindsets	Some e-government champions across government	Leadership's commitment at top level creates an environment that allows people to become more involved	Transformational leadership and full support for digital government from leadership at all levels of government; digital strategy is embedded in or aligned with the national development strategy Teams aligned around data; forward-looking, proactive/anticipatory, innovative, digital and adaptive mind-sets
02 Legal and institutional framework	Basic laws are in place	Regulators as watchdogs; some form of legal authentication of citizen ID	Most legislation in place	Regulators as facilitators; Farsighted and comprehensive legal framework; strong Digital ID; regulatory sandboxes to explore use of emerging technologies
03 Organizational set-up and culture	Not centralized	E-government coordination is under a ministry such as the ICT ministry	CIO at the central level	CIO located within the highest-ranking decision-making body in government with budgetary autonomy; multidisciplinary and cross-functional teams; network of CIOs national/local levels Environment of continuous learning to quickly adapt to change; operational agility, e.g., analytics-enabled human resources to identify and bridge skills gaps, and procurement engages innovative start-ups; augmented workforce or human and machine collaboration, which require among other things, creativity, strategic decisions and empathy; freeing up employees to carry out higher value-added tasks which require creativity
04 Systems thinking and integration	Departments work in silos; low integration of services; information available online	Two-way communication with people; downloadable forms' some e-government projects are experimenting with integrated approaches	E-services cut across ministries and departments and services are provided in a seamless manner; from government-centric to people-centric service delivery	Strong single government website; "Digital-first principle," digital by default, digital by design and mobile-first principle Public service delivery as an integrated system; strong National Digital ID; anticipatory people-centric and people-driven services; co-creation of services Government easy to deal with, responsive and adaptive to people's needs
05 Data management	Limited access to accurate, timely, disaggregated and widely available data	Transaction data–based culture	Data integration and synchronization	Data governance office; once-only (data) principle; data-driven culture; evidence-informed decisions; continuous monitoring and improvement of data; open, machine-readable government data and high usage of open data
06 ICT Infrastructure, affordability & access	Low connectivity; Low availability of hardware No strategy on ICT investment as a whole; IT centric	Customer centric	One single government website	High broadband connectivity, use of frontier technologies, big data; platform business model; decentralized and interoperability architecture; secure by design; blockchain as a security feature; ecosystem centric
07 Resources	Little or no investment for digital transformation	Investment for specific projects	Large-scale investment	Whole-of-government and long-term approach to IT investment, including sustainability in financing; public-private partnerships
08 Capacity of capacity developers	Limited capacity	Investment in computer labs	The use of ICT integrated in all curricula	Strong partnerships with academia, think tanks, private sector, i.e., innovation labs, and other national governments, e.g., regional cybersecurity training; engagement of schools of public administration in building curricula for digital capacity and other relevant skills, continuous training of trainers
09 Societal capacities	Limited programmes in place to build societal capacities	Outreach activities to some vulnerable groups		Digital literacy in society high and Internet penetration also very high at all levels; omni or multichannel approach to lifelong learning' partnerships between government and local ICT industries; maintain trust in government and ICT security, safety and privacy

Figure 3.3 Key pillars for government transformation

Figure 3.3 provides a diagnostic framework that can help Governments identify **where they are** with regard to each of the key pillars for digital government transformation. The features highlighted in the table are grounded in empirical analysis and case studies collected from a number of countries but are by no means exhaustive. A country rarely falls entirely within one of the digital government development categories highlighted in the table. Usually, a country will exhibit features from different categories and may move forward or slip back over time. The movement from one digital government category to the next is not always linear but can be iterative, and it may not happen

at the same time for the whole country. In any case, it is important to assess where a country is situated and to identify the changes or steps needed for improvement. As a reference point, features of the most digitally advanced countries fall within the "transformative" category.

- **Digital Government Capability Assessment**[41]

Experimenting with a Digital Government Capability Assessment (DGCA) will help civil servants build new understanding of the level of digital government capability that exists in a country as a foundation for continued efforts to innovate and lead in the area of digital government and public service delivery. A DGCA is not meant to be used to benchmark capability, but rather to develop an understanding of current capability and to inform decision making about where investments are needed to increase innovation and digital government capability leading to improvements in public service delivery.

Completing a DGCA as part of a workshop serves multiple purposes. The first is to provide workshop participants with exposure to the general process of conducting assessments as a way to systematically identify gaps between existing capability and desired capability. The second is to use that understanding as a new lens through which to learn about the content presented in the workshop, and third, to use that new understanding of a country's digital government capabilities when working with fellow workshop participants to create an action plan for building new capability.

This tool can be used at the inter-institutional level as part of a national exercise or as an international comparative exchange between different countries at the regional or global level. One example is the Caribbean Training Workshop engaging 13 countries held in February/March 2021 with five online facilitated virtual training sessions for two different groups of countries.

The focus of interest, or unit of analysis, in completing a workshop with the DGCA is not a particular digital initiative, such as a portal, but rather it is the whole of government capability for creating and sustaining digital government transformation.
The DGCA process can be carried out in a workshop setting through two complementary steps:

- a self-assessment to be filled out individually by workshop participants and
- a collaborative assessment to be conducted through small or larger groups as a workshop activity.

The DGCA is a set of six dimensions that are key factors in assessing the level of digital government capability. The DGCA uses an "enabler" focus with each of the dimensions of the DGCA representing a theory of change related to the key enabling factors in terms of capabilities that contribute to digital government development. Enablers, as

[41] United National Department of Economic and Social Affairs Division for Public Institutions and Digital Government, Digital Government Capability Assessment: A Handbook for Capacity Development of Local and National Governments, (New York, 2021), pp. 2-3. Available at: https://unpan.un.org/capacity-development/otc/self-assessment-tools/digital-government-capability-assessment

theories of change, in the DGCA, represent what is needed to improve institutional and organizational capabilities for digital government. A theory of change is a model that explains how an intervention will lead to improved performance in a specific domain. It specifies a direction (a desired performance or outcome), and implies the inputs and activities needed to attain the desired direction. A theory of change answers the question "How might A lead to B?" Each of the theories of change underlying the enablers of the DGCA is based on recent relevant literature and a review of current and best practices in innovation and digital government for public service delivery.

Table 3.1 Dimensions of Digital Government Capability Assessment (DGCA)

Dimension	Explanation	Sub-dimension	Number of Questions	Sub-total
Leadership	Leaders are the stewards of Digital Government efforts. They must engage, motivate, build commitment, and mobilize resources for the successful implementation of a digital strategy. Leaders must also craft the plans to achieve the organizational goals, as well as its communication to stakeholders and monitoring the progress.	Vision	4	11
		Policy	4	
		Data	3	
Strategy	Strategic plans help to support the government agenda. This contains the actions to be taken to pursue the digital government goals.	General	8	15
		Integration and Interoperability	3	
		Data	4	
Governance	The organizational capacity and managerial actions developed to overcome potential cultural barriers in implementing the digital strategy across	General	6	20
		Citizen and Business	5	
		Partnership	2	
		Data	3	
		Organization	4	

	agencies and departments. The development of good governance must be aligned with the strategic goals, as well as legal framework.			
Legal	The set of legislation, guidelines, and standards that a department or agency must comply with in deploying digital services.	Laws and Regulations	5	26
		Policies and Procedures	14	
		Data	3	
		Procurement	4	
Technology	The set of technologies that directly and indirectly contribute to the delivery of programs and services through digital platforms.	General	4	21
		Citizen and Business	5	
		Public Servants	3	
		Cybersecurity	9	
Professional and Workforce Development	The policy and programmatic affordances in place to support ongoing capacity development.		7	7
Total				100

Each enabler, or dimension of the DGCA, has sub-dimensions that focus attention on specific actions that could be taken in order to increase capability in each of the dimensions. Each sub-dimension has a set of statements or items that are used in the DGCA process. The table shows the list of dimensions, sub-dimensions, and the number of items per sub-dimension. And as mentioned before in the nine key pillars model, the nine key pillars are captured by the DGC dimensions as follows:

Leadership (1. vision and leadership); Strategy (4. systems thinking and integration); Governance (3. organizational set-up and partnerships); Legal (2. institutional and legal frameworks); Technology (6. ICT infrastructure and access to technology), and Professional and Workforce Development (8. Capacities of capacity developers).

The process of conducting a DGCA includes two basic steps. The first is considering the statements and the second is deciding the extent to which the respondent agrees or disagrees that the statement represents the situation in their government. The right-hand

column presents the scoring scale (5-point scale) corresponding with values 5 to 1, from strongly agree, agree, neither agree nor disagree, disagree to strongly disagree.

- **Other relevant tools:**
  - **The UN DESA Readiness Assessment on Institutional Arrangements for Policy Coherence to Implement the 2030 Agenda for Sustainable Development[42]**
    - **Background**

      The 2030 Agenda emphasizes the need for integrated approaches to realize the Sustainable Development Goals (SDGs). Specifically, SDG target 17.14 calls on all countries to "enhance policy coherence for sustainable development" as a key means of implementation. The call for integrated solutions was reiterated during the first United Nations Summit on the SDGs since the adoption of the 2030 Agenda, which took place in 2019. On that occasion, Heads of State and Government committed to strengthening institutions for more integrated solutions. In the UN Summit's political declaration called "Gearing up for a decade of action and delivery for sustainable development", Member States committed to proactively develop effective, accountable and transparent institutions at all levels and ensure more responsive, inclusive, participatory and representative decision-making processes. Member States highlighted that they would "strive to equip domestic institutions to better address interlinkages, synergies and trade-offs between the Goals and targets through a whole-of-government approach that can bring about transformative change in governance and public policy and ensure policy coherence for sustainable development."
    - **Goal**

      To assist Member States in strengthening their institutions for more integrated solutions, the United Nations Department of Economic and Social Affairs (UN DESA) – Division for Public Institutions and Digital Government (DPIDG) – has developed a Readiness Assessment on Institutional arrangements for Policy Coherence. The assessment is based on UN DESA's analytical work and the UN Environment Program's draft methodology for Tier II Indicator 17.14.1. UN DESA/DPIDG is the custodian of the Program on Public Administration.
    - **Objectives**

      The objective of this questionnaire is to gather information from UN Member States in preparation of case studies on policy coherence to be included in a UN capacity development training toolkit. The questionnaire is also aimed at supporting government agencies in assessing their institutional readiness to support policy coherence. It is meant to diagnose

[42] Department of Economic and Social Affairs of the United Nations (UNDESA), Readiness Assessment on Institutional Arrangements for Policy Coherence to Implement the 2030 Agenda for Sustainable Development, available at https://unpan.un.org/node/705

the extent to which the current public sector priorities and strategies, rules and regulations, processes and structures, competencies and the mindsets in government enable the implementation of integrated policies at central and local levels.

- **Structure**

  The questionnaire is a tool that contains questions to facilitate a participatory dialogue process among national ministries/agencies (and sub-national levels of government). The assessment is composed of 9 building blocks, which together give an indication of whether and to what extent a government agency has in place mechanisms that effectively enhance institutional arrangements for policy coherence to implement the sustainable development goals.

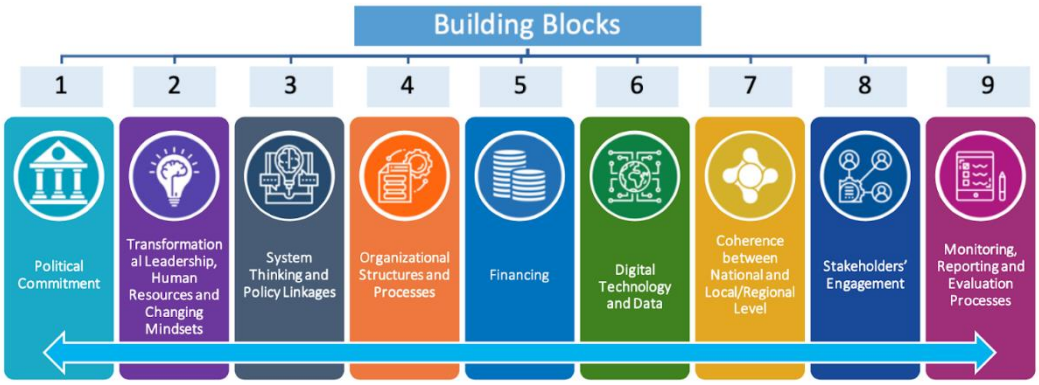


Figure 3.4 The building blocks of the assessment

- ✓ Building Block 1 requires answers based on facts attesting the extent to which a **political commitment** for policy coherence has been institutionalized through legal and normative frameworks in support of the implementation of the national development agenda.
- ✓ Building Block 2 requires answers based on facts regarding **transformational leadership, human resources and changing mindsets** for policy coherence.
- ✓ Building Block 3 requires answers based on facts attesting the **system thinking and policy linkages**: integration of the three dimensions of sustainable development and systematic assessment of policy effects.
- ✓ Building Block 4 requires answers based on facts related to **organizational structures and processes** for inter-ministerial coordination/ integration.
- ✓ Building Block 5 requires answers about **financing** for policy coherence.
- ✓ Building Block 6 requires answers based on facts regarding use of **digital technology and data** for policy coherence.

- ✓ Building Block 7 requires answers based on facts regarding the **coherence between national and local/regional level**.
- ✓ Building Block 8 lists questions related to **stakeholders' engagement** in strengthening policy coherence.
- ✓ Building Block 9 requires answers based on facts regarding **monitoring, reporting and evaluation processes** that support policy coherence.

✧ **Digital Government Readiness Assessment (DGRA) Toolkit: Recent Approaches and Methodologies**[43]

➢ **Background**

Digital Government Readiness Assessment ("DGRA") toolkit, a comprehensive diagnostic tool, aims to help governments at all levels in developing countries assess their readiness towards digital transformation. Through both qualitative and quantitative analyses, it identifies strengths and weaknesses of the current digital government status and proposes future-looking action plans to improve and/or develop a comprehensive national ICT strategy.

The DGRA toolkit has been piloted in several countries (Myanmar, Vietnam, Lebanon, Kyrgyzstan, Uzbekistan, Senegal, etc.) and facilitated strategic policy dialogues with the respective governments. In November 2019, the DGRA team launched an online version of the toolkit, in collaboration with World Bank ITS, to serve as a database for analytics and visualization of the country's relative digital readiness contrasted with other countries. Digital Government Readiness Assessment (DGRA) Toolkit V.31 Guidelines for Task Teams is intended for the task teams who will engage in policy advice on transforming governments through digitization or assessing digital government readiness for Digital Economy.

➢ **Goal**

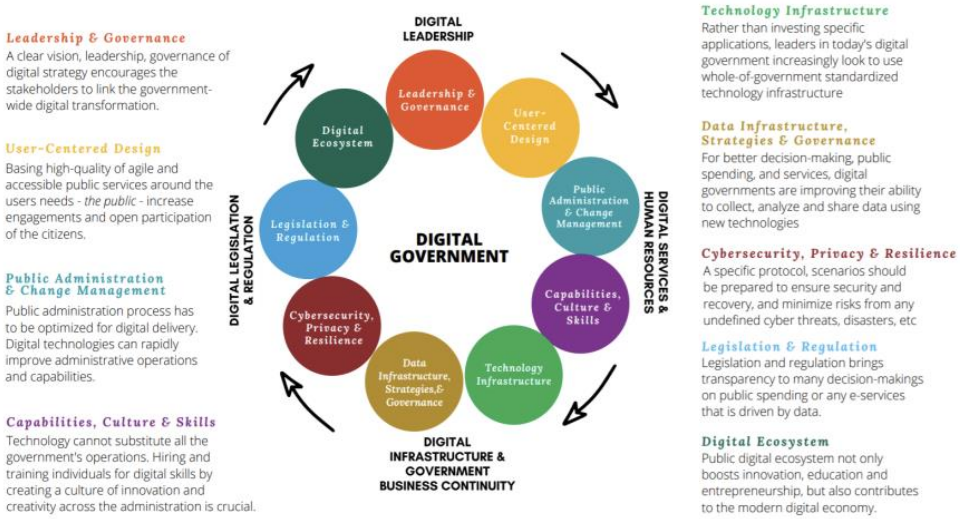
Building an innovative, open, agile and accessible digital government is the first and foremost essential foundation of any digital development, including the establishment of a modern digital economy. Government digitization not only increases administrative efficiency but also brings unprecedented ways to bolster balanced economic growth and facilitates active communications with the public.

➢ **Structure**

The framework of the Digital Government Readiness Assessment methodology derives from research into international best practices and

[43] Digital Government Readiness Assessment Questionnaire, January 2019, Washington, DC. World Bank, available at https://openknowledge.worldbank.org/bitstream/handle/10986/33674/Digital-Government-Readiness-Assessment-DGRA-Toolkit-V-31-Guidelines-for-Task-Teams.pdf?sequence=1&isAllowed=y

views of experts in Digital Government. It is comprised of a comprehensive set of 67 questions and delves into nine core foundations that build open and agile digital government's infrastructure and operations; (i) Leadership & Governance, (ii) User-Centered Design, (iii) Public Administration and Change Management, (iv) Capabilities, Culture and Skills, (v) Technology Infrastructure, (vi) Data Infrastructure, Strategies, and Governance, (vii) Cybersecurity, Privacy and Resilience, (viii) Legislation and Regulation, (ix) Digital Ecosystem.



Source: World Bank DGRA team, 2020

Figure 3.5 Nine pillars of Digital Government Readiness Assessment

✧ PESTLE Analysis[44]

➢ Background

A PESTLE analysis is a tool used to gain a macro picture of an industry environment. PESTLE stands for Political, Economic, Social, Technological, Legal and Environmental factors. A PESTLE analysis allows a strategic and systematic evaluation of a business's prospects, risks, and opportunities in a new environment. PESTEL focuses on analysis of external factors that can impact a project's implementation. It is good for trend identification and offers a general overview of an external context.

➢ Structure

[44] Marketing: PESTLE Analysis, available at https://libguides.library.usyd.edu.au/c.php?g=508107&p=5994242

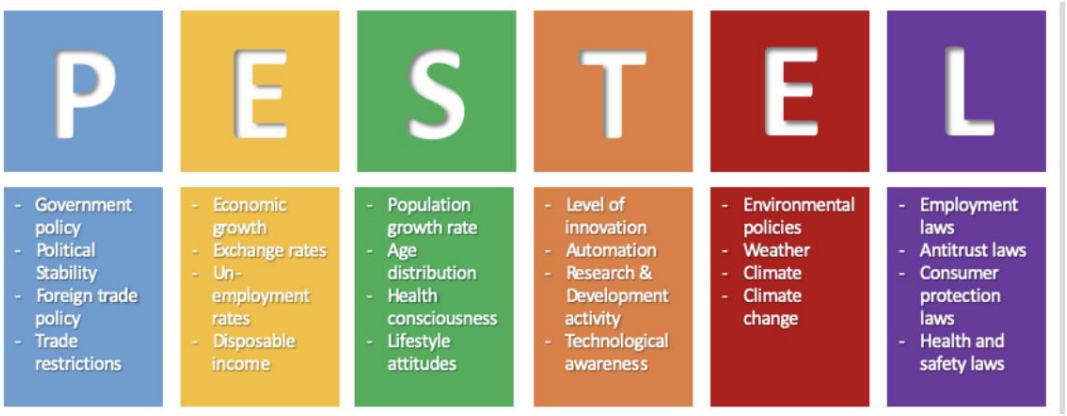


Figure 3.6 The structure of PESTLE analysis

- ✓ Political: Political factors relate to government controls and influences over economy or industry. Government factors may be legislation or economic policies. The political environment can affect an industry through a range of factors, including Trade tariffs, Conflicts, Taxation, Fiscal policies.
- ✓ Economic: Economic factors a have direct impact on a company's long-term prospects in a market. The economic environment may affect how a company prices their products or influence the supply and demand model. Environmental factors can include Inflation rate, Disposable income, Unemployment rate, Interest rates, Foreign exchange rates, Economic growth patterns.
- ✓ Social: Social factors, such as demographics and culture can impact the industry environment by influencing peak buying periods, purchasing habits, and lifestyle choices. Society is important as people's culture and lifestyle can influence when, where and how they are likely to engage with products and services. Social factors include Religion and ethics, Consumer buying patterns, Demographics, Health, Opinions and attitudes, Media, Brand preferences, Education.
- ✓ Technological: Technological factors may have a direct or an indirect influence on an industry. While some industries will be more affected by technology than others, innovations in technology may affect the market and consumer choices and buying power. Technological factors can include Automation, Technological development, Patents, Licensing, Communication, Information technology, Research and Development, Technological awareness.
- ✓ Legal: Legal factors may affect both the internal and external environment of a company. The legal and regulatory environment can affect the policies and procedures of an industry, and can control employment, safety and regulations. Legal factors can include Employment laws, Consumer protection, Industry specific regulations, Regulatory bodies, Environmental regulations.

- ✓ Environmental: Environmental factors include all those relating to the physical environment and to general environmental protection requirements. While the environment is more important to some industries, such as tourism, agriculture or food production, these factors may influence a range of different industries and are worth being aware of. Environmental factors include Climate, Geographical location, Stakeholder and consumer values, Environmental offsets, Weather, Global climate change.

✧ **SWOT analysis**

➢ **Background**

A SWOT (Strength, Weaknesses, Opportunities, Threats) analysis is useful as it identifies a deeper layer including both positive and negative potentials. It is especially useful as it includes both internal factors (strengths and weaknesses) and external factors (opportunities and threats).

➢ **Structure**

SWOT includes:

Internal characteristics that are factors which contributed to the current situation of the actor under research

- ✓ Strengths: advantageous characteristics that arise internally and contribute to achieving the project's objectives
- ✓ Weaknesses: disadvantageous characteristics that arise internally and are unfavorable for achieving the project's objectives

External factors that may affect the actor and project under question

- ✓ Opportunities: advantageous elements in the external environment that contribute to achieving the project's objectives
- ✓ Threats: disadvantageous elements in the external environment that are unfavorable for achieving the project's objectives

● **Summarizing tools that could be used in situation analysis**

Table 3.2 A summary of tools that could be used in situation analysis

Tools	Purposes	Key elements
Star profiling model	It is used in overall diagnostic analysis. It can analyze government transformation capacities and leadership capacities.	(1) The commitment of government leaders at the highest level; (2) A broad spectrum of stakeholders being engaged; (3) Involving individuals and members of civil society
Nine key pillars for digital government transformation	This is a diagnostic framework. The features highlighted are grounded in empirical analysis and case studies. It can help governments identify where they are with regard to each of the key pillars for digital	(1) Vision, leadership, mindsets; (2) Legal and institutional framework; (3) Organizational setup and culture; (4) Systems thinking and integration; (5) Data management; (6) ICT infrastructure, affordability & access;

	government transformation.	(7) Resources; (8) Capacity of capacity developers; (9) Societal capacities
Digital Government Capability Assessment (DGCA)	This tool can be used at the inter-institutional level. It can help civil servants build new understanding of the level of digital government capability that exists in a country as a foundation for continued efforts to innovate and lead in the area of digital government and public service delivery.	The DGCA workshop consists of a self-assessment and a collaborative assessment with a set of six dimensions or "enablers": (1) leadership, (2) strategy, (3) governance, (4) legal, (5) technology, and (6) professional and workforce development.
The UN DESA Readiness Assessment on Institutional Arrangements for Policy Coherence	The questionnaire is a tool that contains questions to facilitate a participatory dialogue process among national ministries/agencies and sub-national levels of government. It is used to gather information from UN Member States in preparation of case studies on policy coherence to be included in a UN capacity development training toolkit, and to support government agencies in assessing their institutional readiness to support policy coherence.	The assessment is composed of 9 building blocks, namely (1) political commitment, (2) transformational leadership, human resources and changing mindsets, (3) system thinking and policy linkages, (4) organizational structures and processes, (5) financing, (6) digital technology and data, (7) coherence between national and local/regional level, (8) stakeholder's engagement, (9) monitoring, reporting and evaluation processes.
Digital Government Readiness Assessment (DGRA)	The DGRA team launched an online version of the toolkit to serve as a database for analytics and visualization of the country's relative digital readiness contrasted with other countries. It is used to help governments at all levels in developing countries assess their readiness towards digital transformation.	It is comprised of 67 questions and delves into nine core foundations: (1) leadership & governance, (2) user-centered design, (3) public administration and change management, (4) capabilities, culture and skills, (5) technology infrastructure, (6) data infrastructure, strategies, and governance, (7) cybersecurity, privacy and resilience, (8 legislation and regulation, and (9) digital ecosystem.

PESTLE Analysis	This tool is good for trend identification and offers a general overview of an external context. It is used to gain a macro picture of an industry environment to analyze external factors that can impact a project's implementation.	PESTLE stands for Political, Economic, Social, Technological, Legal and Environmental factors.
SWOT analysis	It pays attention to both internal and external factors. It is a business strategy tool to assess how an organization compares to its competition.	This assessment includes strengths and weaknesses as internal characteristics, and opportunities and threats as external factors.

3.3 Case studies

In this section, we will learn about several cases, from developed countries to developing countries, from those with high scores in digital governance to those that are facing challenges. The situations are different in different countries, comparing them to better understand different systems based on the social background and situation.

- **Case studies in developed countries**
  - ✧ **[Case 3.1] United Kingdom**[45]

    With the help of tools such as GOV.UK Design System, GOV.UK Notify, and GOV.UK Pay, both central and local governments have been able to ensure speedy service delivery during the pandemic. For instance, by adding GOV.UK Pay's payment link functionality, the UK Home Office was able to create an online payment portal within weeks to support payments that previously required the staff to be present onsite.
  - ✧ **[Case 3.2] Australia**[46]

    Government of South Australia developed a toolkit which contains four essential parts. The toolkit contains both metrics-based tools, as well as road maps that detail the ways forward in response to the organizational needs.
  - ✧ **[Case 3.3] Singapore**[47]

    Singapore launches a government initiative called Virtual Singapore, which is a smart city project that incorporates IoT and M2M technologies to manage urban infrastructure and resources. The project collects data from thousands of sensors installed throughout the city, which helps to improve efficiency and reduce costs.
- ♦ **Case studies in developing countries**

[45] UK Digital Strategy 2017, UK Department for Digital, Culture, Media & Sport, 1 March 2017, available at https://www.gov.uk/government/publications/uk-digital-strategy/uk-digital-strategy

[46] Digital transformation toolkit, Government of South Australia, available at https://www.dpc.sa.gov.au/responsibilities/ict-digital-cyber-security/toolkits/digital-transformation-toolkit

[47] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2022, pp.155-156, 183.

✧ **[Case 3.4] Romania**[48]

Romanian Ministry of Labour used robotic process automation (RPA) to distribute direct payments to self-employed workers impacted by COVID-19. Of the 285,000 claims processed, 96% were automated, with each claim taking 36 seconds as opposed to 20 minutes when processed manually.

✧ **[Case 3.5] Brazil**[49]

Brazil has made significant progress in improving access to the Internet in recent years. Yet, 23% of the adult population had never used the Internet in 2018. Brazilian firms, particularly micro-enterprises, lag behind those in OECD countries in their use of digital technologies.

✧ **[Case 3.6] South Africa**[50]

South Africa is still on the list of developing countries and it's economy has been further strained by COVID-19, so for businesses operating in the current landscape, digital transformation is a means of survival. Adopting digital technology, along with a digital mindset throughout the organization, allows businesses to recover as well as respond to changes quicker, as it enhances, as well as speeds up processes and enables agility. "Within South Africa, The National Development Plan 2030 (NDP) that was published in 2012 emphasizes how ICT will underpin the development of connected information society and a vibrant knowledge economy that is more inclusive and prosperous."

3.4 Key messages

- ✧ A situation analysis requires an understanding of national history, social norms, values, beliefs, and attitudes and views surrounding digital technologies.
- ✧ A situation analysis also involves an assessment of the leadership's commitment to digital government and the state of public governance and public administration.
- ✧ A situation analysis should take into account future national development goals.
- ✧ The star profiling approach provides a framework for analysing government transformation capacities and leadership capacities—an essential aspect of an effective digital government transformation strategy.
- ✧ Nine key pillars for digital government transformation provides a diagnostic framework that can help Governments assess the current status.
- ✧ Digital Government Capability Assessment (DGCA) is used to develop an understanding of current capability and inform decision making about where investments are needed to increase innovation and digital government capacities leading to improvements in public service delivery.

Quiz/exercises:

1. Conduct a quick assessment using Digital Government Capability Assessment and

[48] Ivona Stoica, etc. A Better Integration of Industrial Robots in Romanian Enterprises and the Labour Market, MDPI, pp.1-26, available at https://www.mdpi.com/2076-3417/12/12/6014/pdf

[49] Going Digital in Brazil, available at https://www.oecd-ilibrary.org/sites/e9bf7f8a-en/index.html?itemId=/content/publication/e9bf7f8a-en#:~:text=Brazil%20has%20made%20significant%20progress,their%20use%20of%20digital%20technologies.

[50] National Development Plan 2030, National Planning commission, Republic of South Africa, pp.190, available at https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf

then discuss your country's current situation of digital transformation capacities (https://unpan.un.org/capacity-development/otc/self-assessment-tools/digital-government-capability-assessment).
2. What is the EGDI (OSI, HCI, and TII) score of your country as assessed by the UN E-Government Survey, and what is the ranking category of your country (low, middle, high, very high)? (Please check the ranking table in UN E-Government Survey 2022), and then discuss why you think some countries have strong performance while others face challenges.
3. What are the opportunities, challenges, and capacity gaps of digital government transformation in your country by applying the star profiling model?

Lessons learned and reflections:
1. What is the situation analysis?
2. What is the Star profiling model?
3. What are the nine key pillars for digital government transformation?
4. What are the six dimensions of Digital Government Capability Assessment (DGCA)?
5. What are the six factors in PESTLE Analysis?
6. Which self-assessment tool in the situation analysis is the most useful in your country? Why?

Chapter 4 Envisioning to advance digital government transformation for accelerating implementation of the Sustainable Development Goals

Conducting the situation analysis helps identify our current situation, and we need to know the way forward. The second building block of a holistic approach to digital government transformation involves undertaking an envisioning exercise that can help define where the country intends to go and how digital government transformation can contribute to sustainable national development. In other words, "where do we want to go next?". This chapter examines what an envisioning exercise for digital government transformation is and highlights some useful tools and cases for envisioning.

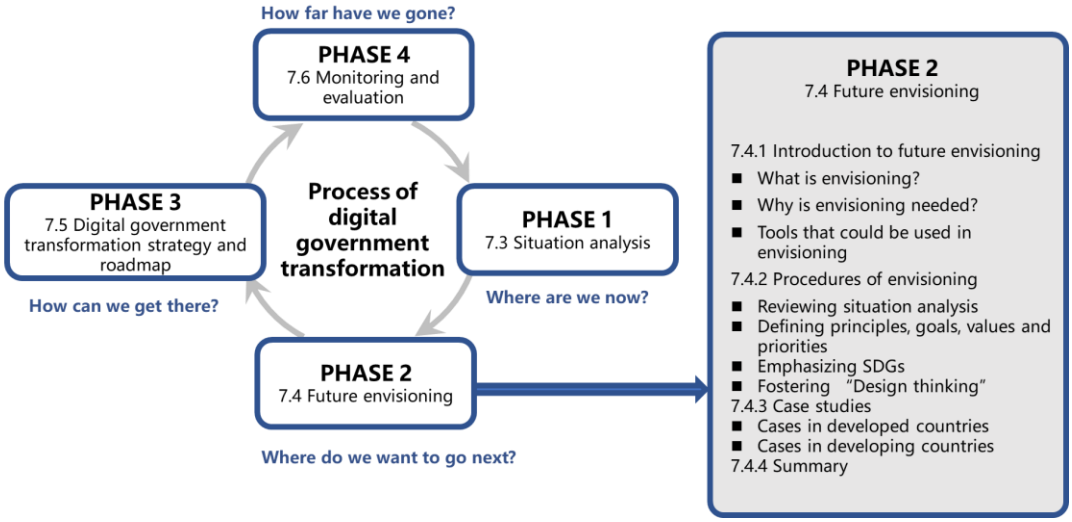


Figure 4.1 The overall structure of Chapter 4

4.1 Introduction to future envisioning

- **What is envisioning?**
  - ✧ Envisioning is a tool you use to establish an image of what you want your organization or project to look like in the future.
  - ✧ A way to stretch your thinking. Creating an envisioning is a way to stretch your organization and establish an envisioning of a "preferred state." Growth in terms of size or scope of operations may form part of an envisioning but doesn't always constitute an envisioning. The circumstances facing your group need to inform the envisioning. Being realistic is important, as is remembering the concept of stretch. Ultimately, the envisioning should guide or frame the work that all participants will need to do in order to accomplish the desired outcomes
  - ✧ Various methods. The task of envisioning can be completed in several ways. Regardless of which method you use, your main focus is to develop

ideas. You must get everyone to share their ideas, reach a common understanding, build consensus, and craft a meaningful envisioning statement.

- ✧ The envisioning of future development needs should revolve around a country's strategic development objectives and not around ICT and digital government. Digital technologies themselves do not deliver public services. They are a tool that can be leveraged when there is a political commitment to transformation, a comprehensive digital government transformation strategy and road map, adequate capacities to effect change, and an implementation plan. The envisioning exercise should include defining governance principles, national goals, digital government values, and priorities for the short and long term.

- **Why is envisioning needed?**
  - ✧ Developing shared goals. Envisioning statements are often very good at getting everyone on the same page. The process of constructing an envisioning statement involves discussions and interactions that will help the group reach consensus on ultimate goals.
  - ✧ Reflecting interests, needs, and skills. Remember that envisioning statements should reflect your interests and be attuned to their specific needs and capabilities. Otherwise, the likelihood of accomplishing the envisioning will be greatly reduced.
  - ✧ Team building exercise. In short, a well-crafted envisioning statement that has buy-in from everyone involved is often a crucial first step in the beginning of any group project.

    Future envision is not around ICT and digital technologies. They do not deliver public services. They are a tool that can be leveraged. The envisioning of future development of government digital transformation should revolve around a country's strategic development objectives.

- **Tools that could be used in envisioning**
  - ✧ **Scenario building**: This is a process of designing a hypothetical situation in a way that helps you predict the consequences of decisions and actions. For example, Massachusetts has proposed legislation to require all state agencies to consult a database of outstanding arrest warrants when a citizen is seeking a service or benefit. Officials could examine the possible consequences of such a new policy by creating a scenario. This scenario would assume reasonable values for the number of times the policy would generate arrests of various types and compute the increased demand on jails or law enforcement officers.
  - ✧ **Forecasting**: This tool is also used to predict future events, but it uses calculations based on historical data. Forecasting typically uses data that have been collected on some events over time and uses them to project trends into the future. Populations, crime statistics, and budgets often have ample historical data for forecasting. The mathematical models used in forecasting may take into account the forces that influence trends to adjust

the predictions.

- ✧ **Environmental scanning**: Monitor important events in the surrounding environment to find out what will affect the future.

4.2 Procedures of envisioning

- **Reviewing situation analysis**

  Envisioning should be based on the outcome of situation analysis. Knowing your capacity level, capacity gaps, challenges and opportunities is the basis for setting future goals and plans

- **Defining principles, goals, values and priorities**
  1. Governance principles: The full realization of the Sustainable Development Goals depends largely on the principles of effective governance. Governance principles are intended to clarify the governance agenda in order to build effective, accountable and inclusive institutions at all levels.
  2. National goals: Digital technologies themselves are not the goals. They are just tools to reach the real national goals. What is the ultimate goal that can be achieved with the help of digital government transformation?
  3. Digital government values: What are the things that digital governments emphasize and pay most attention to? While governance principles act as a fundamental guidance, digital government values specifically focus more on how technologies will be used by governments to realize the national goals.
  4. Priorities for the short term: What is the government's short-term priorities and how can digital transformation help?
  5. Priorities for the long term: What is the government's long-term priorities and how can digital transformation help?
- Emphasizing SDGs
  - ✧ Recap 7.1.2: Digital government is intrinsically linked to the development of today's societies and play an important role for the successful achievement of the 2030 Agenda for Sustainable Development and for the implementation of its 17 SDGs.
  - ✧ A good envisioning for digital government transformation can accelerate SDGs. In order to achieve it, the goals for digital government transformation should adhere to SDGs. Principles of effective governance for sustainable development can provide guidance to countries.
    - ➢ 11 Principles of Effective Governance for Sustainable Development developed by The UN Committee of Experts on Public

Administration (CEPA)[51]:

Table 4.3 11 principles of effective governance for sustainable development

Effectiveness		
Competence	**Sound Policymaking**	**Collaboration**
• Promotion of a professional public sector workforce • Strategic human resources management • Leadership development and training of civil servants • Performance management • Results-based management • Financial management and control • Efficient and fair revenue administration • Investment in e-government	• Strategic planning and foresight • Regulatory impact analysis • Promotion of coherent policymaking • Strengthening national statistical systems • Monitoring and evaluation systems • Science-policy interface • Risk management frameworks • Data sharing	• Centre of government coordination under the Head of State or Government • Collaboration, coordination, integration and dialogue across levels of government and functional areas • Raising awareness of the Sustainable Development Goals • Network-based governance • Multi-stakeholder partnerships

Accountability		
Integrity	**Transparency**	**Independent oversight**
• Promotion of anti-corruption policies, practices and bodies • Codes of conduct for public officials • Competitive public procurement • Elimination of bribery and trading in influence • Conflict of interest policies • Whistle-blower protection • Provision of adequate remuneration and equitable pay scales for public servants	• Proactive disclosure of information • Budget transparency • Open government data • Registries of beneficial ownership • Lobby registries	• Promotion of the independence of regulatory agencies • Arrangements for review of administrative decisions by courts or other bodies • Independent audit • Respect for legality

Inclusiveness

[51] United Nations, Economic and Social Council, "Principles of effective governance for sustainable development", Official Records, 2018, available at https://unpan.un.org/sites/unpan.un.org/files/Principles_of_effective_governance_english.pdf

Leaving no one behind	Non-discrimination	Participation	Subsidiarity	Intergenerational equity
• Promotion of equitable fiscal and monetary policy • Promotion of social equity • Data disaggregation • Systematic follow-up and review	• Promotion of public sector workforce diversity • Prohibition of discrimination in public service delivery • Multilingual service delivery • Accessibility standards • Cultural audit of institutions • Universal birth registration • Gender-responsive budgeting	• Free and fair elections • Regulatory process of public consultation • Multi-stakeholder forums • Participatory budgeting • Community-driven development	• Fiscal federalism •Strengthening urban governance •Strengthening municipal finance and local finance systems •Enhancement of local capacity for prevention, adaptation and mitigation of external shocks • Multilevel governance	• Sustainable development impact assessment • Long-term public debt management • Long-term territorial planning and spatial development • Ecosystem management

- ✓ Competence: To perform their functions effectively, institutions are to have sufficient expertise, resources and tools to deal adequately with the mandates under their authority.
- ✓ Sound policymaking: To achieve their intended results, public policies are to be coherent with one another and founded on true or well-established grounds, in full accordance with fact, reason and good sense
- ✓ Collaboration: To address problems of common interest, institutions at all levels of government and in all sectors should work together and jointly with non-State actors towards the same end, purpose and effect
- ✓ Integrity: To serve in the public interest, civil servants are to discharge their official duties honestly, fairly and in a manner consistent with soundness of moral principle
- ✓ Transparency: To ensure accountability and enable public scrutiny, institutions are to be open and candid in the execution of their functions and promote access to information, subject only to the specific and limited exceptions as are provided by law
- ✓ Independent oversight: To retain trust in government, oversight agencies are to act according to strictly

professional considerations and apart from and unaffected by others

- ✓ Leaving no one behind: To ensure that all human beings can fulfil their potential in dignity and equality, public policies are to take into account the needs and aspirations of all segments of society, including the poorest and most vulnerable and those subject to discrimination
- ✓ Non-discrimination: To respect, protect and promote human rights and fundamental freedoms for all, access to public service is to be provided on general terms of equality, without distinction of any kind as to race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth, disability or other status
- ✓ Participation: To have an effective State, all significant political groups should be actively involved in matters that directly affect them and have a chance to influence policy
- ✓ Subsidiarity: To promote government that is responsive to the needs and aspirations of all people, central authorities should perform only those tasks which cannot be performed effectively at a more intermediate or local level
- ✓ Intergenerational equity: To promote prosperity and quality of life for all, institutions should construct administrative acts that balance the short-term needs of today's generation with the longer- term needs of future generations
- ✓ Envisioning workshops and tools can be beneficial for achieving consensus on a desired future state of affairs. Among them, the solution-based "design thinking" is one of the most recommended methodologies, with a purpose to provide all professionals with a standardized innovation process to develop creative solutions to problems.[52]

- **Fostering "Design thinking"**

  - ✧ What is "Design thinking"?
    - ➢ "Design thinking" methodologies allow people to solve almost all kinds of problems by empathizing with users, defining needs, ideating, prototyping solutions, and testing them.
    - ➢ Having a human-centered core. When employing design thinking, you're pulling together what's desirable from a human point of view with what is technologically feasible and economically viable.

[52] Harvard Business School Online, What is design thinking & why is it important, available at https://online.hbs.edu/blog/post/what-is-design-thinking#:~:text=While%20design%20thinking%20is%20an,%E2%80%94design%2Drelated%20or%20not

- It is an innovative problem-solving process rooted in a set of skills. Compared with the traditional solution, it leaves more space between the issue and the possible solutions and require necessary creative brainstorming (there are no so-called standard solutions).

✧ What is design thinking good for?

- Design thinking helps you better understand the unmet needs of the people.
- Design thinking may reduce the risks associated with launching new ideas, products, and services.
- Design thinking can generate solutions that are revolutionary, not just incremental.
- Design thinking helps you learn and iterate faster.

● What specific steps are involved in "Design thinking"? [53]

- At the high level, the steps involved in the design thinking process are simple: first, fully understand the problem; second, explore a wide range of possible solutions; third, iterate extensively through prototyping and testing; and finally, implement through the customary deployment mechanisms. And please remember design thinking is taught in a linear sequence, but practically it is not always linear.
- Illustration of the five steps of design thinking:[54]

[53] IDEO. What is Design Thinking?, available at https://www.ideou.com/blogs/inspiration/what-is-design-thinking
[54] Rubén Aller. Design Thinking en Sanidad, available at https://lawebdeelectromedicina.com/2017/09/13/desing-thinking-sanidad/

Figure 4.2 Five steps of design thinking

- ✓ Empathize—Research Your Users' Needs Based on Empathy: set aside your own assumptions about the world and gain real insight into users and their needs
- ✓ Define—State Your Users' Needs and Problems: analyze your observations and synthesize them to define the core problems you and your team have identified
- ✓ Ideate—Challenge Assumptions and Create Ideas: start thinking outside the box and brainstorming based on previous steps, and look for alternative ways to view the problem and identify innovative solutions to the problem statement you've created
- ✓ Prototype—Start to Create Solutions and Identify the Best Possible Solution
- ✓ Test—Try Your Solutions Out: return to previous stages to make further iterations, alterations and refinements – to find or rule out alternative solutions; you can also craft your story to inspire others toward action[55]

[55] Interaction Design Foundation (IxDF). What is Design Thinking?, available at https://www.interaction-design.org/literature/topics/design-thinking

4.3 Case studies

This section shows examples and good practices of finished and ongoing digital transformation plans to demonstrate how policymakers can use envisioning and "design thinking" methodology to set goals and make plans.

- ✧ Cases in developed countries:
  - ➢ **[Case 4.1] Singapore**[56]

    In 2014, Singapore launched the Smart Nation initiative to build an information-driven, intelligent nation with a "citizen-centric" holistic government. This initiative was mainly launched by GovTech (Government Technology Department) to collect and analyze data through nationwide sensors to better grasp real-time information on various project matters (e.g. traffic conditions, and air quality). Based on this, the Singapore government has been at the forefront of digital government development in the world through innovative practices in the areas of top-level design, data management, and citizen engagement.
  - ➢ **[Case 4.2] Los Angeles**[57]

    The SmartLA 2028 Strategy is a concise summary of Los Angeles' vision, the approach to becoming a smart city, and the roadmap to 2028. The strategy proposes that a smart city is not just software or hardware installed in the city, but an integrated smart urban ecosystem comprised of multiple elements that must be integrated to function together to serve the public customer experience. In this strategy, Los Angeles proposes five components of a smart city: smart city infrastructure, smart city data tools and facilities, smart city data services and applications, smart city connectivity and digital inclusion, and smart city governance. This strategy also included some good practices in Los Angeles.
- ✧ Cases in developing countries:
  - ➢ **[Case 4.3] China[58] and Shanghai[59]**

    China is one of the seven Asian countries that joined the very high EGDI group for the first time in 2020. The country's progress can be attributed in part to the implementation of comprehensive digital government policies and initiatives at both the national and subnational levels. A firm commitment to the development of "smart cities" first appeared in the Report on the Work of the Government in

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[56] Smart Nation Singapore, available at https://www.smartnation.gov.sg/
Singapore Digital Government Journey, available at https://www.tech.gov.sg/singapore-digital-government-journey/REALISING THE iN2015 VISION. available at https://www.imda.gov.sg/-/media/imda/files/about/resources/realisingthevisionin2015.pdf

[57] City of Los Angeles, SmartLA 2028 Smart City Strategy, available at https://ita.lacity.org/sites/g/files/wph1626/files/2021-05/SmartLA2028%20-%20Smart%20City%20Strategy.pdf

[58] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2022, pp.50

[59] Kai Yu, The "1+1+3+3" policy framework for Shanghai's urban digital transformation has been initially established, available at https://www.thepaper.cn/newsDetail_forward_16253754

2015, and as developing digital government is an important part of this initiative, municipalities have been racing to set up their digital government portals.

Shanghai's city-level digital transformation has a policy framework which can be summarized as "1+1+3+3": one opinion on digital government transformation; one 14th five-year-plan on digital transformation; three policy actions (Shanghai Data Regulation, promotion policies, and policy on data exchange infrastructure); three-year plan in three fields: economy, society, and governance.

- **[Case 4.4] Seychelles**[60]

  In Seychelles, significant digital transformation has taken place since the beginning of the COVID-19 pandemic. As highlighted by the Vice President of the Republic of Seychelles, the country has used the digitalization momentum created by the pandemic to introduce innovative changes in the education and public administration systems, taking the country one step closer to realizing the Goals set out in the 2030 Agenda. Digital transformation in the country has not reached its full potential, largely due to the slow speed and high cost of Internet services; however, the Government has been working with telecommunications services to extend Internet accessibility to more segments of the population.

- **[Case 4.5] Cambodia**[61]

  Cambodia is actively engaged in laying a strong foundation for digital transformation. In 2019, the Government adopted the E-Commerce Law and the Consumer Protection Law to guarantee security and fair competition in the electronic market. Draft legislation on information technology crimes, cybersecurity and access to information has also been drawn up to prevent and address cybercrime and ensure freedom of information. This year, the Government has committed to expanding digital development under the Cambodian Digital Government Policy 2022-2035, which aligns with the SDGs and the Digital Economy and Society Policy Framework 2021-2035. The National Council for Digital Economy and Society, one of the most esteemed institutions in the country, is responsible for implementing the latter strategy and has been selected to lead the e-government innovation process.

- **[Case 4.6] Armenia: aligning public administration priorities with SDGs**[62]

[60] Seychelles, Accelerating digital transformation in challenging times, message from the Vice President of the Republic of Seychelles on World Telecommunication and Information Society Day, 17th May 2021, available at https://www.ict.gov.sc/documents/2021/WTISD_2021_VP_message.pdf

[61] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2022, pp.78.

[62] National Electronic Health Operator, E-health in Armenia (2022), available at https://corporate.armed.am/en/about-system/ehealth-in-armenia; Armenia, National pathway for food systems

Armenia has been pursuing its Digitalization Strategy for 2021-2025, whose strength derives to some extent from its alignment with both the Public Administration Reform strategy and the SDGs. With support from the World Bank, e-government innovation projects have been launched this year, but some of the digital transformation initiatives developed to meet the objectives set out in the 2030 Agenda have already been undertaken. The E-Health in Armenia project, now in the implementation phase, provides medical professionals with up-to-date digital records and information on patient health, contributing to time and cost optimization in the health-care sector and allowing Armenia to move closer to achieving SDGs 3 and 10. Digitalization in the agriculture sector has also begun, with the Government using drone imagery and satellite technology to collect real-time data and statistics that can guide decision-making in areas relating to SDGs 2 and 8. One of the next steps is to develop an e-justice system that will contribute to the achievement of SDG 16.

4.4 Key messages

- ✧ Use of digital technologies in government should support the overall national vision; a diagnostic analysis can help Governments identify the purpose of digital government transformation.
- ✧ Envisioning is a tool you use to establish an image of what you want your organization or project to look like in the future.
- ✧ The envisioning of future development needs should revolve around a country's strategic development objectives and not around ICT and digital government.
- ✧ A good envisioning for digital government transformation can accelerate SDGs.
- ✧ "Design thinking" methodologies allow people to solve almost all kinds of problems by empathizing with users, defining needs, ideating, prototyping solutions, and testing them.

Quiz/exercises:

1. Check the national development plan or the equivalent in your country to see whether digital government transformation is part of the plan and how it relates to SDGs. Then, discuss how you would like to improve this plan based on the results of the situation analysis.
2. Define the governance principles, national goals, digital government values, and short and long-term priorities for your country or city with reference to the result of the situation analysis and the principles of SDGs.

transformation in support of the 2030 Agenda, Food Systems Summit 2021 Dialogues, available at https://summitdialogues.org/wp-content/uploads/2021/09/Armenia_National-Pathway_2021_En.pdf; World Bank, Armenia to improve public sector performance through digital solutions, with World Bank support, press release, 3 March 2022, available at https://www.worldbank.org/en/news/pressrelease/2022/03/03/armenia-to-improve-public-sector-performance-through-digital-solutions-with-world-bank-support.

Lessons learned and reflections:

1. What is envisioning?
2. Which tools could be used for future envisioning?
3. Why is it necessary to integrate SDGs into a country's national development plan and future envisioning of digital government transformation?
4. What specific steps are involved in “Design thinking”?

Chapter 5 Developing a strategy and roadmap for digital government transformation and capacity development

In previous chapters, we have mainly focused on situation analysis and envisioning. Once a country's needs, goals, principles, and priorities have been identified, the strategy and road map for digital government transformation needs to be built. The third building block of a holistic approach to digital government transformation is building strategy and roadmap, which is "How can we get there?". This chapter explores the purpose and content of a national strategy for digital government transformation. It highlights the critical importance of aligning the digital government transformation strategy with a country's national development strategy and with local-level strategies, as well as the capacities at the institutional, organizational, individual, and societal levels.

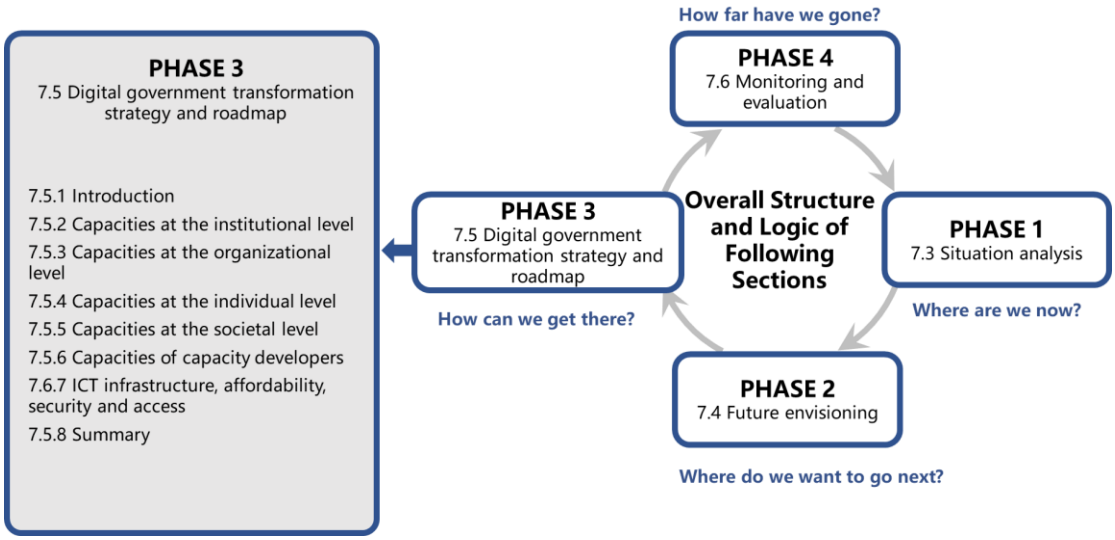


Figure 5.1 The overall structure of Chapter 5

5.1 Introduction to strategy and roadmap for digital government transformation

- **What is the strategy and roadmap for digital government transformation?**
  - ✧ National strategy for digital government transformation

    An effective national strategy for digital government transformation identifies the overall purpose of digital government for that country, how it relates to the country's SDG priorities, its key development objectives, and how it will benefit people. It also specifies how it is aligned with subnational-level strategies and places emphasis on both "leaving no one offline" and "leaving no one behind". The strategies of the most digitally advanced countries also emphasize e-

participation, digital inclusion, and the digital-first, digital-by-default, digital-by-design, and mobile-first principles, as well as the once-only (data) principle and the use of new technologies such as AI, blockchain, and big data. Aligning the national digital government transformation strategy with local-level strategies

✧ Aligning the national digital government transformation strategy with local-level strategies

For effective and inclusive digital government transformation to occur, it is essential for countries to align their national digital strategy and implementation road map with local and other subnational strategies and plans. It is also important to involve local authorities in the design of a national digital strategy and to avoid top-down approaches, which often result in a lack of implementation of the digital strategy at the local level and a low uptake of digital services.

Roadmap are aligned with strategic objectives at the subnational level16 and reflect the Government's commitment to use and explore new, emerging, and frontier technologies such as blockchain, big data, and secure cloud systems to deliver better services for people. Principles of effectiveness, inclusiveness, accountability, trustworthiness, and openness direct how the Government applies these technologies.

Strong emphasis is placed on approaches that involve people in the design and delivery of government policies, programmes and services.

✧ Road map and implementation plan

- A country's road map for digital government transformation should be built upon key pillars that can help promote effective, accountable, and inclusive digital government.
- Nine key pillars as focal points for digital government transformation

1.	**Vision, leadership and mindsets:** Strengthen transformational leadership, build digital capacities, and change mindsets at the individual and institutional levels.
2.	**Institutional and regulatory framework**: Establish a comprehensive legal and regulatory framework for the development of an integrated institutional ecosystem.
3.	**Organizational set-up and culture:** Transform the organizational set-up and culture.
4.	**Systems thinking and integration**: Promote systems thinking and the development of integrated approaches to policymaking and service delivery.
5.	**Data governance**: Ensure the strategic and professional management of data to address data access and use priorities and enable data-driven policymaking.
6.	**ICT infrastructure and affordability and access to technology:** Provide access to high-speed broadband Internet and safe and secure access to new technologies for all.
7.	**Resources:** Mobilize resources and align priorities, plans and budgeting, including through public-private partnerships.
8.	**Capacities of capacity developers**: Enhance the capacities of schools of public administration and other capacity-building entities and mechanisms.
9.	**Societal capacities:** Develop capacities at the societal level to bridge the digital divide and ensure that no one is left behind.

Source: 2020 United Nations E-Government Survey.

Figure 5.2 Key pillars of a road map for digital governance transformation and digital capacity development

- **Principles for developing a strategy and roadmap**
  - ✧ An implementation road map for digital government transformation should always be aligned with and integrated into the Government's overall development strategy.
  - ✧ There should also be alignment with subnational strategies to ensure that local perspectives are incorporated into national development plans. The digital government transformation road map should include actions to transform the government into an open, collaborative, interconnected organization structured around an architecture of integrated services.
  - ✧ The road map may also include actions aimed at facilitating public-private partnerships and enhancing collaboration for public value co-creation. It is important for the road map to specify how resources will be mobilized for the implementation of digital government transformation; there should be a solid connection between institutional mandates, services to be delivered, mechanisms to be employed, channels to be used, and respective budgets.
  - ✧ A road map must include short-term, medium-term and long-term projects that are aligned with the digital government transformation vision. It is advisable to start with projects that can be completed relatively quickly and easily, as demonstrated progress and success will encourage public buy-in and support for the transformation process.
- **Tools that could be used in developing a strategy and roadmap**
  - ✧ The UN DESA DiGIT4SD toolkit

    The UN DESA DiGIT4SD toolkit can help countries—especially least developed countries, landlocked developing countries and small island

developing States—develop and implement digital government strategies and initiatives in support of SDG implementation. The toolkit includes measures for monitoring and review during both the planning and the implementation phases.[63] It shares tracking methods for measuring the implementation of relevant policies and activities and evaluation and audit methods for assessing SDG implementation and the achievement of targeted objectives.

Here we just introduce some parts of the UN DESA DiGIT4SD toolkit: 1) Key Factors necessary for the development of digital government; 2) Environmental analysis; 3) Mapping stakeholders.

- Key Factors necessary for the development of digital government

  In developing digital governments, political, financial, and organizational conditions, cultural context, availability and capacity of human capital, quality of communication infrastructure, and data and information systems are some key factors that need to be evaluated. These factors will affect the adoption and progress of e-government development, and its sustainability.

  - ✓ Political Conditions

    - Commitment to e-government and good governance
    - Legislative framework
    - Awareness of the political values of e-government
    - Leadership skills
    - National identity and perception of government
    - Citizens' participation in government affairs

  - ✓ Organizational Conditions

    - Administrative structures and legacies
    - Public administration reforms
    - Civil service reforms
    - Central coordination and support unit
    - Policy coordination in inter-governmental relations

  - ✓ Cultural Context & Human Capital

    - Culture, traditions, and languages
    - Gender inequality
    - Education levels

[63] United Nations Economic and Social Commission for Asia and the Pacific, Interregional Capacity Development Workshop on Digital Government Implementation Toolkit for Sustainable Development (DIGIT4SD) (2019), available at https://www.unescap.org/events/ interregional-capacity-development-workshop-digital-government-implementation-toolkit

- IT literacy and the number of online users
- IT facilities and programs
- Culture of information and knowledge sharing
- Prevailing organizational culture
- Attitude and adaptability to change, especially in public administration.
- Managerial skills in the public sector
- Customer service and attitude towards citizens

✓ Financial Conditions

- Resource allocation process
- National income structure.
- Access to alternative financing mechanisms
- Partnerships with the private sector and other role players
- Access to capital markets
- Mechanisms for venture investments
- Available financial resources

✓ Communication Environment

- Citizen ‘s awareness and understanding of ICT and e-government initiatives
- Communication culture and channels
- Information and knowledge sharing practices

✓ Technological Infrastructure

- (Tele)communications infrastructure
- Penetration rates of telecommunication technologies
- Urban versus rural: demographic/geographic bias
- Software and hardware (legacy systems)
- IT standards

✓ Data & Information Systems

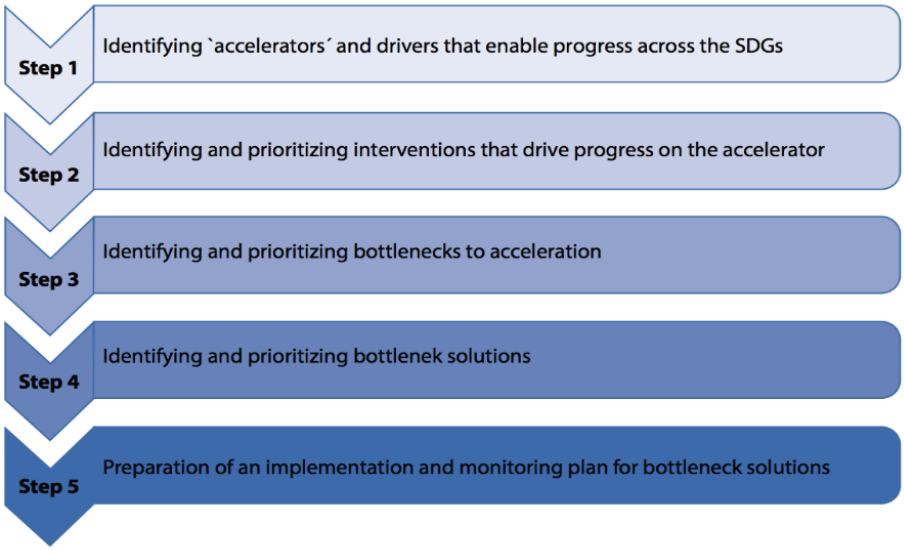
- Legacy of data processing, management information, and decision support systems
- Available and accessible data and information
- Data collection procedures and information standardization
- Data quality and security
- Capacity to analyse data and utilize information.
- Capacity to direct the flow of information as part of the decision-making process

- Environmental Analysis

  To identify relevant SDG target areas within a country for development of digital government initiatives, an analysis of an organization and/or its environment is essential. An environmental analysis helps setting the scene at the start of a project, creating an action plan, decision-making as it offers additional perspectives, and getting a larger team on the same page when the analysis is conducted in a group setting.

  - ✓ PESTEL and SWOT are forms of environmental analyses that are easily applicable to many situations. They include the analyses of political, economic, social, technical, environmental, and legal factors (PESTEL) and the analyses of strengths, weaknesses, opportunities, and threats (SWOT). They are not only efficient forms of analyses to highlight key issues but can also influence the final outcomes of a project. The combination of both tools will produce an all-encompassing overview of the environment your organization or government is operating in and automatically highlights areas that are in need of focus.
  - ✓ Another tool for the identification of target areas includes the UNDP's SDG Accelerator and Bottleneck Assessment (ABA). ABA is a tool which supports countries in their identification of catalytic policy and/or programme areas, or so-called accelerators, that are able to trigger "positive multiplier effects across the SDGs, and solutions to bottlenecks that impede the optimal performance of interventions that enable the identified accelerators" (UNDP 2017).

    ABA includes various steps that are intended to help experts and country teams in identifying relevant areas. The tool consists of five systematic steps:



Source: ABA tool steps (UNDP 2017)

Figure 5.3 The steps of Accelerator and Bottleneck Assessment

- Mapping stakeholders

UNESCAP's stakeholder mapping tool categorizes actors into four segments. As per this framework, all actors are divided into organisations (which can be the relevant ministry), co-hosts (i.e. NGOs), interest groups, and the public (i.e. informal leaders in the community).

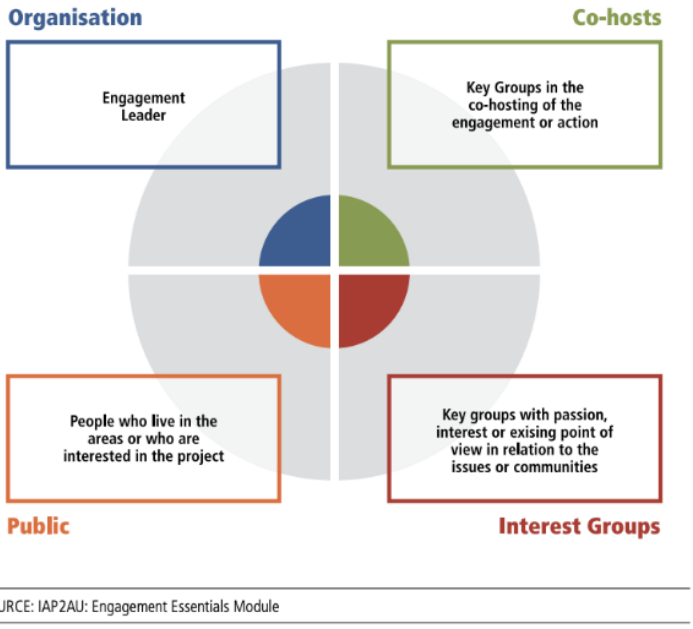
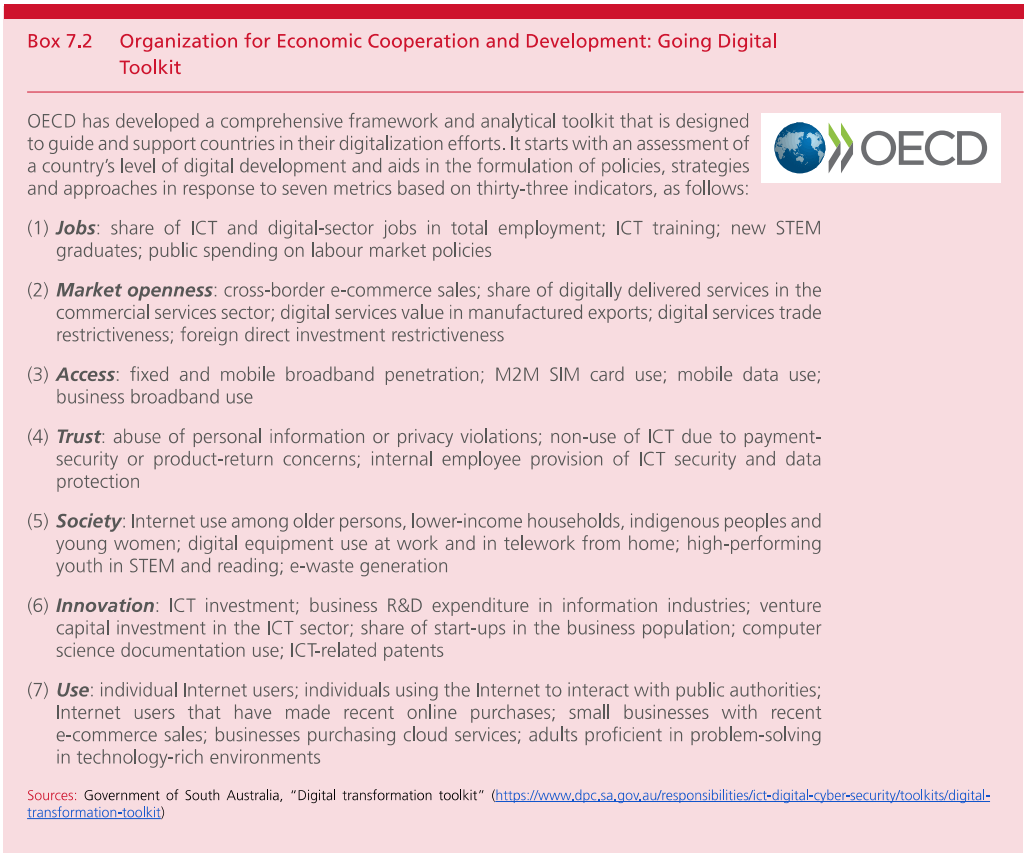


Figure 5.4 Stakeholder mapping tool

✧ OECD toolkit that provides countries with digital development support

Figure 5.5 Organization for Economic Cooperation and Development: Going Digital Toolkit[64]



Box 7.2 Organization for Economic Cooperation and Development: Going Digital Toolkit

OECD has developed a comprehensive framework and analytical toolkit that is designed to guide and support countries in their digitalization efforts. It starts with an assessment of a country's level of digital development and aids in the formulation of policies, strategies and approaches in response to seven metrics based on thirty-three indicators, as follows:

(1) ***Jobs***: share of ICT and digital-sector jobs in total employment; ICT training; new STEM graduates; public spending on labour market policies

(2) ***Market openness***: cross-border e-commerce sales; share of digitally delivered services in the commercial services sector; digital services value in manufactured exports; digital services trade restrictiveness; foreign direct investment restrictiveness

(3) ***Access***: fixed and mobile broadband penetration; M2M SIM card use; mobile data use; business broadband use

(4) ***Trust***: abuse of personal information or privacy violations; non-use of ICT due to payment-security or product-return concerns; internal employee provision of ICT security and data protection

(5) ***Society***: Internet use among older persons, lower-income households, indigenous peoples and young women; digital equipment use at work and in telework from home; high-performing youth in STEM and reading; e-waste generation

(6) ***Innovation***: ICT investment; business R&D expenditure in information industries; venture capital investment in the ICT sector; share of start-ups in the business population; computer science documentation use; ICT-related patents

(7) ***Use***: individual Internet users; individuals using the Internet to interact with public authorities; Internet users that have made recent online purchases; small businesses with recent e-commerce sales; businesses purchasing cloud services; adults proficient in problem-solving in technology-rich environments

Sources: Government of South Australia, "Digital transformation toolkit" (https://www.dpc.sa.gov.au/responsibilities/ict-digital-cyber-security/toolkits/digital-transformation-toolkit)

Digital government transformation is not just about technologies. It is, above all, about public governance transformation and innovation as part of a country's overall national development vision and strategy. Developing capacities for digital government transformation is essential. This requires a holistic approach that is value-driven and institutionalized across all levels of government and society, including developing capacities at the societal, institutional, organizational, and individual levels. It entails fundamental changes in the mindsets of public servants and in the way public institutions collaborate, as well as the capacities of capacity developers.

- **Quiz/exercises:**

1. Use the UN DESA DiGIT4SD toolkit - Key Factors necessary for the development of digital government to analyze your country situation.
2. Use the stakeholder mapping tool to map the stakeholders in your country.

[64] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020, pp.189.

5.2 Capacities at the institutional level

This subsection focuses on the importance of establishing an institutional ecosystem for digital government transformation, the critical role of regulators, the type of institutional capacities needed for digital government, and the key elements of how to establish a comprehensive institutional framework. It also provides national examples of comprehensive institutional frameworks for digital government transformation.

- **What is the institutional capacity?**
  - ✧ Governments require the right institutional capacities to harness new technologies for the realization of broader societal goals, including the achievement of the SDGs. Institutions are rules that prescribe behaviours and structure political, economic, and social patterns of interaction to create order.
- **Putting in place an institutional ecosystem**
  - ✧ Governments need to put in place an institutional ecosystem for the adoption and application of digital technologies and the deployment of digital government services. This ecosystem must incorporate laws, regulations, policies, guidelines, and standards that address issues such as access to information, data privacy protection, digital security, and AI legislation. Re-engineering business processes in the back office to ensure seamless service delivery often requires legal reform. Providing personalized services online may call for an electronic signature policy while also requiring new regulations on how agencies handle private data provided by individuals as part of those transactions.
  - ✧ Many countries that are at a relatively advanced stage of the digital government transformation process have established legal and regulatory frameworks to support digital government services, including legislation governing access to information, personal data protection (including digital security), open government data, digital identity, digital signatures, the digital publication and dissemination of government expenditures, data interoperability, emerging technologies (such as AI) and related applications, and digital government as a right. Robust standards must be established for the whole of government to ensure coherence and safety in the deployment and application of technologies in all areas and at all levels of public administration.[65]
  - ✧ **[Case 5.1] Estonia**

    According to the 2020 Member States Questionnaire (MSQ) for Estonia, the country's e-government portal provides a login that allows users to view their personal information, use e-services and read messages sent by the Government. It is a secure gateway to the e-State, providing reliable and up-to-date information on individuals and the Government, safe access to e-services, and guidance on how to interact and engage in transactions with

[65] Organization for Economic Cooperation and Development, OECD Draft Policy Framework on Sound Public Governance, GOV/PGC(2018)26, available at https://www.oecd.org/gov/draft-policy-framework-on-sound-public-governance.pdf.

government entities.[66] To achieve all this, the Government had to formulate and activate comprehensive legislation, including the Public Information Act, Personal Data Protection Act, Cybersecurity Act, Identity Documents Act, Electronic Identification and Trust Services for Electronic Transactions Act, State Budget Act, and compliance of the State Information Management System with the Estonian Interoperability Framework.

- ✧ In developing a comprehensive institutional and regulatory framework, it is necessary to take stock of what laws and regulations exist and how they are interrelated in order to identify gaps and establish a point of departure for the adoption and harmonization of legislation fully supportive of digital government transformation.
- ✧ When developing legislation, regulations, and strategies for digital government transformation, it is essential to take the needs of vulnerable groups into account from the start, with emphasis given to safety, availability, affordability, and access to services. Institutions should also use a gender lens in building and coordinating technology and data-related regulatory frameworks, and digital inclusion and digital equality should be explicit in policy objectives.

- **Developing a comprehensive regulatory framework**
  - ✧ In developing a comprehensive institutional and regulatory framework that allows countries to deliver digital services in a convenient, reliable, secure, and personalized manner, it is necessary to take stock of what laws and regulations exist and how they are interrelated in order to identify gaps and establish a point of departure for the adoption and harmonization of legislation fully supportive of digital government transformation.
  - ✧ Regulatory and legal frameworks should be aligned with the broader national objectives of a country. As a caveat, digital policies may need to define the desired balance between access to information, security considerations and privacy concerns. Changing procurement rules and practices and strengthening the relevant implementation capacities of public institutions are also central to digital government transformation.
- **Taking the needs of vulnerable groups into account**
  - ✧ When developing legislation, regulations, and strategies for digital government transformation, it is essential to take the needs of vulnerable groups into account from the start, with emphasis given to safety, availability, affordability, and access to services. Presently, very few national AI strategies address the risks, access gaps and impacts associated with AI-based technologies as they relate to women and marginalized populations. In countries actively leveraging frontier technologies, vulnerable groups are often left behind because they lack digital literacy and digital competencies, further widening the digital divide.
  - ✧ Institutions should also use a gender lens in building and coordinating technology and data-related regulatory frameworks, and digital inclusion and

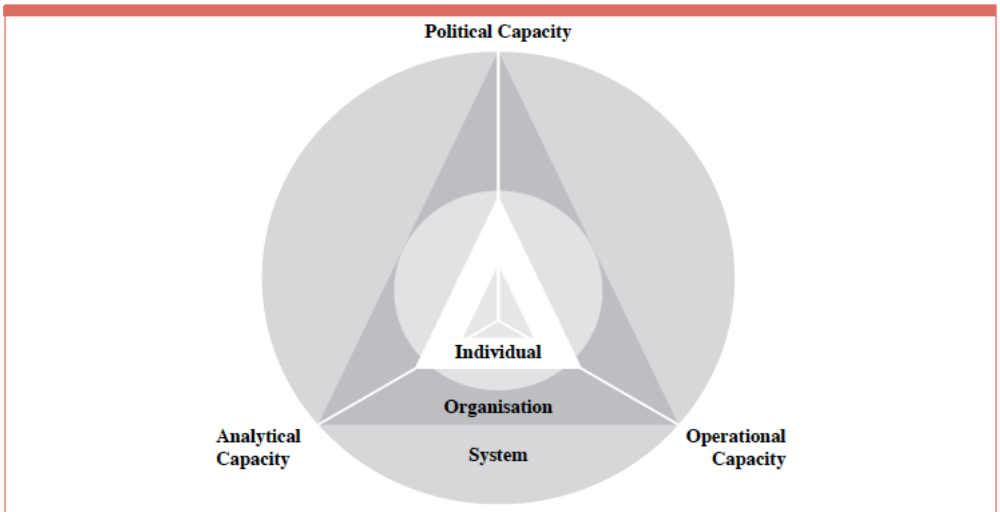
[66] Estonia, State portal, available at eesti.ee.

digital equality should be explicit in policy objectives.

- **Regulators' new role of a facilitator and partner**

  In the past, digital regulators acted as watchdogs, gatekeepers, and arbiters, dealing with discrete technology issues or changes; more recently, their role has become that of a facilitator and partner in shaping ICT and digital regulation, as they are actively "working with other stakeholders to shape a common digital future".[67]

- **New government capacities are needed**
  - ✧ New government capacities are needed to address institutional and regulatory requirements for the integration and use of rapidly evolving technologies. Generally, no Governments can address regulatory issues alone; multistakeholder engagement and the sharing of experiences are key to success.
  - ✧ To ensure that a solid regulatory framework translates into effective policy action, analytical, operational, and political capacities are required at the system, organizational and individual levels.
    - ➢ Analytical-level capacities ensure [that] policy actions are technically [feasible] and can contribute to [the] attainment of policy goals.
    - ➢ Operational-level capacity allows the alignment of resources with policy actions so that they can be implemented in practice.
    - ➢ Political-level capacity helps to obtain and sustain political support for policy actions.



Source: Maria Katsonis, "Rethinking policy capacity, competencies and capabilities", figure 1.A, *The Mandarin* (10 June 2019), available at https://www.themandarin.com.au/109791-rethinking-policy-capacity-competencies-and-capabilities/.

Figure 5.6 Strengthening policy capacity, competencies and capabilities for digital government transformation[68]

[67] International Telecommunication Union, Global ICT Regulatory Outlook 2018 (Geneva, 2018), pp. 9 and 37, available at https://www.itu.int/dms_pub/itu-d/opb/pref/D-PREF-BB.REG_OUT01-2018-PDF-E.pdf

[68] Maria Katsonis, Rethinking policy capacity, competencies and capabilities, figure 1.A, The Mandarin (10 June 2019), available at https://www.themandarin.com.au/109791-rethinking-policy-capacity-competencies-and-capabilities/

- **Quiz/exercises:**

1. How could the government develop an institutional ecosystem to harness new technologies toward the achievement of SDGs?
2. How should the government attend to the needs and demands of vulnerable groups while strengthening institutional capacities for digital government transformations?

5.3 Capacities at the organizational level

This subsection examines why a whole-of-government approach is essential for the integration of organizational processes and public service delivery and showcases a number of central coordination mechanisms that can facilitate collaboration across policy areas and government levels. It also focuses on the importance of government interoperability to support the sharing of information and services. The importance of changing the organizational culture to foster collaboration and innovation within the public sector is emphasized as well.

- **What is the organizational capacity?**
  - ✧ Organizational capacity relates to government structures that define authority, roles and responsibilities, accountability and reporting lines, and mechanisms and processes for coordination and communication.
  - ✧ Changing laws and regulations is not enough to effect change within and outside of government. To move the digital government transformation process forward, there is a need for organizational structures that can operationalize the new rules and contribute to the development of new, critical mindsets.
- **A whole-of-government approach is needed**
  - ✧ The SDGs are highly integrated with complex interlinkages among the Goals and associated targets, and a whole-of-government approach is needed to ensure that organizational structures can coordinate and integrate public service delivery in ways that best serve the objectives of the 2030 Agenda.[69]
  - ✧ While there is no blueprint for designing organizational structures that can promote the integration of processes and data among different agencies and different levels of government, a basic approach followed by the most advanced countries has been to reorganize institutions and organizations to establish appropriate horizontal and vertical workflows before starting an automation process.
  - ✧ While there is a general awareness of the need to address the synergies, trade-offs, and interlinkages among the SDGs, the implementation of integrated approaches to service delivery and efforts to strengthen policy coherence have not been the same across countries. In practice, achieving integration and policy coherence is difficult, not least because existing institutional arrangements may impede progress in these areas. Understanding how to adapt

[69] United Nations, Transforming our world: the 2030 Agenda for Sustainable Development, A/RES/70/1 (2015), available at https://sustainabledevelopment.un.org/post2015/transformingourworld

organizational structures to effectively address existing linkages among the SDGs is critical to achieving progress.[70]

- ✧ **[Case 5.2]** For example, Germany has revamped its Council for Sustainable Development; Estonia, Morocco and France have set up interministerial committees or task forces to monitor SDG implementation; and Norway, Samoa and Sierra Leone have strengthened mechanisms for enhanced institutional engagement with local authorities. These new structures should both support and be supported by the integrated use of digital technologies. New and emerging technologies can be deployed to help make sense of enormous quantities of data to identify synergies and trade-offs among different SDGs, which can potentially improve policy coherence and service delivery. Better data mining and machine-learning techniques can help predict the impact of specific policy choices in areas such as climate, land use, and water.[71]

- **Having in place a central coordinating agency**
  - ✧ In terms of organizational set-ups, countries that are among the top performers in digital government usually have in place a central coordinating agency with budgetary autonomy to manage the national digital strategy and the national website team and to define and coordinate the functions of the chief information officer (CIO) or the equivalent. This agency is usually located within the highest decision-making body in government (the Office of the President or the Prime Minister's Office) or receives a robust mandate from it.
  - ✧ Several countries have also established a network of CIO focal points within strategic institutions linked to the coordinating agency at both the national and local levels. Having CIOs share their knowledge with public officials can help strengthen digital capacities.
  - ✧ Having CIOs share their knowledge with public officials can help strengthen digital capacities.
  - ✧ Chief data officers and data protection offices or units are becoming increasingly important for the effective management of data-driven government transformation.
  - ✧ Some countries have chief innovation officers, particularly at the local level.
  - ✧ **[Case 5.3] Colombia, India and other countries**
    - ➢ In Colombia, for example, where digital transformation has been identified as a national priority, there is a CIO network across all agencies.[72]
    - ➢ In India, for example, a Chief Information Officers Programme has been set up to create e-governance champions within line ministries and line departments; the objective is to accelerate the implementation of e-

[70] United Nations, Opening remarks: Learning Conference on Implementing the 2030 Agenda in the Caribbean Region, 15 May 2019, Port of Spain, Trinidad and Tobago, available at https://www.un.org/development/desa/statements/asg/msspatolisano/2019/05/opening-at-learning-conference-on-implementing-the-2030-agenda.html

[71] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020, pp.193.

[72] Cionet Colombia, available at https://www.cionet.com/cionet-colombia

governance initiatives across all levels of government.[73]

- The most digitally advanced countries have put in place councils or advisory groups to facilitate collaboration at the ministerial level; among these are the Swedish National Digitalisation Council, the Australian Digital Council, and the Digital Economy and Digital Inclusion Ministerial Advisory Group in New Zealand.

✧ Many countries have made their organizational processes adaptable to rapid technological changes. Organizational agility and risk management are at the core of effective digital government transformation. Growing cybersecurity concerns are compelling Governments to embed risk management (including mitigation and contingency strategies) in their organizational processes.

- **Capacities are needed to promote coordination**

✧ Capacities are needed to promote coordination at the organizational level to enable different government ministries and agencies to effectively communicate and exchange information. Increasing the capacity of government agencies to communicate effectively within and outside of government is essential for enhanced collaboration for policy coherence and service delivery in diverse areas such as health, education, disaster risk reduction, and national security. Effective coordination, communication and collaboration can be leveraged to achieve government interoperability, which may be defined as "the mix of policy, management, and technology capabilities (e.g., governance, decision-making, resource management, standards setting, collaboration, and ICT software, systems, and networks) needed in order for a network of organizations to operate effectively".[74]

✧ Interoperability "is a top priority today as Governments try to integrate services across departments so as to improve effectiveness as well as efficiency".[75]

✧ **[Case 5.4] Republic of Korea: National Information Resources Service[76]**

The National Information Resources Service in the Republic of Korea was established to integrate the information of central government institutions. The Service is responsible for the operation and management of 1,230 digital government services linked to 45 central government institutions and controls about 45,000 government information resources.

[73] India, Ministry of Electronics and Information Technology, Digital India (2020), available at https://digitalindia.gov.in/content/capacity-building

[74] Theresa A. Pardo and G. Brian Burke, Improving Government Interoperability: A Capability Framework for Government Managers (Albany, Research Foundation of the State University of New York, 2008), p. 3, available at http://www.ctg.albany.edu/media/pubs/pdfs/improving_government_interoperability.pdf

[75] Egidijus Barcevic˘ius and others, "Exploring digital government transformation in the EU", JRC Science for Policy Report (Luxembourg, Publications Office of the European Union, 2019), p. 58, available at https://publications.jrc.ec.europa.eu/repository/bitstream/JRC118857/jrc118857_jrc_s4p_report_digigov_soa_04122019_def.pdf

[76] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020, pp.196.

The National Information Resources Service (NIRS) is the world's first pan-governmental data centre responsible for integrating and managing the data and information of central government institutions. Consolidating information resources once separately managed by individual government departments in one centralized place, NIRS was set up to address challenges associated with the operation of isolated information systems, including the inefficient use of information resources, duplication in ICT investments, the lack of IT expertise, and wide exposure to security risks. The four main functions of this government-wide data centre are as follows:

(1) integrating, operating and managing 1,230 digital government services linked to 45 central government institutions and controlling about 45,000 government information resources, including servers and storage;

(2) consolidating and retrieving information through the government-exclusive G-Cloud to facilitate interdepartmental information sharing and optimize resource utilization;

(3) operating Hye-An, the pan-governmental big data portal, for all government officers to support science- and data-driven government policymaking; and

(4) protecting national information resources against cyberthreats through an integrated security management system using artificial intelligence technologies.

Sources: Republic of Korea, National Information Resources Service (www.nirs.go.kr).

Figure 5.7 Republic of Korea: National Information Resources Service

- **Transforming the organizational culture at all levels**
  - ✧ Governments establishing new organizational structures and processes will also need to transform the organizational culture at all levels. An organizational culture that values collaboration, synergy, teamwork, and partnerships and that emphasizes value delivery is a key success factor in any digital government transformation.
  - ✧ It is essential to create an organizational culture in which innovation is embraced and actively pursued. Innovation must be promoted with a clearly defined purpose, and the Government should provide incentives that benefit both the public and private sectors and encourage partnerships and collaboration.
  - ✧ Creativity and innovation can be stimulated by an organizational culture in government that values openness and the sharing of data to guide strategic decisions.
  - ✧ With the rapid evolution of digital technologies, it is essential to have in place a forward-looking organizational culture that promotes continuous learning through online and face-to-face training, staff exchanges, study visits and retreats within and between Governments. Providing induction courses for new public employees, introducing strong socialization mechanisms, identifying and leveraging champions of change and collaboration, and providing incentives can all help to promote organizational change.

- **Quiz/exercises:**

1. Benchmarking can be achieved by looking outside your own domain. It can also provide important lessons or improved methods that could be missed by only looking only at your own organizations. It includes four main steps:
   ①Pre-requisites: situation analysis and future envisioning.

②Analyze and understand the whole organizational structure, and make comparisons with the examples.

③Build consensus, support, and partnership.

④Consider limitations and considerations.[77]

Use "benchmarking" to thoroughly analyze one case mentioned above or in the previous chapter (e.g. New York, Los Angeles, Shanghai), make comparisons with your countries, and summarize what your countries can take advantage of to improve efficiency and performance. When drawing a conclusion, consider the temporal and spatial limitations and considerations.

5.4 Capacities at the individual level

This subsection explains why it is necessary to develop capacities at the individual level for effective digital government transformation, what types of capacities are needed, and why it is critical for Governments to recruit and retain the best talent for digital government transformation. It also highlights the need for multidisciplinary teams in government and for safe spaces in which individuals can nurture innovation.

- **What is the individual capacity?**
  - ✧ Individual capacities are the beliefs, mindsets, values, attitudes, knowledge, skills, and competencies of people.
  - ✧ Public servants are at the forefront of public service delivery and play a key role in ensuring national ownership and achievement of the SDGs. New individual capacities at all levels of government are needed for the design and implementation of holistic, integrated, coherent and evidence-based policies and services that leverage new technologies.
- **Improving individual capacities within government and across society**
  - ✧ Institutional and organizational reforms are likely to be ineffective unless public officials and all stakeholders in society internalize the beliefs, norms and values that underlie the new institutions and organizations being put in place. Changing mindsets and behaviours is just as important as changing laws and regulations. Indeed, the first pillar of the road map for digital government transformation is strengthening transformational leadership and digital capacities and changing mindsets within government and across society.
  - ✧ There is a growing gap between the skills of public sector employees and the skills of private sector employees, with the former often lacking twenty-first-century competencies such as digital skills, data literacy, the ability to solve problems using systems thinking, and the capacity to anticipate future scenarios and pursue innovation. Individual capacities are needed in the public sector to ensure that those working in government can understand the complex interactions and trade-offs characterizing the SDGs, envisage different policy scenarios, consider long-term policy horizons, and have the capacity to design,

[77] Sharon S. Dawes et al., (2004), Making Smart IT Choices. New York: Center for Technology in Government University at Albany, State University of New York, pp. 111-112

implement and monitor integrated policies and services by leveraging digital technologies.

- ✧ Public servants need to have the capacity to work across different government departments and with other State institutions, and they need to be able to raise public awareness and involve civil society and other stakeholders in governance processes. New attitudes, skills and behaviours are needed for interaction with vulnerable groups and to engage individuals and administrators at various levels of government in the localization of the SDGs. The foresightedness to anticipate problems, the flexibility to quickly adapt to and address unanticipated circumstances, and the resilience to mitigate risks are central features of any government transformation. Following an assessment of existing government capacities at the individual level based on the situation analysis, it is necessary to identify which new capacities are required to implement a country's digital government transformation strategy. In many cases, the most urgent priority will be the development digital capacities, which in government generally refer to the competencies, skills, knowledge, and practical experience needed to use technologies in creative ways to better respond to people's needs.

- **Recruiting, retaining, and motivating the best digital talent for digital government transformation**
  - ✧ Securing the best digital talent and a multidisciplinary team of experts in government is vital. Without a strong core team of specialists possessing a wide range of digital capacities—including data scientists, cloud architects, privacy and cybersecurity experts, innovation specialists with knowledge of cutting-edge technologies, AI experts and behavioural analysts—any attempt to embark on a digital government transformation journey is likely to fail.
  - ✧ Leveraging frontier technologies largely depends on the digital capacities of government in data collection, storage, analysis, and management. Government should gain the capacities to ensure proper data management, the capacities to effectively collect and use disaggregated data from various sources. And implementing an effective data strategy requires a chief data officer.
  - ✧ **[Case 5]** A survey conducted in 2019 by the Center for Digital Government reveals that in order to succeed today, a CIO needs to be a capable strategist, communicator, negotiator and motivator; the role of technologist comes in near the bottom of the list of required qualities.

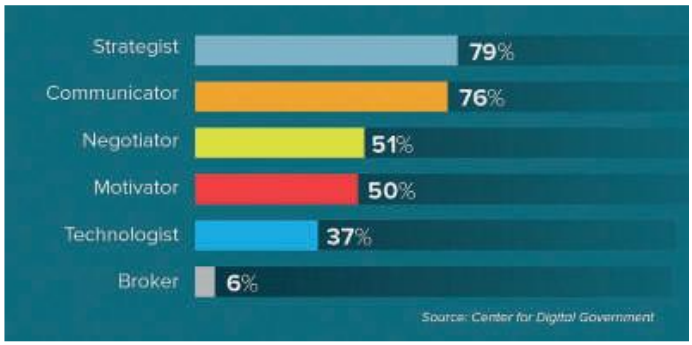


Figure 5.8 What are the most important traits of CIOs today?[78]

- ✧ Since changes in the digital landscape are occurring at such a rapid rate and technology deployment can potentially have irreversible consequences, Governments need to develop forecasting capacities to enable them to anticipate and address possible negative consequences and determine what skills might be needed in the future. Improved selection processes and training are needed to support digital government transformation. The recruitment process should include not only the Government's human resources (HR) department but also ICT specialists, including analytics experts. Another critical issue is that of developing new HR strategies for building and effectively deploying an augmented workforce in the public sector. Meanwhile, upskilling and reskilling the existing workforce should also be attached with importance.

- **Developing digital capacities within government and changing mindsets**
  - ✧ The Government must be able to attract and maintain a core pool of digital expertise and ensure that digital skills are embraced across all levels of government. Changing mindsets, including beliefs and attitudes, is one of the most difficult challenges in implementing a digital government strategy. In its work on a competency framework for public servants to achieve the SDGs, UN DESA has identified evidence-based, digital, and collaborative mindsets and associated competencies as critical to moving forward with the realization of the SDGs. The digital capacities public servants and capacity developers need to acquire will continually evolve with the progressive incorporation of new ICT and frontier technologies.

[78] Tod Newcome, What are the most important traits of CIOs today?, Government Technology, Analytics (June 2019), available at https://www.govtech.com/analytics/What-Are-the-Most-Important-Traits-of-CIOs-Today.html

Figure 5.9 Mindsets and competencies[79]

- ✧ More to know in changing mindsets to implement the SDGs
  - ➢ Nowadays there is no doubt that digital government transformation should be good to the SDGs, and thus changing mindset to achieve the digital government transformation goal should also align with the requirements of implementing the SDGs. Generally, a mindset consists of beliefs and attitudes that a person has assimilated throughout a lifetime about themselves and the world around them (worldview). Mindsets affect the way we think, see (frame reality) and act.[80] UN DESA's Changing Mindsets to Realize the 2030 Agenda for Sustainable Development report provides the new mindsets and competency framework for SDGs implementation. To learn about these mindsets and how to promote a change in mindsets is part of the capacity building of digital transformation.
  - ➢ The competency framework for public servants to achieve the SDGs has identified key mindsets and associated competencies as critical to moving forward with the realization of the SDGs. The framework helps to identify competencies that entail specific behaviours. Supporting mindset change calls for a practical focus on concrete behaviours associated with specific competencies that can function as vehicles for in-practice learning. Changing mindsets by doing and solving complex problems is a valuable approach.[81] All the mindsets and competences can be divided into 3 types: institutional effectiveness, institutional accountability, and institutional inclusiveness.
  - ➢ The mindsets for SDGs implementation

[79] Ibid.
[80] Department of Economic and Social Affairs of the United Nations (UNDESA), Changing Mindsets to Realize the 2030 Agenda for Sustainable Development, 2021, pp.16, available at https://unpan.un.org/sites/unpan.un.org/files/Changing%20mindsets%20report%20-%201%20October.pdf
[81] Department of Economic and Social Affairs of the United Nations (UNDESA), Changing Mindsets to Realize the 2030 Agenda for Sustainable Development, 2021, pp.22, available at https://unpan.un.org/sites/unpan.un.org/files/Changing%20mindsets%20report%20-%201%20October.pdf

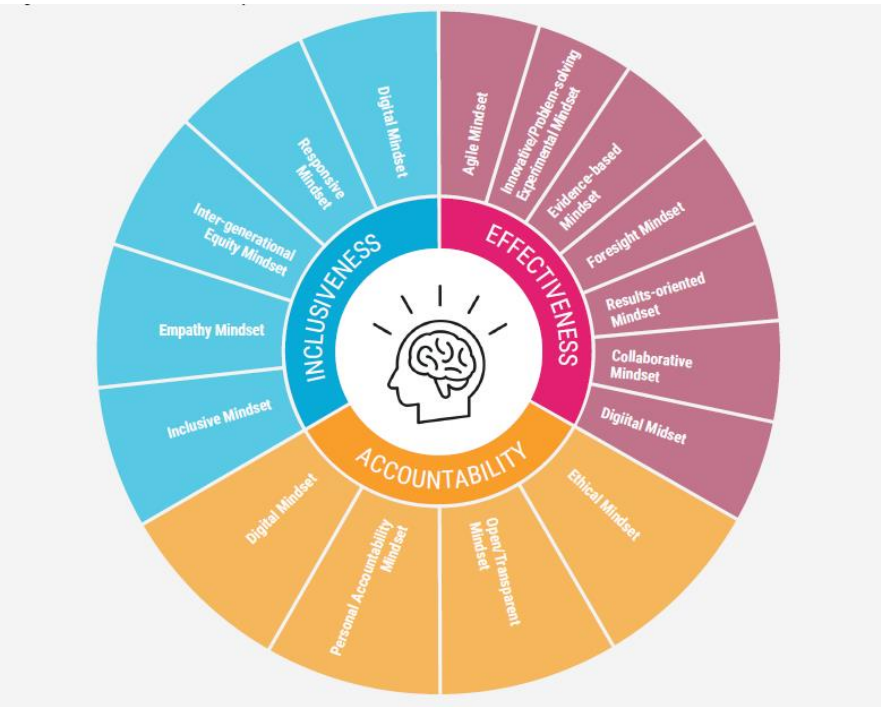


Figure 5.10 Mindsets for SDGs implementation[82]

- Highlight on following mindsets
  - ✓ Inclusive mindset
  - ✓ Digital mindset
  - ✓ Evidence-based mindset
  - ✓ Foresight mindset

MINDSETS	BELIEFS	ATTITUDES	COMPETENCIES
Inclusive Mindset	All people are equal in dignity and rights and deserve equal opportunities for a better life.	Is committed to treating everyone with dignity and respect; empathy, tolerance, solidarity, and no discrimination.	**Competencies** that are linked to this mindset are: **respect for diversity, and non-discrimination** to promote public sector workforce diversity, and in line with SDG 16.7, ensure responsive, inclusive, participatory, and representative decision-making at all levels; **inter-generational equity** to ensure prosperity and quality of life for all, noting especially the needs of today's children and how current actions may jeopardize the basic needs of future generations; **empowerment and participation** and develop awareness of own and communities' beliefs, values and expectations and ensure a culture of caring; **and negotiation and facilitation** to find solutions to a shared problem. Successful negotiators will analyze a problem, identify the interested parties, and reach a consensus. Communication, persuasion, planning, strategizing, and cooperating are essential skills of negotiation and facilitation.

[82] Department of Economic and Social Affairs of the United Nations (UNDESA), Changing Mindsets to Realize the 2030 Agenda for Sustainable Development, 2021, pp.29, available at https://unpan.un.org/sites/unpan.un.org/files/Changing%20mindsets%20report%20-%201%20October.pdf

Digital Mindset 	If properly leveraged, digital technology can help address a multiplicity of challenges.	Is focused on leveraging the advantages of technology in support of governance transformation while addressing its risks.	A digital mindset is not just the ability to use technology, but it is a set of behaviors and attitudes; it is a change of public institutions' capacities needed to **keep abreast of technological developments and understand the applicability (benefits and risks)** of digital technologies to solve complex problems (digital literacy). Digital transformation requires abilities to apply technology to appropriate tasks within government, seeking effectiveness, and transparency of government processes, reorganization of work, and continuous training. It also requires the ability to secure sensitive data.
Evidence-based Mindset 	Data is critical to make good decisions.	Is driven and motivated to using, validating, and documenting data.	A competency associated with the evidence-based mindset is **data and information literacy** to recognize the need to locate, retrieve, analyze, and utilize data and information for problem solving as well as to promote transparency for better public policy and service design and delivery. **Public Financial Management (PFM)** competency is also needed for effective public administration and service delivery, especially in fragile and post conflict environments (see chapter 12).
Foresight Mindset 	Present and future transformation in support of the SDG is possible. The future can be influenced, and trends anticipated if we ask the right questions, plan, and prepare for the future.	Is open to using techniques and methodologies for discovering and designing future trends to anticipate challenges and solutions.	A foresight mindset includes short and **long-term planning** to develop clear goals that are consistent with agreed strategies such as the 2030 Agenda and specific SDG targets; **forward looking and proactivity** to ensure anticipatory, flexible and action-oriented behaviors to implement potential solutions and address challenges. as well as **risk-management** competencies to identify and assess issues and risks and create a plan that allows to contain or control those identified and their consequences.

Figure 5.11 Inclusive mindset, Digital mindset, Evidence-based mindset and Foresight mindset

- While changing mindsets is an individual responsibility and journey that takes time and practice, it is necessary to adopt a whole-of-government approach, encompassing behavioural changes at the individual, organizational and institutional levels.
- The first step to changing mindsets is to identify and be aware of one's own limiting beliefs. It requires recognizing that mindsets and worldviews shape actions. Personal beliefs, assumptions and biases about the world need to be uncovered through diagnostic self-assessment methodologies. It is important to understand what barriers/beliefs are holding back public servants in pursuing the institutional goals related to the 2030 Agenda. A values analysis can be conducted along a situation analysis to understand the specific problems of a country's own context. It is then important to realize that different beliefs lead to better outcomes. A full understanding of the 2030 Agenda values is critical. Through diagnostic tools, it is possible to identify the inconsistencies between values and beliefs on the one hand, and actions that may be unconsciously implemented. Adopting strategies to let go of and re-phrase limiting beliefs into new beliefs aligned with the 2030 Agenda should take centre stage. Moving from a noncollaborative mindset to a collaborative one requires changes in underlying values, beliefs and actions to achieve those values. Transforming behaviours, in turn, reinforces the new beliefs and

assumptions.[83]

Figure 5.12 Steps to changing mindsets[84]

- Several key strategies to foster a change in public servants' mindsets, are summarized here below.[85]

[83] Department of Economic and Social Affairs of the United Nations (UNDESA), Changing Mindsets to Realize the 2030 Agenda for Sustainable Development, 2021, pp.30, available at https://unpan.un.org/sites/unpan.un.org/files/Changing%20mindsets%20report%20-%201%20October.pdf
[84] Ibid.
[85] Department of Economic and Social Affairs of the United Nations (UNDESA), Changing Mindsets to Realize the 2030 Agenda for Sustainable Development, 2021, pp.31, available at https://unpan.un.org/sites/unpan.un.org/files/Changing%20mindsets%20report%20-%201%20October.pdf

(1)STRATEGIES TO PROMOTE CHANGE AT THE INDIVIDUAL LEVEL – MINDSETS	
1.1 Raise awareness of the principles and values of the 2030 Agenda and of the 11 principles of effective governance for sustainable development and their underlying beliefs and enhance the understanding of how to align public servants' mindsets with those principles.	**Recommendations:** a. Update public service codes of conduct and public service charters to include reference to the principles and values of the 2030 Agenda and to the principles of effective governance for sustainable development. b. The set of guidance notes to implement the principles of effective governance could be mainstreamed in the capacity development training courses of schools of public administration and development agencies. c. Schools of public administration[29] can undertake training on the 2030 Agenda and the SDGs to sensitize public servants to the principles and values of the 2030 Agenda. In this respect, the Curriculum on Governance for the SDGs developed by UN DESA provides training material that can be adapted to the regional/ national context and can be used to help promote effective change in public institutions.[30] In particular, the toolkit on Changing Mindsets in Public Institutions can be a reference for institutes of training to gain insights on new values, mindsets and competencies needed to implement the 2030 Agenda.
1.2 Promote socially conscious and transformational leadership values and mindsets with a focus on building inclusive societies. Socially conscious leaders have a significant role to play in the survival and long-term development of institutions that promote the principle of equity and inclusiveness. Building capacities in socially conscious leadership values and enhancing skills in empathy, social research, systems thinking, participatory planning, and team building can promote and transform the mindsets of change-agents to implement the SDGs, both within and across nations (see chapter 2).	**Recommendation:** a. Establish capacity development and training activities to promote socially conscious leadership values, mindsets, and behaviors for public servants across all government levels.
1.3 Define new mindsets to implement the SDGs in the public sector through a new competency framework for the SDGs.	**Recommendation:** a. See below 2.1
1.4 Adopt an innovation/ problem-solving, agile and evidence-based mindset in the public sector as well as continuous learning. Shifting mindsets involves a dynamic process – not necessarily a linear path – of constant practice and renewal (see Chapters 4 and 5). Training, both for long- and short-term change, could be more effective when focusing on problem-solving.	**Recommendations:** a. Design and adopt a Public Service Charter for Innovation in Public Management. b. Develop capacity development training on innovation, experimentation, and evidence that can promote high-level motivation and a greater propensity to embracing new mindsets.
1.5 Governments need to be able to attract, develop, and retain a dedicated workforce. Public sector human resource professionals are a key component in attracting and motivating the best talent in the public sector and hiring people with the right mindsets.	**Recommendations:** a. Human resource practice should move from being transactional to being more strategic. Human resources departments should have a more strategic role in recruiting and attracting the best talent in the public sector (see Chapter 9). b. Mechanisms to promote employee engagement is key to having a motivated, engaged workforce that embraces new mindsets and performs the critical work of government (see Chapter 9).

(2) STRATEGIES TO PROMOTE CHANGE AT THE INDIVIDUAL LEVEL – BEHAVIORS	
2.1 Define new mindsets through a new competency framework to implement the SDGs and describe what new behaviors are needed to implement Goal 16. Public administration systems must define new mindsets and competencies that can advance the principles of the 2030 Agenda across public service and ensure that they are put into practice. UN DESA's competency framework (see page 25) could serve as a reference for countries that would like to focus on new competencies, mindsets, and behaviors.	**Recommendation:** a. Develop a new competency framework to guide public servants' recruitment, behavior, and performance.
2.2 Instill meaning and an understanding among public servants of the required mindsets and related behaviors needed to advance the SDGs. Public servants first need to understand why a change in mindsets and behavior is needed. Second, they need to understand what change (in terms of values, beliefs and attitudes, and capacities and competencies) is required to advance the realization of the 2030 Agenda. Third, they need to understand how these changes can be triggered. (see Chapters 10 to 15).	**Recommendations:** a. Schools of Public Administration and Management Institutes and Public Service Training Institutions/Units" should mainstream the SDGs and new mindsets required to realize the 2030 Agenda in their curricula (see Chapter 9). b. Schools of public administration can promote acculturation, investment in personal socialization, and individual's ethical education to foster a change in public servant's previous patterns of beliefs and behaviors. Understanding how people behave is critical to fostering a change in mindsets. c. Promote effective communication campaigns regarding the new competency framework within the public sector to highlight the changes needed to encourage a change in mindsets and behaviors.
2.3 Nurture champions of change in the public sector for the successful implementation of the SDGs. Organizations need to identify champions of change that can serve as role models for new mindsets and behaviors that will support change (see Chapter 9).	**Recommendation:** a. Government can establish or submit initiatives to Award programmes at the national and local levels to help uncover champions of change. For example, the UN Public Service Awards, which is the most prestigious international recognition of excellence in public service, can help discover champions of change and disseminate national initiatives worldwide.

Figure 5.13 Strategies to promote change at the individual level

- Growth versus fixed mindset

  A more general preferred mindset in transformation is the growth mindset. The growth and fixed mindset are terms coined by psychologist Carol Dweck. In her book *Mindset - changing the way you think to fulfil your potential*, Dweck details the importance of people (from students to CEOs) having a growth mindset.

  A growth mindset is one that enables people to see opportunities to learn from all situations - love challenges, fear not learning, is motivated by self-development, and finds lessons and inspiration in the success of others. A fixed mindset, on the other hand, is only willing to enter into new and unfamiliar situations and challenges if they believe they will succeed. A fixed mindset is values being right and validation, often blaming others and giving up if things don't go right and feel threatened and jealous of the success of others. A growth mindset is better for experimentation. Experiment requires trying new things (even if you are not 100% sure they will work), it requires a curiosity and a motivation to learn what works and what doesn't. The growth mindset is sometimes referred to as the learning mindset. The activities today all help support working with a growth mindset.

  In short, a fixed mindset is like "I can't do it", but a growth mindset is like "I can't do it YET".

✧ No excessive reliance on vendors or private sector expertise

- In engaging personnel for digital government transformation, excessive reliance on vendors or private sector expertise should be avoided, as the Government might lack the capacity to follow up on problems that arise in the implementation phase. Although international cooperation and support are desirable and often necessary, skills and knowledge should be locally sourced whenever possible.
- Some countries, such as Singapore, provide competitive salaries and favourable working conditions in the public sector in order to attract and retain world-class professionals.
- **[Case 5.6]** Singapore, Government Technology Agency (GovTech) as part of Smart Nation and Digital Government Group within the Prime Ministers' Office, operating as a company

  Singapore provides competitive salaries and favourable working conditions in the public sector in order to attract and retain world-class professionals. The country's Government Technology Agency (GovTech), which is part of the Smart Nation and Digital Government Group within the Prime Minister's Office, operates as a company, harnessing digital technology to develop and deliver digital products and services to people, businesses and the Government as part of the public sector digital transformation process. It recovers innovation costs by

including them in product pricing, which is approved by the Ministry of Finance.[86]

- It is crucial to secure a high ratio of IT specialists to other types of expertise in government and to take on quality personnel. Procuring the most talented and capable professionals requires flexible recruitment rules and pay scales that are compatible with the private sector. It is also vital to ensure that government ICT users who do not have an in-depth knowledge of digital technologies are provided with the necessary resources and support to develop new competencies and make effective use of these technologies in their day-today work.

✧ **Creating multidisciplinary and multisectoral teams**

- Building strong teams and communities of practice can help foster better information sharing.
- **[Case 5.7]** In Australia, where the Digital Transformation Agency provides free training to assist government teams in understanding and meeting the Digital Service Standard. The Agency is currently "working on a Building Digital Capability program with the Australian Public Service Commission. The program will attract digital talent to the Australian Public Service, create clear career pathways, help managers create digital teams, and inspire leaders to take a visionary approach to creating digital services." The Agency also organizes "communities of practice that bring together people working in government to share ideas, show their work, solve problems and explore best practice". [87]As part of its efforts to ensure no one is left behind, the Government has put in place coaching and mentoring programmes for women to strengthen their digital role in government.

✧ **Ensuring safe spaces for innovation and experimentation**

- It is critical to ensure that individuals and teams working in the public sector can avail themselves of safe spaces for innovation and experimentation where collaboration with the private sector and civil society is possible and where risk-taking is not only allowed but encouraged. It is important to share experiences and lessons learned from countries that have successfully accelerated government innovation.
- **[Case 5.8]** In Denmark, the "Government supports a GovTech program to help tech startups deliver new solutions to create public sector value", and the Government of Finland has created a culture of experimentation with the launch of "a digital platform called Kokeilunpaikka (meaning 'place of experiment') to encourage citizens to learn about experiments and also design their own".[88]

✧ **A plan to develop individual capacities for digital government transformation**

[86] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020 pp.198

[87] Australia, Digital Transformation Agency, Building digital skills across government, available at https://www.dta.gov.au/ourprojects/building-digital-skills-across-government

[88] Deloitte, Innovation accelerators: creating safe spaces for government innovation (2019), available at https://www2.deloitte.com/us/en/insights/industry/public-sector/government-trends/2020/government-innovation-accelerators.html

- The key elements of a plan to develop capacities at the individual level for digital government transformation are as follows:[89]

Strengthen leadership capacities and the commitment to digital government transformation.
Enhance the understanding of digital trends and strengthen the digital literacy and digital competence of senior and middle-level government officials to enable them to manage the digital transformation process.
Enable the development of new mindsets and competencies through ongoing training.
Create multidisciplinary and multisectoral teams.
Attract and retain the best digital talent in the country through competitive remuneration, incentives and innovation programmes.
Design entry-level programmes to attract young talent.
Develop clear career development paths and engage in proper succession planning.
Ensure that there is a high ratio of ICT experts to other experts in government.

- **Quiz/exercises:**

1. How can the recruiting process be changed in order to improve the general digital capacity of public servants in your country?
2. What kind of mindsets do your country need for digital government transformation?
3. What are the steps to changing mindsets? How do you plan to use them?
4. In your opinion, do most people in your organization tend to have growth mindsets or fixed mindsets? Why?

5.5 Capacities at the societal level

This subsection analyses the critical role of developing capacities at the societal level and how Governments can promote digital inclusion.

- **What are the societal capacities?**

1. Digital government capacities and capacity development for the achievement of the SDGs are inextricably linked to the capacities of all stakeholders in society. Ensuring that no one is left behind is the overarching principle of the 2030 Agenda.
2. In every country, vulnerable groups—typically youth, women, older persons, migrants, indigenous peoples, persons with disabilities, minorities, and the poor—confront barriers that prevent them from fully participating in their nation's political, economic and social life. These groups are excluded through practices that discriminate against people based on their gender, sexual orientation, race, ethnicity, income level or disability status. Such practices can rob them of dignity, security and the opportunity to lead a better life.
3. Digital capacity development is a significant undertaking because all actors in

[89] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020, pp.199

society must be equally empowered. Developed countries and least developed countries are not at the same level in leveraging digital technologies for e-government. People living in rural areas may be at a greater disadvantage than people living in cities, including in the use of digital technologies to access and use government services. Those with relatively high incomes that can afford to pay for digital technologies, devices and connectivity have greater access to government services than do those with lower incomes. The digitally illiterate population is also unable to take advantage of the benefits of digital government.

- **Identifying those being left behind in digital government**

  In the context of digital government, a vulnerable or disadvantaged person may be broadly defined as one who is unable or at risk of being unable to access the online information or e-service(s) he or she requires, or for whom such access requires a disproportionate level of effort, with this lack of access placing that individual at a disadvantage.[90]

  Every individual — regardless of age, race, gender, ethnicity, legal status, place of residence, or socioeconomic status — is entitled to basic rights and services, including digital government services. The digital divide reflects and exacerbates longstanding structural inequalities, so while vulnerable populations may stand to benefit most from digital and learning technologies, they are also the most likely to be digitally excluded. Public institutions can play a key role in identifying those who are marginalized or disadvantaged and in ensuring that policies, funding and resources are directed towards addressing any gaps identified.

  1. **Those living near or below the poverty line**

     Poverty is multidimensional and takes many forms but is almost always associated with a lack of access to basic public services; digital poverty is an added dimension that can leave already disadvantaged groups even further behind. With the integration of digital poverty into the poverty paradigm, the implications of poverty extend beyond income measurements and the lack of access to health, education, housing, social security and other services to include the lack of integration in the digital world. Public administrations need to ensure that social protection, healthcare, education, employment, water and sanitation services are of adequate quality and are available, accessible and culturally acceptable to all groups in society—and as many of these services move online, extra steps need to be taken to ensure that those living in poverty are able to access essential e-services.

  2. **Women and girls**

     Gender equality is one of the cornerstones of sustainable development, and public institutions have an important role to play in bridging the gender gap so that no one is left behind. The gender gap is evident across all sectoral services,

[90] United Nations Economic and Social Council, Background note on challenges for institutions in ensuring that no one is left behind: draft contribution by the Committee of Experts on Public Administration to the 2016 thematic review of the High-Level Forum on Sustainable Development, prepared for the fifteenth session of the United Nations Committee on Public Administration, held in New York from 18 to 22 April 2016

with one research study concluding that women are 30 to 50 per cent less likely than men to use the Internet to participate in public life.[91] Women are also less likely to own a smartphone. In addition to being less connected, women are underrepresented online and in data. What's more, Gender disparities at the top level of e-government leadership are significant.

The full realization of the 2030 Agenda can occur only when women across the globe have achieved full equality and parity in political participation, leadership, and social and economic empowerment. Gender equality is a fundamental human right, but it is also a necessary foundation for a peaceful, prosperous and sustainable world. In many countries, women's rights are jeopardized or violated because of entrenched gender discrimination and limited access to social services and economic opportunities.

3. **Older persons**

The growth in the share of older persons is the result of declining fertility and increasing longevity as well as advances in social and economic development. This demographic transition is taking place against the backdrop of the accelerating digital transformation. In most countries, older persons represent the largest group of individuals that do not use information and communications technology (ICT).

Assistive technology devices and solutions can support greater and safer mobility for older people, especially persons with disabilities or those living alone. Social media platforms can promote social interaction and reduce social isolation and loneliness.

Older persons must be given careful consideration in the design of public service delivery models and the provision of government services. The lack of convenient access to social services through online portals or service centres can reinforce their exclusion and keep them on the wrong side of the digital divide. Older persons can benefit enormously from many of the new technologies available, including those used for the provision of public services, but action must be taken to strengthen their digital skills and ensure that they have access to the Internet. More broadly, Governments need to identify and address the specific challenges faced by older persons so that no one is left behind.

4. **Persons with disabilities**

More than 1.3 billion people, or 15 per cent of the world's population, experience some form of disability, with a large number living in developing countries. It is important to recognise the diversity of disability as disability extends across a wide spectrum, involving various levels of ability and encompassing physical and mental limitations. Similar to older people, they

[91] Sabhanaz Rashid Diya, The future of digital is human, The Daily Star, 16 January 2020, available at https://www.thedailystar.net/opinion/perspective/news/the-future-digital-human-1854616

tend to struggle with the adoption of digital technologies. Though they make up a relatively smaller share of the population, they should not be overlooked.

At present, e-government is far from being accessible for all persons with disabilities. Many of those with disabilities lack access to both physical services and e-services. Access to online services confers a disproportionate advantage, while the lack of access constitutes a disproportionate disadvantage. It often takes more effort and/or costs more for persons with disabilities to use e-government services and engage in e-participation activities.

Technical standards for e-services can be developed to meet a particular disability need, but it is just as important to consider the potential disability-related impact at all stages in the development of general technical standards. creating accessibility guidelines and consulting with disability experts are two ways to raise awareness among countries establishing e-services and relevant standards. In low-income communities with limited infrastructure and no previous experience with targeted assistance, those with disabilities can become increasingly isolated from the rest of society, but the provision of inclusive e-services can help close the gap. For persons with disabilities, accessibility and inclusion should be assigned top priority in the actions and policies of public institutions.

[Case 5.9] China: online services for persons with disabilities[92]

In China, e-government development has helped strengthen policy integration, improve the quality of public services, and increase government transparency. In April 2016, China released its National Plan on Implementation of the 2030 Agenda for Sustainable Development, which lays out specific plans for the implementation of the 17 Sustainable Development Goals and associated targets. In 2018, the State Council issued guidance on accelerating the establishment of a nationwide online government services platform and further promoting "Internet + government services" to optimize the business environment, bring convenience to enterprises and people, stimulate market vitality and social creativity, and build a service-oriented government people are satisfied with.

Within this people-centric government services framework, particular attention is being given to vulnerable groups. For example, to address the needs of persons with disabilities, Beijing has made continuous efforts to improve social security and public services systems by promoting innovative online applications. One of these is a special application that allows persons with disabilities to apply for assistive devices directly from the government website. Assistive device services are provided to all certified persons with disabilities who have a Beijing household registration, so there is no need to submit

[92] China, E-Government Research Center, Party School of the Central Committee of C.P.C (National Academy of Governance), available at https://www.ccps.gov.cn/bmpd/dzzzw/

certification of disability when accessing such services. Persons with disabilities can get at least 50 per cent of the relevant subsidy for purchased auxiliaries on the service platform; those who receive a subsistence allowance, those who have a low income, no income or are unemployed at working age, children under 16, and students above the age of 16 are entitled to a 100 per cent subsidy. The application is made simple; persons with disabilities only need to sign in on the Beijing Persons with Disabilities Online Service Platform or Beijing Municipal Administrative Service Center website at home and submit their applications online. After the platform automatically identifies the candidates and the corresponding subsidy through data sharing, the administrative departments complete the examination and approval process online. The auxiliary products can be purchased on the Internet to satisfy practical needs and are delivered to people's homes in about a week. This process eliminates all certifications and intermediate procedures and enables persons with disabilities to undertake all transactions from home.

5. Youth

Globally, there are more than 1.8 billion young people between the ages of 15 and 24, and close to 90 per cent of them live in developing countries. Young people have never been more educated or more connected, yet they continue to encounter significant obstacles that prevent them from realizing their full potential. Around 267 million youth are not in education, employment or training; young women make up two thirds of this group as a result of gendered expectations guiding them towards unpaid family work and informal employment.

Technology has greatly expanded access to information and opportunities, prompting changes that have transformed the lives of many young people. The innovative potential of young people and the power of technology are already proving to be a powerful combination for empowering youth to achieve the Sustainable Development Goals. Young people around the globe are generally eager to adopt new technologies and should face no difficulties in embracing digital government.

Digital government can also play a central role in engaging young people in public discourse. Some government administrations have addressed the limited participation of youth in policymaking through targeted policy and institutional reform; the adoption of relevant legislation and the creation of a national youth congress are among the mechanisms implemented to facilitate youth participation in governance. Enhanced responsiveness to the needs of youth in the development and delivery of public services has stimulated an increase in proposals put forward by young people as inputs to policymaking.

6. Migrants and refugees

There are disparities within and between refugee and migrant groups in terms of physical access to digital technology, utilization rates, the skills needed to

make best use of the different technologies, and the ability to pay for digital services.[93] Large inflows of migrants and refugees bring unprecedented challenges and place a severe strain on public institutions.

Understanding the critical challenges migrants and refugees experience is crucial in designing e-government policies and has the potential to increase their inclusion in society and decrease immigrant-native achievement gaps.[94] However, the provision of digital services for migrants and refugees needs to be balanced with face-to-face interaction and support.

7. Other vulnerable populations

Generally, the lack of online services for vulnerable groups derives from intentional or unintentional discrimination, cultural barriers, educational opportunities and institutional gaps caused by the failure to identify emerging divides and respond with public policies and services that meet the needs of these groups. There is still insufficient understanding of how the design and implementation of e-government affects people of different ages, capabilities and income levels and what needs to be done to address discrimination and ensure equity for all.

Clearly, proactive efforts are needed to acknowledge and identify the gaps, to provide vulnerable populations with mechanisms for engagement so that the types and origins of discrimination are better understood, and to then use what has been learned to develop responsive e-government and improve the lives of those who are hardest to reach.

- **Developing digital capacities for co-creation and cooperation and promoting digital inclusion**
  - ✧ Digital capacities for co-creation and cooperation in public service delivery can be developed in many ways, including through civil society hackathons, awareness-raising workshops, targeted training, and informational meetings with an array of stakeholders. These types of collaboration increase societal capacities and buy-in.
  - ✧ To promote digital inclusion and ensure that more people can navigate the Internet and benefit from government services, many Governments are prioritizing the provision of opportunities for digital literacy development. While digital skills and competencies can be acquired through targeted training at any age, they should ideally be developed within the context of a broader quality education so that children and youth can benefit from early exposure and experience.
  - ✧ **[Case 5.10] Zambia**[95]

[93] Khorshed Alam and Sophia Imran, The digital divide and social inclusions among refugee migrants: a case inregional Australia, Information Technology and People, vol. 28, No. 2 (2015); available at https://www.researchgate.net/publication/273003145_The_Digital_Divide_and_Social_Inclusion_among_Refugee_Migrants_A_Case_in_Regional_Australia

[94] Margarida Rodrigues, Can digital technologies help reduce the immigrant-native educational achievement gap?, JRC Working Papers (Seville, Joint Research Centre, 2018)

[95] United Nations, Department of Economic and Social Affairs, "UNPSA winners" (2014)

Efforts undertaken in Zambia constitute a good example of how a Government has invested in the capacity development of its people. Through the iSchool Zambia initiative, the Government has facilitated the development and dissemination of a public-private ICT-based "home-grown" educational programme. Learning materials in English and vernacular languages have been produced, along with lesson plans, teacher training materials and student reading books. Targeted schools receive tablets with training materials and solar-power equipment (if needed). Smart centres—local Internet-café-style facilities set up to encourage community engagement—serve as satellite communications facilities and provide digital access. This is enhanced by low-cost rural connectivity, data analytics and off-grid power.

- ✧ Developing capacities for digital government must be purpose-driven and pursued with the intention of bridging gaps among different societal groups and regions. To bridge the digital divide, Governments can make Internet access more affordable, provide multiple channels to access services, and deliver user-friendly online content. Many countries have already taken steps to expand avenues of access to government information and services. Other ways to narrow the digital divide are to offer user-friendly content that is easily accessible and to provide adequate user support. Self-service kiosks, one-stop shops, online video and audio tutorials, user-friendly interfaces, and help-desk support through live chats and face-to-face interaction benefit all users but can be especially valuable for vulnerable groups.
- ✧ It is essential to raise awareness through effective public communication campaigns both to inform people of the benefits of digital services and to ensure more widespread use of online platforms. If people are not aware that government services are provided online, they will not use them.
- ✧ **[Case 5.11] India**[96]

  Through the Digital India initiative, the Government has produced resources such as banners, public campaign materials, videos for television, and materials for face-to-face information sessions with people.
- ✧ **[Case 5.12] Canada**

  In Canada, the country's Policy on Communications and Federal Identity[97] ensures that communication with the public is carried out through a variety of media and platforms in order to maximize reach and explore innovative ways to use technology. Government departments inform the general public about e-government services through Twitter, Facebook and LinkedIn; as an example, the team responsible for developing a new payment system for the Treasury Board of Canada Secretariat used Twitter to announce the changes and to actively connect with and engage the general public. The aforementioned Policy circumscribes the Government's use of social media. The Privacy Commissioner of Canada provides online resources, including

[96] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020, pp.203

[97] Canada, Policy on Communications and Federal Identity, available at https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=30683

tips for using social media sites that outline privacy implications for both employees and employers within the Federal Government.

- ✧ Governments must demonstrate that they can be trusted with the data people provide and that their interaction with the public can produce meaningful change. They need to show that they are credible in terms of providing safe and consistent access to services, promoting digital literacy, and enabling the participation of all groups in society, particularly the most vulnerable.
- ✧ Hackathon: encourage more talents and stakeholders to participate in the innovation of digital technology.
  - ➢ A hackathon, also known as a codefest, is a social coding event that brings computer programmers and other interested people together to improve upon or build a new software program. It brings people with technical backgrounds together to form teams to solve a problem or develop new ideas, and finally generates ideas for new tech products and services.[98]
  - ➢ **[Case 5.13] EUVsVirus Hackathon by the European Commission[99]**

    It was a pan-European online hackathon from April 24 to 26, 2020, connecting civil society, innovators, partners, and buyers across Europe to develop innovative solutions to coronavirus-related challenges. There were six general challenge domains: health & life, business continuity, social & political cohesion, remote working & education, digital finance, and "other". This hackathon was a world record with more than 21,000 participants in 3,500 teams from many nationalities. This whole initiative made possible the creation of many projects, from connected devices to software-based platforms such as 3D glasses to monitor vital signs and an online matching system for health equipment.
  - ➢ **[Case 5.14] African Youth Anti-Corruption Hackathon by the United Nations Office on Drugs and Crime[100]**

    As the first edition of the Coding4Integrity hackathon series, organised in 2021 for young coders from Egypt, Kenya, Nigeria, Senegal and South Africa, represents one outstanding example of how to leverage distance learning, digital innovation and social entrepreneurship to meaningfully engage youth whilst empowering them in coming up with their own innovative and creative solutions. The hackathon offered young developers the chance to come up with their own ideas on how to counter corruption through technology. Each of the 65 teams chose a single thematic area and developed their ideas within one of three hackathon tracks, namely Artificial Intelligence, Blockchain Dapp Development, or Web2 Development.

- **Bridging digital divides and empowering vulnerable groups**
  - ✧ Leaving no one behind in the evolving hybrid digital society is a challenge for

[98] Mekhala Roy, Hackathon, available at https://www.techtarget.com/searchcio/definition/hackathon

[99] Kiev Gama, Successful Models of Hackathons and Innovation Contests to Crowdsource Rapid Responses to COVID-19, Digital Government: Research and Practice, Vol. 2, No. 2, 2020, pp.1-7

[100] African Youth Anti-Corruption Hackathon 2021, available at https://grace.unodc.org/grace/en/youth-empowerment/coding4integrity/african-youth-anti-corruption-hackathon-2021.html

both developed and developing countries. For instance, the development objective behind the establishment of a personal identification system is inclusive in nature, but in cases where the approach is not well designed or where the legal framework is weak and fails to take into account factors such as cost and access, discriminatory practices can emerge that will have the greatest impact on the most vulnerable, including those living in poverty, women, older people, and persons with disabilities.

- ✧ Millions of connected individuals can leapfrog traditional barriers to enjoy the services and benefits of a digital government and economy, with faster communication, streamlined transactions and a multitude of services at their fingertips. Digital technology is playing an increasingly critical role in the way the world lives, learns, works, and participates in the economy and society — which means that vulnerable populations without digital access are effectively placed at an even greater disadvantage and are being left even further behind. To achieve equitable participation in the digital society and bridge the widening digital divide, Governments must make meaningful digital opportunities available for all – beyond basic connectivity, in particular the poorest members of society, women and girls, older people, persons with disabilities, youth, migrants, refugees, and other marginalized groups.
- ✧ The digital divide is now characterized by a higher degree of complexity; it is no longer just about connectivity but is also a measure of the extent to which one can benefit from online information and digital services. In the hybrid digital society that exists today, the lack of access to digital services among those who are living in poverty or vulnerable situations—referred to in this chapter as the digital poor—may be either intentional (the result of exclusionary policies and laws) or unintentional (the result of societal power dynamics or one-size-fits-all policies).[101] The digital gaps in institutional coverage can also be attributed to a lack of access to engagement opportunities and consultative processes for vulnerable populations, coupled with a lack of awareness about the needs of these groups on the part of Governments.[102] Achieving digital equity for all is more urgent now than ever before.

- **Barriers relating to access, affordability, and ability (3As)**

  Leaving no one behind is key to addressing the expansion of digital services to ensure access for all. The operationalization of this objective is critical but challenging, however, as digital inclusion is influenced by a multitude of economic, social and governmental factors relating directly and indirectly to issues around digitalization. People from all segments of society have an equal right to benefit from the advancement of digital government; however, among the poorest and most vulnerable, access to public services continues to be impeded by barriers such as financial cost, geographical location, cultural and

[101] Kevin Watkins, Leaving no one behind: an agenda for equity, Lancet, vol. 384, No. 9961 (20 December 2014), pp. 2,248-2,255, available at https://doi.org/10.1016/S0140-6736(13)62421-6

[102] United Nations, Economic and Social Council, conference room paper on eradicating poverty and promoting prosperity while leaving no one behind: implications for public administration, prepared for the sixteenth session of the United Nations Committee of Experts on Public Administration, held in New York from 24 to 28 April 2017

environmental factors, discrimination, language-related issues, and the lack of institutional support for equitable digital inclusion in e-government. Different groups have specific constraints requiring targeted solutions.

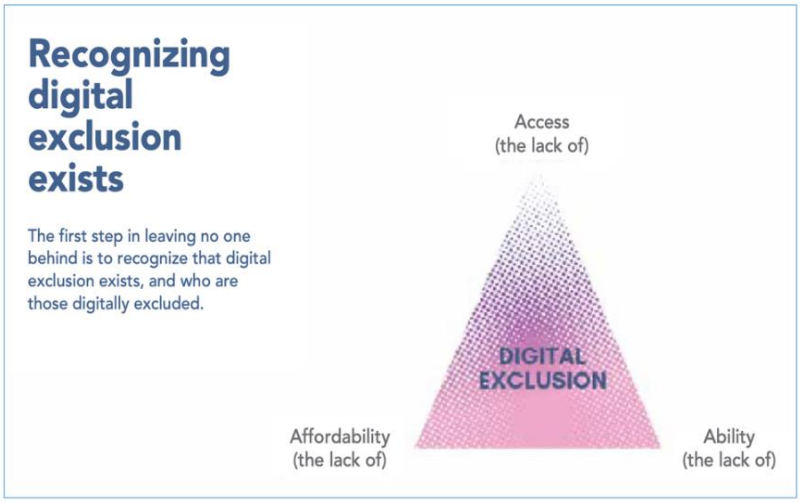


Figure 5.14 The intersectionality of barriers: of access, affordability and ability in determining digital exclusion

- ✧ Access

  Access is a fundamental requirement for digital inclusion. Critical areas of access in the context of digital government include access to electricity, access to the Internet and mobile infrastructure, and access to e-information and e-services.

- ✧ Affordability

  Meaningful access to digital information and services remains too costly for many vulnerable groups, especially in developing communities and regions. The growing ubiquity and complexity of digital government make affordability an even bigger concern, as the inability to pay essentially translates into digital exclusion when those who are most vulnerable are unable to access ever-evolving e-government services and are being left further and further behind.

  Affordability covers three areas relevant to e-government: (a) the affordability of Internet access, especially broadband (for services requiring high bandwidth); (b) the affordability of digital devices (cellular phones and other mobile-enabled devices); and (c) the affordability of e-services and the need for public access points (some may require direct fees or the payment of fees to an intermediary, and users may need to travel a significant distance to access mobile services or complete e-service transactions).

- ✧ Ability

  Access and affordability are closely linked to digital literacy, as opportunities to improve digital competency mean little when individuals are digitally excluded or do not understand how they might benefit from digital connectivity.

The three areas of literacy relevant to e-government participation are general (or traditional) literacy, digital literacy and language literacy.

- **The role data, design and delivery can play in ensuring no one is left behind**[103]

  In order to address evolving needs within the new hybrid digital society and ensure that no one is left behind, Governments may need to rethink, revise or even revolutionize the way they provide services and interact with the public, with particular attention given to vulnerable populations, and through an integrated offline-online approach. It is important to shift the focus from abstract visions to functional solutions that answer objectively assessed needs. It is offered an integrated framework for e-government engagement grounded in three essential elements:

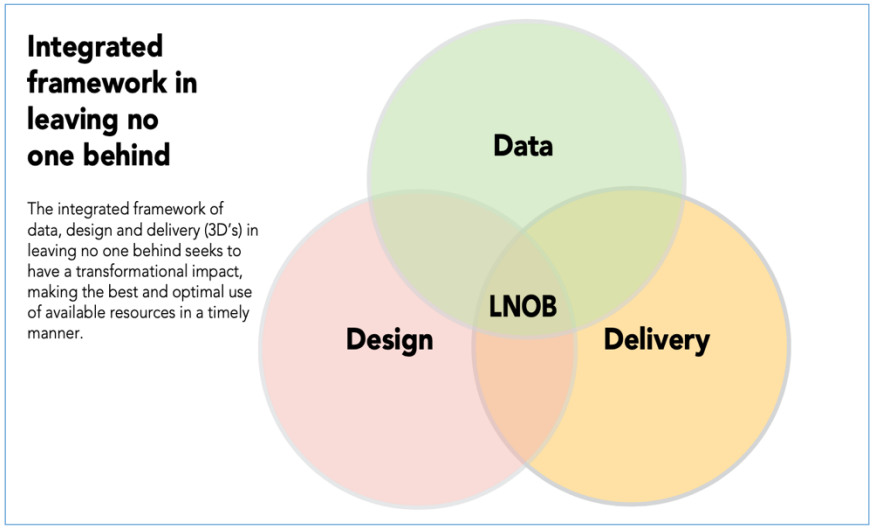


Figure 5.15 Integrated data-design-delivery framework for e-government

- Data informed by the specific needs of vulnerable groups;
- Design that places people at the centre of e-government policy processes and services provision;
- Delivery approaches that focus on inclusion and the use of innovative approaches (such as blended/omnichannel delivery, pilot initiatives, experimentation, and sandboxing) to reach those left furthest behind.

Strategies centred around data, design and delivery are not new, but they have not been used widely by Governments in an integrated framework. These "3D's" are intersecting tools that can have a transformational impact. Taken together, they can improve e-government for all but are likely to have the greatest effect on vulnerable populations, given the challenges disadvantaged groups face with regard to meaningful digital access and connectivity, the affordability of mobile devices and Internet connectivity, and the ability to engage in and benefit from e-government.

[103] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2022, pp.136.

- **Quiz/exercises**

1. Identify stakeholders of digital government transformation in society.
2. Identify those who are being left behind in digital government transformation.
3. Try to use the stakeholder analysis to identify stakeholders such as governments, enterprises, civil society organizations, and vulnerable groups in your country; please also tell what their stakes are, and how to balance their interests in the process of digital government transformation.
4. How can the new technologies contribute to digital government transformation?

5.6 Capacities of capacity developers

This subsection emphasizes the importance of developing the capacities of capacity developers and provides a few examples of relevant capacity development initiatives.

- **Who are capacity developers?**
  - ✧ A wide range of education providers should be involved in sustainable capacity development. Capacity developers may include schools of public administration, management development institutes, or non-State actors such as private sector software developers.
- **Developing the capacities of capacity developers**
  - ✧ Institutes and schools of government and public administration, which are uniquely positioned to play a key role in strengthening the skills and competencies necessary for the implementation of the 2030 Agenda. Schools of government provide training for public servants of all types and at all levels. They are involved in setting up research programmes for public administration and public policy and can provide technical assistance to public administrations (including HR managers) in the implementation of reform and innovation programmes. Institutes of public management and schools of public administration play a central role in developing curricula that provide current and future public servants with the requisite skills, mindsets and competencies they will need for effective governance.
  - ✧ **[Case 5.15] Digital Kazakhstan: providing civil servants with digitalization training**[104]

    Key to the success of any government digitalization effort is building the capacities of those who train and educate the users of ICT-based programmes. Digital Kazakhstan coordinates ongoing training programmes that strengthen the capacities of chief digital officers and IT specialists at all levels of government to provide government employees with the ICT skills and support they need to contribute to digital government transformation. The training workshops focus on economic sectors, new technology trends and project management skills. So far, civil servants have been able to participate in training programmes at Nazarbayev University in Kazakhstan, the Academy of Public

[104] United Nations Public Service Awards database, available at https://publicadministration.un.org/en/UNPSA; Digital Kazakhstan, About the program, available at https://digitalkz.kz/en/about-the-program

Administration under the President of the Republic of Kazakhstan, the e-Governance Academy in Estonia, and the e-Government Leadership Centre in Singapore. Central to this programme of continuing education is the commitment to building the capacities of capacity builders through public and private partnerships. The objective is to ensure that individual digital government experts and leaders internalize and are able to develop in others the strategic mindsets and competencies for today and the future. Transformational leadership must be developed at the individual level so that public servants possess the skills and strategies needed to address rapidly evolving and increasingly complex issues and can also build digital, institutional, organizational, and societal capacities.

✧ **[Case 5.16] UN DESA: global initiative focused on equipping public servants with the capacities to implement the SDGs**[105]

"The overall purpose of the initiative is to develop the capacities of public servants (in terms of knowledge, skills, attitude, leadership competencies and mindsets) to support the implementation of the SDGs, provide data and information about [the] development of capacities in various regions, and support institutional capacity development for improved public service delivery as well as North-South and South-South exchange of effective governance practices to ensure cross-fertilization and mutual learning." Through the initiative, UN DESA "is engaging with schools and institutes of public administration to mobilize and equip public servants for implementing the 2030 Agenda … as well as developing and updating their curricula to reflect the SDGs and the key principles and objectives of the 2030 Agenda." The overall purpose of the initiative is to develop the competencies public sector leaders and public servants require to effectively support the achievement of the SDGs. Through this initiative, the UN DESA Division for Public Institutions and Digital Government was able to provide technical assistance to 57 institutes and schools of public administration in Africa, Asia and the Pacific, Central Asia and Latin America, enabling them to provide targeted capacity development and training to more than 2,000 government officials from around the world. This initiative has facilitated the provision of purposeful training that highlights the critical importance of changing the mindsets of public servants in order to achieve the SDGs.

- **Quiz/exercises**

1. Who are the main capacity developers in your country? How could the capacity developers have an impact on digital government transformation?
2. Discuss what role of schools of public administration could play in your country and how they can help to promote digital mindsets in public sector.

[105] United Nations, Calendar—events: Building Capacity of Training Schools and Institutes of Public Administration for the SDGs (2019), available at https://publicadministration.un.org/en/news-and-events/calendar/ModuleID/1146/ItemID/3025/mctl/EventDetails

5.7 ICT infrastructure, affordability, security, and access

- ✧ A robust ICT infrastructure is a critical enabling factor for effective digital government transformation. Without affordable and widely available high-speed broadband Internet and safe and secure access to new technologies, Governments cannot effectively provide digital services and people cannot make use of them. There are **various new technologies** such as:
  - **Artificial intelligence (AI)**
    The definition of artificial intelligence: The Oxford English Dictionary of Oxford University Press defines artificial intelligence as: the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.[106]

    Since Governments have been searching for ways to effectively contain the COVID-19 outbreak and relieve the stress on public services, this trend has further intensified. Most innovative quick-to-market solutions have stemmed from the private sector. However, the crisis has exposed the need for increased government leadership in the development and adoption of new technologies such as AI and robotics to ensure an effective provision of public services. AI-powered technology has proven to be beneficial for the provision of health care services when emergency lines outpaced capacity.

    In Indonesia, the Government's Task Force for Research and Technological Innovation has been working on models to use AI to strengthen diagnostics by doctors in detecting the Coronavirus. During the outbreak, many people have turned to self-checks for symptoms and accessed "virtual doctors'' to get medical advice. For example, in Croatia, the "virtual doctor" is powered by artificial intelligence and has been developed by Croatian IT companies in cooperation with epidemiologists. This digital medical assistant is proving highly effective, since it can process tens of thousands of requests on a daily basis, while doctors can only handle some 50 calls a day.[107]
  - **Chatbot**
    A chatbot or chatterbot is a software application used to conduct an on-line chat conversation via text or text-to-speech, in lieu of providing direct contact with a live human agent.[108] Chatbots have offered solutions in overcoming language barriers, accessing information, and communicating with health practitioners.

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[106] Oxford English Dictionary, artificial intelligence, n., available at https://www.oed.com/viewdictionaryentry/Entry/271625

[107] Department of Economic and Social Affairs of the United Nations (UNDESA), United Nations E-Government Survey 2020, pp.222-223.

[108] Chatbot, Wikipedia, available at https://en.wikipedia.org/wiki/Chatbot#cite_note-target-1

[Case 5.17] Dubai: Rammas chatbot[109]

The Dubai Electricity and Water Authority (DEWA) is the first government organization in the emirate to use AI for direct, real-time interaction with customers. In 2017, DEWA launched Rammas, an online chatbot that can communicate with customers and respond to their queries in both Arabic and English. This initiative aims to reduce the number of visitors to DEWA offices by 80 per cent and to further encourage the use of smart channels to support the Smart Dubai initiative. It also supports the efforts of DEWA to enhance the use of AI in alignment with its vision to become an innovative—and more sustainably operated—world-class utility. Available through the DEWA smart application, Rammas acts as a virtual employee that is available around the clock. "Rammas responds to customers instantly while continuing to learn and understand their needs based on their enquiries. Rammas ... analyses these enquiries based on available data and information and takes action to accurately answer and streamline transactions with ease".

- **3D printing technologies**

  3D printing technologies have been adopted to produce replacement valves for reanimation devices, and protective medical face shields to address the shortage. During COVID-19, Italy was one of the first countries to expand its production of valves through 3D printing technology developed by Italian engineers. The Austrian Government has been cooperating with the University of Technology Graz to produce 300 more protective masks and hospital gear items per day, which are urgently needed in hospitals and general practices.

- **Robots**

  Robots have been effective in providing security and sanitation, thus, reducing staff exposure to health risks. Patrol robots using facial recognition and thermal cameras are deployed at airports and public places to scan crowds and identify potentially infected people. Sterilization robots equipped with ultraviolet lights have been helpful to disinfect hospitals and contaminated areas. Other robots monitor vital parameters from medical devices or allow patients to communicate remotely with nurses.

  Governments are also using drones with similar technologies to monitor streets, deliver medical supplies or disinfect public spaces. In Oman, for example, the Royal Oman Police is using drones to instruct citizens and residents to stay at home and avoid stepping out unless it is absolutely necessary.

- **Blockchain**

  Blockchain is opening up a wide range of possibilities for smart services

[109] Dubai Electricity and Water Authority website, available at https://www.dewa.gov.ae/en/about-us/dewa-digital-journey/rammas; the Rammas chatbot, available at https://www.dewa.gov.ae/en/rammas.

applications. The transformative potential of this technology is enormous. Public officials are investigating how blockchain systems can assist them in their administrative duties and are exploring ways the blockchain ecosystem can benefit society at large. Blockchain technology will allow certain aspects of city management to be distributed among stakeholders, decentralizing governance and making it possible for complex transactions to be managed by multiple parties in areas such as power production, distribution and consumption. Recently, the United Arab Emirates developed the UAE Strategy for Artificial Intelligence and Emirates Blockchain Strategy 2021. The objective of the blockchain strategy is to transfer 50 per cent of government transactions to blockchain by 2021, while the AI strategy focuses on improving government activities in specific sectors, including technology, transport, health, education, water, renewable energy and environment. Saudi Arabia has an agreement with IBM to implement blockchain applications for government and commercial services. In 2018, Bahrain implemented Legislative Decree No. 54/2018 for the Issuance of Letters and Electronic Transactions, which provides a legal framework for the use of new technologies such as blockchain for government services.

- **Big data and analytics**

  Cities can use analytics to improve municipal policymaking and operations in a wide range of areas. Big data is produced from a variety of sources and is becoming critically important in the design and deployment of effective local government policies. Decision-making based on comprehensive real-time city data analysis allows municipal authorities to optimize public resources in a holistic manner. Leveraging the full potential of big data can transform government models, service models and industrial development processes, making cities and human settlements inclusive, safe, resilient and sustainable (SDG 11).

  [Case 5.18] Hangzhou: real-time traffic management[110]

  Hangzhou manages its traffic through the analysis of big data. Millions of servers clustered together in a supercomputer analyse data points and use proprietary algorithms to manage traffic signals and improve traffic flows. Using analytics and artificial intelligence, the city's smart traffic system has helped reduce congestion, road accidents and crime. Cameras across the city monitor traffic conditions at all times. The traffic management system recognizes traffic accidents and congestion from video footage and integrates Internet data and alarm data to instantly perceive and respond to traffic incidents throughout the city. When an accident occurs, road users and authorities are quickly alerted and traffic flows are managed accordingly. Using smart vehicle dispatching technology, the system

[110] Du Yifei, Hangzhou growing "smarter" thanks to AI technology, first published in People's Daily, 19 October 2017; accessed from the Al Wihda website, available at https://www.alwihdainfo.com/Hangzhou-growing-smarter-thanks-to-AI-technology_a58657.html

issues integrated dispatch commands to police, fire, rescue and other essential vehicles. The system then coordinates traffic lights to give emergency response vehicles unimpeded access to emergency sites. Video analysis technology is used to index the entire city, and video recognition algorithms allow authorities to take preventive measures to ensure the safety and security of the public. The use of the traffic management system has increased traffic speeds by 11 percent and has reduced travel time in the city by 10 percent.

- **Internet of Things**

  "The Internet of Things is the concept of connecting any device (so long as it has an on/off switch) to the Internet and to other connected devices. The IoT is a giant network of connected things and people – all of which collect and share data about the way they are used and about the environment around them."[111]

- **AR and VR**

  Immersive technologies such as AR and VR can provide users with engaging experiences and in the present context can improve municipal governance and the lives of visitors and local residents. These technologies are often mentioned in the context of promoting local tourism, as they can play an important role in attracting visitors, which bolsters the economy. However, there are also a number of practical uses for AR and VR in municipal operations. Large metropolitan areas are often difficult to navigate, even for local residents, and using a traditional smartphone GPS is not always the safest approach, as it interferes with the user's awareness of his or her surroundings and can lead to an accident.

  Creating an augmented layer with navigation can drastically improve the navigation experience and increase the safety of the driver. In emergency situations or in the aftermath of a disaster, AR applications can provide rescuers with virtual assistance, including clear communication channels, accurate information on current conditions, safe-route suggestions, and real-time decision-making support. AR and VR can also be used to train police officers and rescue workers, as the interactive visual effects can allow them to experience and respond to simulated threats in realistic locations and threat situations. These emerging technologies, like the others reviewed in this section, can contribute to the SDG 11 objective of making cities and human settlements inclusive, safe, resilient and sustainable.

- **Cloud computing**

  Existing city infrastructure can be improved through increased reliance on cloud computing, which offers local governments the opportunity to seamlessly implement new smart applications to improve data capture,

[111] IBM, Internet of Things, available at https://www.ibm.com/blogs/internet-of-things/what-is-the-iot/

strengthen predictive capacities, and enhance services provision—while also keeping costs down. The local authorities in Buenos Aires are using a cloud-based system to manage the city's smart lighting system, ensuring access to affordable, reliable, sustainable and modern energy for all (SDG 7) and sustainable consumption and production patterns (SDG 12). Cloud computing options are also available for residents, who can conveniently use cloud services virtually anywhere on the device of their choice.

[Case 5.19] Buenos Aires: cloud-based lighting management system[112]

As the population of Buenos Aires has increased, so have energy consumption and CO^2 emissions. In an effort to rationalize energy use, local authorities installed a high-quality LED street lighting system supported by cloud-based lighting management software. The new system is more energy efficient, cheaper to operate and more sustainable and has made the city safer and smarter. The system allows the monitoring, switching, and dimming of each light point in the network, optimizing energy consumption and creating safe conditions for vehicles and pedestrians. The lighting management software supports new and existing lighting assets and the remote monitoring of performance, energy consumption, and fault detection. The system upgrade has affected 91,000 light points or 75 percent of the city lighting in Buenos Aires, saving 50 percent in operational costs and significantly reducing annual CO^2 emissions.

- ✧ A robust ICT infrastructure can cope with the risks. Cloud services can be particularly vulnerable to cybersecurity threats. Sensitive data stored in the cloud, including financial, public sector and health data, can be compromised through hacking or misuse. Protective measures that meet international quality and safety standards need to be put in place and updated as needed. Cloud security regulations should cover public and private cloud services, as confidential personal and government data are stored in both. Blockchain is being used in a growing number of countries as a security feature.
- ✧ A robust ICT infrastructure can increase connectivity. Connectivity is a critical concern for many digital government developers. ITU estimates indicate that while the number of Internet users worldwide increased between 2005 and 2019, half of the world is still not connected. The region with the highest Telecommunication Infrastructure Index (TII) value in 2020 is Europe (0.82); the corresponding values for Asia and the Americas are just under 0.60, and those for Africa and Oceania are below 0.40. The proportion of individuals with Internet ranges from 26.8 per cent in Africa to 82.4 per cent in Europe. These enormous gaps in ICT infrastructure and Internet access characterize what the world experiences as the digital divide.
- ✧ A robust ICT infrastructure should expand public access options. Since private Internet access is not possible in many contexts, Governments must expand

[112] Interact City, Buenos Aires: an innovative platform that supports adaptive smart city applications, available at https://www.interact-lighting.com/global/customer-stories/buenos-aires

public access options, including Wi-Fi hotspots in public spaces, Internet kiosks for services, and similar alternatives. Such measures require significant public investment and will need to be funded from national budgets, though outside partnerships might ease the financial burden, and also invite innovation. Digital collaboration is actually becoming a critical factor for success. Governments should actively pursue public-private, North-South, South-South and other partnerships to build digital capacities in all areas and at all levels in order to leverage new and emerging technologies for digital government development.

✧ **[Case 5.20] China: embracing digital transformation[113]**

Chinese municipalities have been racing to set up their digital government portals. The Shanghai Government Data Service Portal is one of the local projects that has been most successful in providing one-stop public services. Simultaneously, China is actively incorporating frontier technologies such as big data, AI and 5G into digital government to enhance the efficiency of public sector management and service delivery. In 2020, the Government announced its intention to establish a government information resource sharing system using blockchain technology. Social media applications have also been smartly utilized as digital tools to connect people, businesses and the Government. The most notable examples are WeChat and Alipay, which allow individuals to access public services through their smartphones. The Government is also establishing official accounts on social media to facilitate direct interaction with the public. Public authorities are increasingly using social media as a tool for crisis management; during the outbreak of COVID-19, members of the public used Alipay to report their health status and emergencies.

Quiz/exercises

1. Discuss the technology gaps and opportunities in your country by using the DGC assessment –TECHNOLOGY section.
2. How can frontier technologies contribute to digital government transformation?

5.8 Key messages

✧ The key idea of this module is to help identify the capacities at different levels and find the proper models for different situations.

- Identifying the capacities at different levels

In different contexts, we need to practice different types of assessments. If we are to test an individual's performance and perceptions, the Individual Level

[113]China, Report on the Work of the Government (2015), available at http://english.www.gov.cn/archive/publications/2015/03/05/content_281475066179954.htm; UNDP China, Smart Cities and Social Governance: Guide for Participatory Indicator Development (Beijing, 2017), available at https://www.undp.org/content/dam/china/docs/Publications/Smart%20Cities%20and%20Social%20Governance-EN.pdf

Assessment is what we need. The difference between the organizational level and institutional level is whether there's party difference and groups. The societal level is easy to understand, which is to assess the response of the entire society. Also, there are analyses for stakeholders like developers, partners, and infrastructure.

- Searching for the right tool

For each different level to analyze, we've prepared assessment models respectively. Note that they are only some universal tools that fit certain scenes well. This doesn't necessarily mean that they are always the best choice. For real situations, we still recommend you compare and find the optimal model according to the specific question.

✧ The digital government strategy and the road map for digital government transformation should be built around key pillars, and all targeted priorities should be addressed holistically. Governments must put in place an institutional and regulatory ecosystem for the deployment of digital government, employ systems thinking and an integrated service model approach, and establish a central coordinating agency or mechanism with budgetary autonomy to manage the implementation of the national digital strategy and transformation road map. Priority should be given to recruiting and retaining the best talent in a country, developing critical mindsets, and promoting safe spaces for experimentation.

✧ Another essential priority in digital government transformation is promoting digital inclusion and ensuring that all people, including vulnerable groups, can access new technologies and e-government services to improve their well-being.

✧ Capacities that support effective digital government transformation are required at the societal, institutional, organizational and individual levels. Capacities for managing data, mobilizing resources, and ensuring adequate ICT infrastructure and the availability of affordable and accessible technology and high-speed connectivity are equally important.

✧ Digital capacities at the societal level—including digital skills and competencies but also the appropriate values and norms—are critical for the uptake and continued use of digital services and for sustained digital participation.

Quiz/exercises:

1. Summarize the challenges and opportunities at four levels and identify which entities should be responsible for addressing those challenges.
2. Develop an outline of strategy and roadmap for digital government transformation. Also outline the capacity development for your country at the institutional, organizational, individual, and societal levels.
3. Which civic group do you think is most vulnerable in your society? What is the digital divide in your country context and how to narrow it?
4. Do you think your country has a robust ICT infrastructure?

Lessons learned and reflections

1. What are the strategy and roadmap needed?
2. What is an institutional ecosystem?

3. What are the most important traits of CIOs today?
4. What are growth and fixed mindset?
5. What are the mindsets needed for SDGs implementation?
6. What actions can the government take to help foster changing mindsets?
7. In general, who are vulnerable groups in society?
8. Who are capacity developers and how they can contribute to digital government transformation?

Chapter 6 Monitoring, evaluation, and improvement for digital government transformation

The fourth building block of a holistic approach to digital government transformation is monitoring and evaluation. Thus, we can know, “How far have we gone?”. Since digital government transformation is a dynamic process and a long journey instead of a final destination, the continuous monitoring and evaluation of digital services are essential. This chapter will introduce the objectives, methods, and indicators of monitoring and evaluation. For further learning, iterative feedback is needed to ensure continuous improvement.

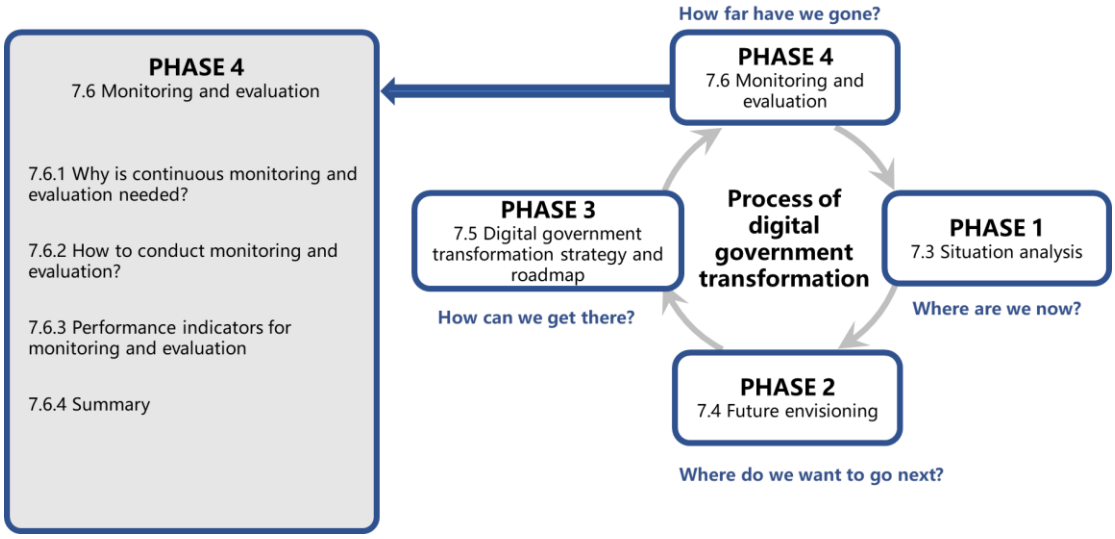

Figure 6.1 The overall structure of Section 7.6

6.1 Why is continuous monitoring and evaluation needed?

Digital government is a journey and not a final destination, the continuous monitoring and evaluation of digital services is essential.

- ✧ An impact assessment methodology for evidence-based policymaking can help Governments evaluate the progress in the medium term.

  [Case 6.1] In June 2008, the Government of Scotland updated its National Performance Framework to provide a unified structure for measuring sustainable, inclusive growth and the well-being of citizens.[114]
- ✧ Keeping track of how digital government services are contributing to or can better contribute to the achievement of the SDGs is equally important.

[114] Scotland, National Performance Framework—what it is: an overview of the Framework, available at https://nationalperformance.gov.scot/what-it

[Case 6.2] In 2018, the University of Oxford and the Global Change Data Lab launched the SDG Tracker to accurately monitor and measure progress towards the realization of each of the 17 Goals and related targets.[115]

- ✧ The essence of monitoring and evaluation is to track progress and measuring what is happening in relation to what was planned. A well-designed monitoring and evaluation plan will provide a basis for accountability for results used and results achieved, which will support evidence-based decision-making. Meanwhile, the continuous monitoring and evaluation generates critical information for evaluation, providing recommendations and lessons to inform future policy processes. That is to say, monitoring and evaluation can not only promote successful mechanisms for the development and implementation of current policies, but also for the projects in the future and multilevel governance mechanisms. There are diverse benefits could be generated by monitoring and evaluation for better performance, including improving efficiency and effectiveness, improving reporting to stakeholders, improving the performance information available in time and for effective decision-making, mitigating risks to performance, establishing clear accountabilities assigned to results, and managing performance expectations jointly set out and owned by stakeholders.
- ✧ The overall structure and logic of monitoring and evaluation should be a part of cyclic process with arrows that goes "back" to the beginning. The adoption of this iterative model that leverages usage statistics and public feedback on digital government services to inform continuous improvement is an essential component of evidence-based governance. Seeking user feedback is essential, but it is equally important to share the results; letting users know their voices are being heard and demonstrating how their input is guiding meaningful change strengthens transparency and promotes trust in the Government. Capacities to use public feedback to improve services and programs is part of a holistic approach to digital government transformation that values performance and sustained responsiveness.
- ✧ **[Case 6.3] United Kingdom: The Digital Inclusion Evaluation Toolkit**

  The Digital Inclusion Evaluation Toolkit[116] in the United Kingdom is a collection of resources designed to help any organization assess the impact of a digital inclusion project. The toolkit aims to enable teams to provide evidence on how successful a project has been at implementing change and show how a project could be improved or iterated to increase its impact.

[115] SDG Tracker, Measuring progress towards the Sustainable Development Goals (2018), available at https://sdg-tracker.org/

[116] Digital Inclusion Evaluation Toolkit, available at https://www.gov.uk/government/publications/digital-inclusion-evaluation-toolkit

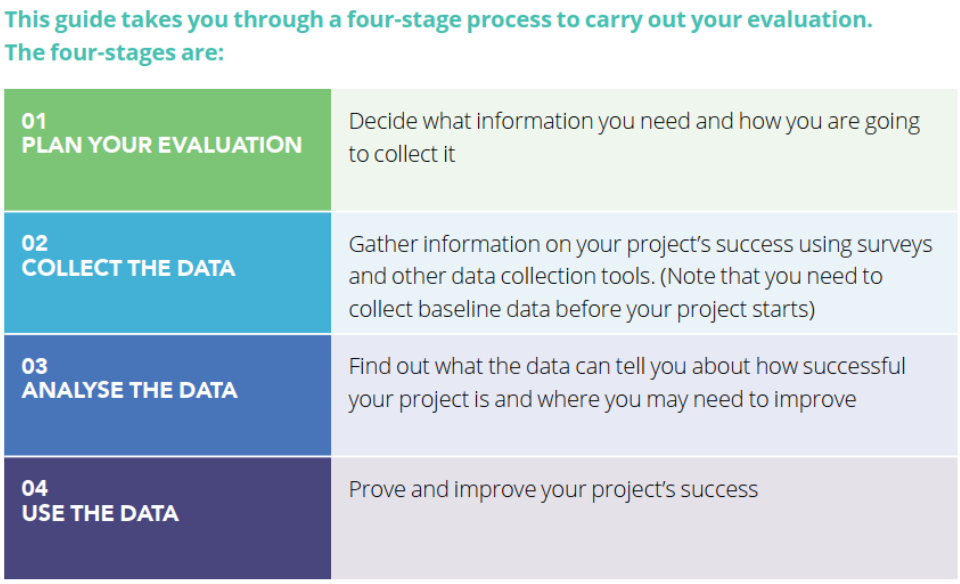

Figure 6.2 The Digital Inclusion Evaluation Toolkit

6.2 How to conduct monitoring and evaluation?

- Monitoring and evaluation are important for moving towards the realization of SDGs. Therefore, it's necessary to keep track of how digital government services are contributing to the achievement of the SDGs. We should incorporate the monitoring and evaluation of the progress towards the realization of 17 SDGs into monitoring and evaluation of digital government transformation.
- Performance indicators can comprise both quantitative and qualitative measures that assess variables such as user uptake, user satisfaction, and the share of automated customer service generated by the digital government system. Where applicable and possible, data should be disaggregated by gender, age, disability status, setting (urban/rural), and other relevant factors to analyse outcomes for different demographic groups.
- Multiple stakeholders should be involved in monitoring and evaluation. Following the key pillars of strategy for capacity development (introduced in module 5), we find the following stakeholders at the institutional level, organizational level, individual level and societal level, as well as the capacity developers: Governments (different government ministries and agencies), public servants (regulators, policymakers, chief data officers), partners (academia, experts, think tanks, international organizations), private sectors, vulnerable groups (the poor, women and girls, older persons, persons with disabilities, youth, migrants and refugees) and developers.

6.3 Performance indicators for monitoring and evaluation

Based on tools that are mentioned in Module 3 - Digital Government Capability Assessment (DGCA) and Digital Government Readiness Assessment (DGRA), Checklist for the important indicators of monitoring and evaluation is designed.

Table 6.4 Checklist for the important indicators of monitoring and evaluation

Checklist for the important indicators of monitoring and evaluation		
Dimension	**Important Indicators**	
Leadership	Vision (SDGs; Effectiveness, Accountabilities and Inclusiveness)	
	Policy	
	Roadmap	
Legal	Law and regulations	
	Policies and procedures	
Strategy	Integration and Interoperability	
	Data	
	Digital inclusion	
	Standards	
Governance	Agency leaders	
	CIOs	
	Public servants	
	Organization	
	Culture	
	Partnership	
Technology	ICT infrastructure	
	Access	
	Cybersecurity	
	Privacy	
	Resilience	
User-centered Design (participation, inclusion, service delivery, user satisfaction)	Governments (different government ministries and agencies)	
	Public servants (regulators, policymakers, chief data officers)	
	partners (academia, experts, think tank, international organizations)	
	private sectors	
	vulnerable groups (the poor, women and girls, older persons, persons with disabilities, youth, migrants and refugees)	
	Developers	
	Training capabilities	

Professional and Workforce Development	Digital mindsets	
	Digital learning platform	

6.4 Key messages

- ✧ Government capacities for iterative feedback are needed to ensure continuous improvement.
- ✧ Keeping track of how digital government services are contributing to the achievement of the SDGs is equally important.
- ✧ The essence of monitoring and evaluation is to track progress and measuring what is happening with reference to what was planned.
- ✧ Digital government transformation can be understood as a journey of constant improvement in service of society's well-being, peace and prosperity.

Quiz/exercises:

1. What specific digital government services could contribute to the implementation of SDGs?
2. Discuss the potential challenges you might face when applying specific indicators, such as data availability and data quality. What measures could you take to mitigate these risks?
3. How would you evaluate the digital government transformation practices in your country?

Lessons learned and reflections

1. Why is it necessary to undertake monitoring and evaluation?
2. What are the objectives of undertaking monitoring and evaluation for SDGs and stakeholders?
3. What are the indicators of monitoring and evaluation? What type of indicators do you prefer? Quantitative or qualitative? Why?

Chapter 7 Wrap-up of the whole program

7.1 Action plan exercise

Develop an overall national plan of digital government transformation for your country, including the situation analysis, vision, strategy, roadmap and monitoring and evaluation plan, in line with SDGs in a holistic approach.

(Hint: Think about what you have done in the past, what was required and has actually happened at different levels (individual, institutional, societal etc.). What you have expected and what you eventually generated. Then, think about what problems you are facing today and how you could solve the problems. Based on the exercise above, make a plan for the future transformation.)

- **Action plan: from thinking to action**

The implementation of a plan is a journey in itself. A good action plan is a living document that gets reviewed and updated on an ongoing basis to reflect the (possibly changing) context.

✧ How to select best solution: trade-off between Value and Feasibility

Figure 7.1 Trade-offs between value and feasibility

➢ Value

What net benefits will this solution bring and to whom?

In financial terms this is (Benefits – Costs) X Risk, but not all value is financially measurable.

➢ Feasibility

How likely is the successful completion and operation of this solution? How big are the disruptions on the way?
This takes into account the capabilities of implementation as well as possible obstacles.

Besides Value and Feasibility, many other criteria often need to be considered, such as:

Impact on a specific set of people (and ensuring nobody is left behind).
Impact on trust and transparency.
Impact on learning.
Impact on culture.
Choices of timeframes for desired results.

… and many others according to case and context.

- **Design thinking pathway to action**

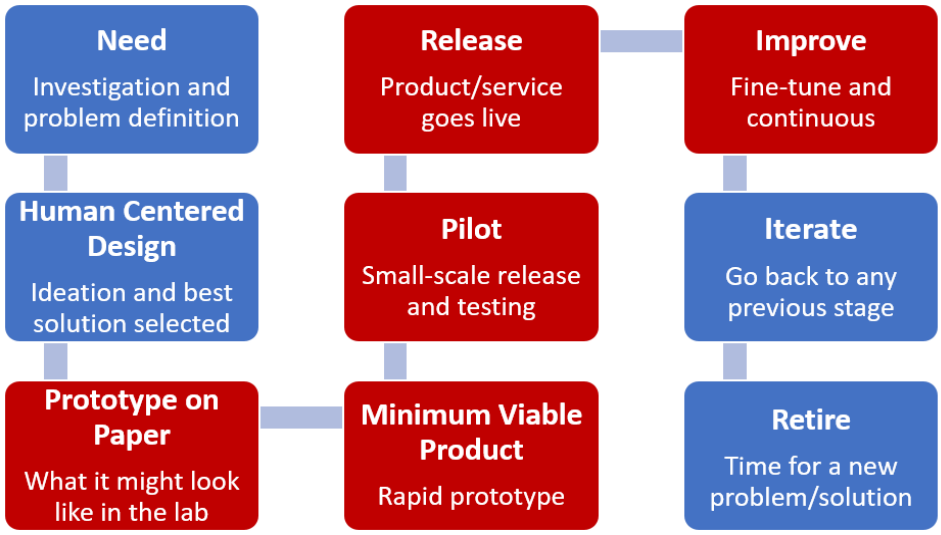

Figure 7.2 Design thinking pathway to action

- **Key Components of an Action Plan**
  - ✧ Action Step: Each goal or objective needs a series of action steps with what needs to happen to achieve this goal.
  - ✧ Responsibility: Whose job is it to perform this task? Who will support?
  - ✧ Ownership: Who is responsible and accountable for ensuring good and timely completion and for corrective action if and when needed.
  - ✧ Timeframe: Milestones and end date.
  - ✧ Resources: Financial and other resources needed to complete this task.
  - ✧ Key Performance Indicators (KPIs): Measurements of value to indicate how effectively you have achieved your goal.
  - ✧ Information Sharing: A communication plan to keep people involved aware of

what is happening all along.

7.2 Evaluation of the whole training

We've shared national initiatives and experiences from a good range of countries. We have also experimented with digital government transformation roadmap. What are the major takeaways have you learned from this toolkit? Which parts of this toolkit could be improved?

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