

# 1. A Digital Government Model Framework for Sustainable Development

## 1.1 Introduction

The earliest development of digital government can be traced back to the 1980s.<sup>1</sup> Over the past several decades, there have been significant changes in how digital government, or e-government,<sup>2</sup> has evolved in terms of conceptualization, implementation and evaluation. Advancing digital government in support of effective public services delivery is now a major policy imperative in countries around the world.

The concept of digital government is no longer new. It is, however, becoming progressively more complex with the advent of emerging technologies such as artificial intelligence (AI) and as the boundaries between physical and digital government and across sectors and jurisdictions become increasingly blurred and interconnected. At the same time, the imperative to digitalize institutions and public services has never been more urgent. In order to both meet the rising expectations of an ever more digitally sophisticated global population and support sustainable development, Governments must leverage digital development to become more resilient and efficient. This is particularly critical given the complex nature of the shocks, crises and other challenges that continue to emerge at the national, regional and global levels, in particular the effects of intersecting and compounding crises such as those related to food, fuel, health and inflation<sup>3</sup>.

The present chapter starts by reviewing the evolution of digital government over the past several decades, highlighting its profound implications for sustainable development. The remainder of the chapter introduces and explores a Digital Government Model Framework developed to support the building, strengthening and empowerment of effective, inclusive and accountable institutions, in line with the objectives articulated in SDG 16.

Understanding the evolution of digital government is crucial for contextualizing the proposed Model Framework. Examining the development of digital government over time allows the identification of key trends, challenges, and success factors that have shaped past and current digital government strategies and practices. The historical perspectives, findings and analyses – as seen through the lens of the successive editions of the United Nations E-Government Survey – offer valuable insights for the design and conceptualization of a Digital Government Model Framework, ensuring that it addresses real-world needs, leverages lessons learned, and drives better outcomes in achieving the 2030 Agenda for Sustainable Development.

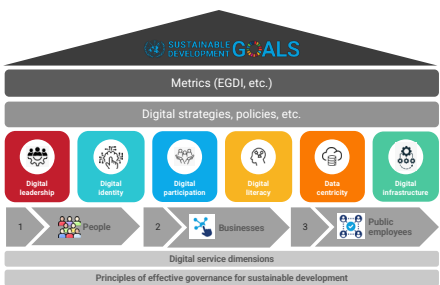


Photo credit: DPIDG, UN DESA

In this chapter:	
1.1	Introduction 1
1.2	Two decades of digital development through the lens of the United Nations E-Government Survey 2
1.2.1	A brief history of the UN E-Government Survey 3
1.2.2	E-Government Development Index: principles and components 4
1.2.3	Evidence of the role of digital government in accelerating implementation of the 2030 Agenda 8
1.3	Towards a Digital Government Model Framework 11
1.3.1	Principles for sustainable development and digital development 13
1.3.2	Stakeholders 19
1.3.3	Business drivers for digital government 22
1.3.4	Digital policies, strategies and priorities 26
1.3.5	Measuring and evaluating digital government 27
1.4	The apex of the Digital Government Model Framework: achieving Sustainable Development Goals and national development objectives 29
1.5	Key recommendations 30

Drawing on the empirical observations of the United Nations E-Government Survey and its longitudinal findings over the past two decades, the proposed Digital Government Model Framework incorporates a principle-based approach to designing digital policies and strategies, as well as a set of key business drivers to guide its implementation so that the needs of stakeholders – including all individuals, businesses and public employees – are well served. With the elaboration of the Model Framework, the chapter aims to provide a robust foundation for countries to enhance and guide current and future digital government efforts in a manner that promotes sustainability and inclusivity and ultimately contributes to the accelerated implementation of the 2030 Agenda for Sustainable Development.

## 1.2 Two decades of digital development through the lens of the United Nations E-Government Survey

In March 2001, the United Nations brought countries together around the emerging concept of digital government, also referred to as e-government. The Third Global Forum on Reinventing Government, devoted to the theme of fostering democracy and development through e-government, provided 122 countries with the opportunity to share practical experiences and innovative solutions in digital government.<sup>4</sup> The response, level of participation, and outcome far exceeded expectations – particularly given the early stage of digital government development and the limited understanding of its scope and potential at that time.

This was followed in July 2001 by the initial effort of the United Nations Department of Economic and Social Affairs (UN DESA) – at that time the Division for Public Economics and Public Administration – to benchmark digital government development through the publication of a research report entitled *Benchmarking E-Government: A Global Perspective – Assessing the Progress of the UN Member States*. This groundbreaking report introduced the E-Government Index (later renamed the E-Government Development Index, or EGDI) as a useful tool for policy planners to analyse the principles, approaches, progress, and commitment of countries in the realm of digital government.<sup>5</sup>

The rationale for introducing a comparative index was supported by the keen interest among stakeholders even at the embryonic stage of digital government development. The index would offer countries an objective point of reference, with e-government progress measured through a series of indicators or targets marking a specific stage of development. Countries would be able to assess their own progress over time and in relation to other countries inside or outside their respective regions, and the index components would indicate the nature, convergence and divergence of development challenges at a granular level. The regular monitoring of progress would allow the systematic tracking and evaluation of the efficacy of national digital initiatives. Finally, a comparative global index published by the United Nations would be seen as objectively neutral (not influenced by political bias or commercial interests).

In 2003, the World Summit on the Information Society (WSIS) adopted the Geneva Plan of Action, which incorporated 11 action lines for sustainable development, introduced in support of broader WSIS initiatives aimed at promoting the use of information and communications Technology (ICT) to build an inclusive information society. Listed under action line C7 (ICT applications) are e-government, e-business, e-learning, e-health, and other priority areas. Actions called for within the e-government subsection include enhancing the delivery of government services through the use of ICT, improving the efficiency and transparency of the public sector, and promoting people's engagement and participation in public governance through digital means. (See box 1.2 in subsection 1.2.3 of the present chapter for information on the implementation and follow-up of action line C7.)

The world leaders who adopted the 2030 Agenda for Sustainable Development in 2015 recognized that “the spread of information and communications technology and global interconnectedness has enormous potential to accelerate human progress, to bridge the digital divide and to develop

knowledge societies”.<sup>6</sup> Numerous resolutions of the United Nations Economic and Social Council and General Assembly have since identified e-government as an important enabler and development tool for achieving the Sustainable Development Goals (SDGs).<sup>7</sup>

In the 2020 report of the United Nations Secretary-General’s High-level Panel on Digital Cooperation, the E-Government Survey is highlighted as a key ranking, mapping and measuring tool supporting digital transformation worldwide.<sup>8</sup> Various reports of the Secretary-General – including *Our Common Agenda* (2021)<sup>9</sup> and the “Road map for digital cooperation” (2020)<sup>10</sup> – call for the provision of public services that meet the evolving needs of the population in an increasingly digitalized society, and the Survey monitoring and assessment process can help countries identify and address those needs.

Since its inception, the E-Government Survey has served as a knowledge and policy tool, helping Governments understand their relative and contextual strengths and challenges and providing policymakers with evidence-based information and policy options that can help them mobilize digital government for the implementation of the SDGs and national development strategies. Each edition of the Survey has generated increasing interest among the Member States and other stakeholders, serving as a resource not only for tracking national progress in digital government development but also for learning from global and regional experiences and gaining insights for policy formulation in priority areas.

### 1.2.1 A brief history of the UN E-Government Survey

The first (2001) edition of the Survey, *Benchmarking E-Government: A Global Perspective – Assessing the Progress of the UN Member States*, laid the basic foundations for tracking digital government development, introducing an objective monitoring and evaluation framework that would evolve over time. There were indications, even then, that the digitalization of government could be transformative. The first edition featured the FirstGov.gov portal of the United States of America in a section on best practices, highlighting the role of digital government in helping restore order and coordinate emergency assistance after the terrorist incident on 11 September 2001 (see box 1.1).

#### Box 1.1 The FirstGov.gov portal in the United States: early evidence of effective digital government

The United States was among the first countries to recognize the vital role digitalization would play in government. The E-Government Act, adopted in 2001, established the Office of E-Government and the Office of the Federal Chief Information Officer within the White House Office of Management and Budget. The Act also established the Federal CIO Council, which included chief information officers from across the executive branch of government. A key milestone was the creation of the FirstGov.gov portal (later renamed USA.gov), which was featured in *Benchmarking E-Government: A Global Perspective – Assessing the Progress of the UN Member States* (the first edition of the United Nations E-Government Survey in 2001) because of the central role it played in restoring order and coordinating emergency assistance in the aftermath of the terrorist incident in New York on 11 September 2001.



Sources: United Nations, Division for Public Economics and Public Administration, and American Society for Public Administration, *Benchmarking E-Government: A Global Perspective – Assessing the Progress of the UN Member States*, (New York, 2002), available at <https://desapublications.un.org/publications/benchmarking-e-government-global-perspective-2001>; and United States, “Twenty years of making government more accessible through the E-Government Act”, GSA Blog Team, 29 December 2022, available at <https://www.gsa.gov/blog/2022/12/29/twenty-years-of-making-government-more-accessible-through-the-egovernment-act>.

The 2001 edition of the Survey predicted the dynamic evolution of digital government, offering an observation that still resonates today: “For a large majority of countries, national e-government program development is occurring in a swift and dynamic manner and for now change is the only constant”.<sup>11</sup> See table 13 in the technical appendix, on the trajectory of the past 12 editions of the Survey, highlighting trends in digital government development both generally and in relation to thematic focal points, and how the EGDI has evolved over a period of more than two decades as a tool for monitoring, analysing, and forecasting digital development in the public sector and identifying relevant trends.

### 1.2.2 E-Government Development Index: principles and components

Because digital government encompasses important public activities that come under scrutiny, objectivity and accountability are extremely important in e-government planning, implementation and evaluation. Measuring and assessing progress in digital government requires robust metrics and key performance indicators (KPIs), along with the adaptive use of emerging technologies such as AI.<sup>12</sup> The EGDI has emerged as a quantitative composite metric and global performance indicator capable of producing levels and rankings of digital development across the 193 Member States and capturing relevant trends.

**Table 1.1 EGDI and LOSI component indices and subindices**

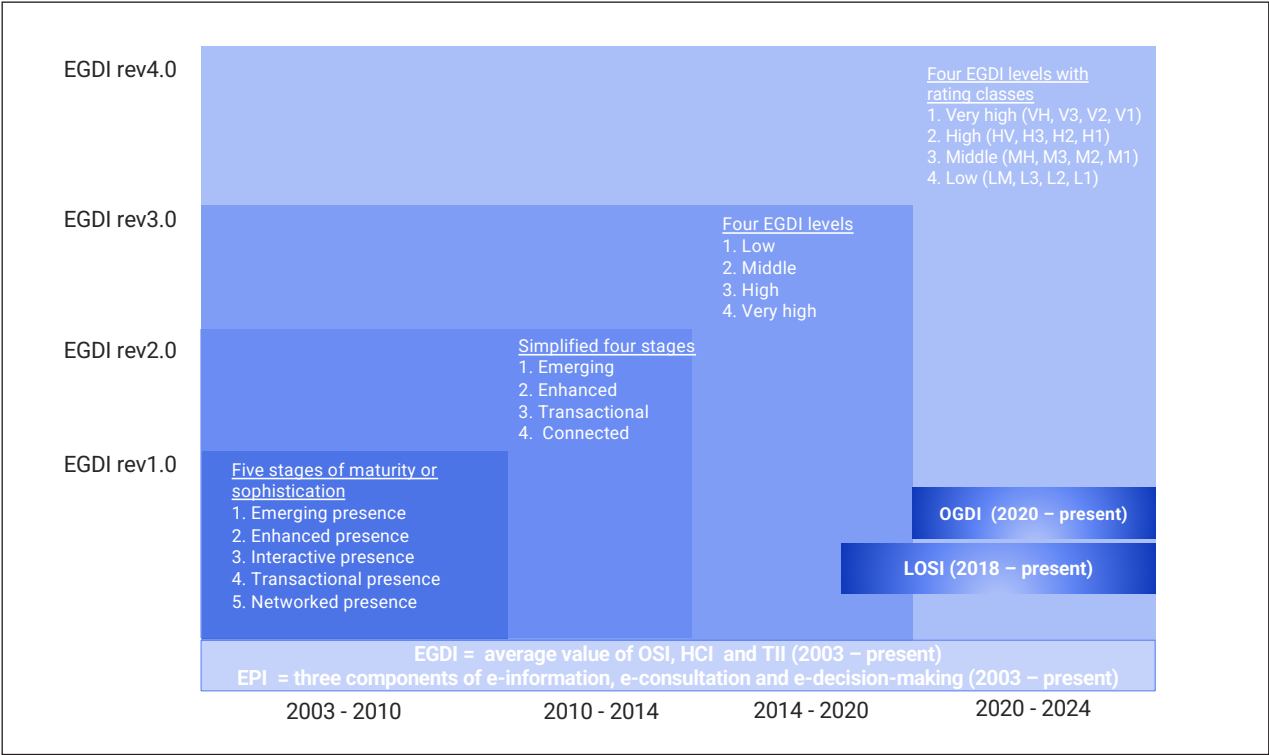
Index	Components	Subindices
<u>National level</u>  E-Government Development Index (EGDI)	Online Services Index (OSI)	Institutional framework (IF)
		Services provision (SP)
		Content provision (CP)
		Technology (TEC)
		E-participation (EPI) (a) e-information (b) e-consultation (c) e-decision-making
	Telecommunications Infrastructure Index (TII)	Internet users
		Mobile cellular subscribers
		Wireless broadband subscribers
		Broadband affordability*
	Human Capital Index (HCI)	Adult literacy rate (AL)
		Gross enrolment ratio (GER)
		Expected years of schooling (EYS)
		Mean years of schooling (MYS)
		E-government literacy (EGL)*
<u>Local level</u>  Local Online Services Index (LOSI)		Institutional framework (IF)
		Services provision (SP)
		Content provision (CP)
		Technology (TEC)
		Participation and Engagement (EPI)
		E-government literacy (EGL)*

\* Introduced in the 2024 E-Government Survey

The E-Government Survey assesses national and subnational online services provision as well as relevant technology infrastructure and human capital indicators, assigning values to various features relating to digital government development. The composite and component indices and subindices reflect progress and gaps in e-government development, offering a rating system that allows comparison and relative rankings. The EGDI and the Local Online Services Index (LOSI) are not designed to capture e-government development in an absolute sense, but rather to provide a snapshot of digital progress at a particular point in time. Table 1.1 shows the list of the EGDI and LOSI component indices and subindices.

Figure 1.1 summarizes the evolution of EGDI (or its equivalent) from 2003 to 2024. The methodology section of the Survey (included in the technical appendix) provides additional information on enhancements to the Online Services Index (OSI), Telecommunications Infrastructure Index (TII), and Human Capital Index (HCI), the introduction of the LOSI, and changes relating to EGDI and LOSI component indices and subindices over successive editions of the Survey.

Figure 1.1 The evolution of the E-Government Development Index from 2003 to 2024



### Key methodological principles that have shaped the EGDI and its component indices and subindices

The concept of a global metric was introduced in the first edition of the E-Government Survey in 2001. The revised methodology adopted for the second edition in 2003 has been used for more than two decades, with minor incremental revisions in the successive editions of the Survey. The 2004 and 2005 editions measured the readiness of countries for e-government, but in 2008 it was determined that “readiness” did not adequately reflect the need for concrete action, so the focus of the Survey shifted to assessing actual e-government development, captured at that time by the term “e-government maturity”. In 2014, it was decided that the conceptual reference to e-government maturity was no longer useful, as digital government approaches were constantly evolving to meet the changing demands and expectations of the population (including specific segments and sectors of society) and to integrate emerging digital technologies. Maturity suggested an end point, while e-government development was and would always be characterized by continuous change.

Over the period 2016-2024, the Survey methodology has continued to evolve in response to the changing contexts, applications, assessments, demands and trends associated with e-government and digital development. Although there have been improvements and refinements, the Survey methodology has remained anchored in a set of fundamental principles that have endured across the 13 editions (including this one). These principles are as follows:

- a) The process needs to be universally applicable to all Member States, with a focus on development goals rather than specific technologies. As emphasized in the 2004 edition, the Survey exists to “assess the progress of ‘access to ICT for all’” and is “considered to be a tool at the disposal of the Government, which, if applied effectively, can contribute substantially to promoting human development. It supports, but does not supplant, the development efforts of Member States.”<sup>13</sup>
- (b) A binary numeral system (0 and 1) is used to assess features and services in government portals and for most other Survey questions, ensuring a high degree of objectivity.
- (c) Local languages, impartial phrasing, and questions geared towards the average citizen or government respondent are used in an effort to ensure neutral, unbiased assessment independent of any external influence.
- (d) Changes (based on scientific evidence and technological insights) should reflect development trends but not compromise comparability. As noted in the 2001 Survey, “Change and improvement must be a permanent part of the process if a country is to achieve the stated goals within its strategic framework and to offer the most inclusive citizen-centric approach.”<sup>14</sup>

The widespread acceptance of EGDI and the comparative advantage it enjoys as a tool for measuring e-government development derives from these key methodological principles. Essentially, refinements are possible, but alignment with the adopted methodology is vital for ensuring continuity, consistency and comparability for longitudinal analysis. Most of the changes introduced with regard to the metrics are linked to the evolution and increased sophistication and proliferation of digital technologies (including emerging technologies such as AI), the need to reassess development priorities with the adoption of the SDGs, and shifts in the conceptualization of digital government based on national, regional and global trends.

### The role of the EGDI in both assessing and propelling digital development

The United Nations E-Government Survey is one of the most frequently downloaded flagship publications of UN DESA, and the E-Government Knowledgebase is one of the most visited websites. The various editions of the Survey have been used extensively by digital ministries and agencies within the Member States for a variety of purposes, ranging from guiding digital policy development and national ICT investment in digital technologies to mustering political leverage to facilitate the implementation of national digital priorities. The impact the Survey has had on digital policymaking can be seen in official reports released by countries such as India<sup>15</sup> and Uruguay.<sup>16</sup>

The EGDI is widely recognized as an authoritative and comprehensive global metric for assessing the digital development of countries around the world. Its longevity, comprehensive methodology, and global coverage contribute to its pre-eminent status in this domain. The EGDI interfaces with and complements various development indicators and frameworks as it promotes inclusive digital access and services provision, which are crucial for achieving SDG targets related to health, education, economic growth, and reduced inequalities. The EGDI also highlights the important role digital government plays in fostering innovation and competitiveness in the digital economy and digital society.

The authoritative nature of the EGDI is also evident in how it is utilized by various United Nations agencies, international organizations, think tanks, researchers, and private entities as a credible benchmark for evaluating and comparing the digital government capabilities of countries worldwide. Table 1.2 shows a non-exhaustive list of global assessment frameworks utilizing the EGDI as an input or reference, underscoring how the EGDI provides a *lingua franca* and common point of reference for analysing the advancement of digital development.

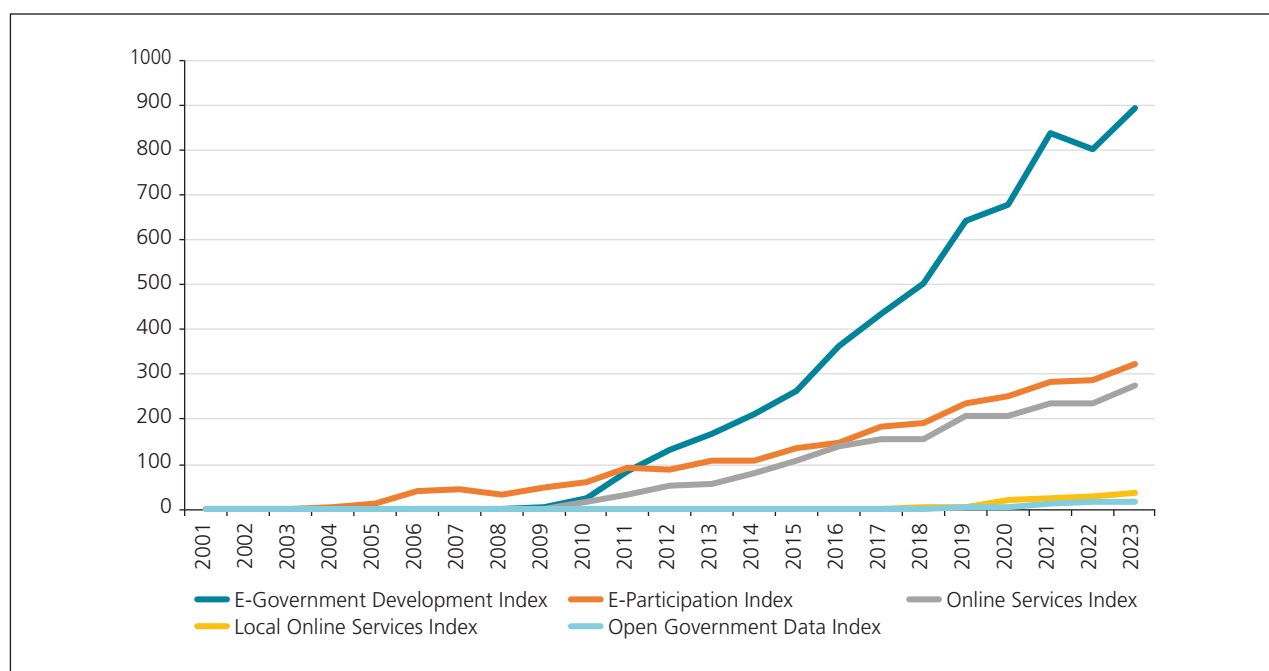
Table 1.2 Use of the EGDl in various global frameworks for assessing digital development

Institution	Title of metric, initiative or report	Description
United Nations Development Programme	Digital Development Compass	The Digital Development Compass is a tool developed by UNDP to help countries track their progress in digital transformation. Compass indicators are compiled into the Open Digital Development Data Exchange, which includes 189 publicly available data sets and can be accessed on GitHub. Under its Government component, reference is made to the EPI and OSI; under its People component, reference is made to the HCI; and under its Connectivity component, reference is made to the TII.
International Telecommunication Union	ICT Development Index	The ICT Development Index (IDI) is a composite indicator published by the International Telecommunication Union (ITU) to measure the development of the information and communications technology sector. Reference has been made to the OSI component and EPI subindex of the EGDl.
World Bank	GovTech Maturity Index	The GovTech Maturity Index is a composite index that comprises four components with a total of 48 key indicators; 40 are updated or expanded GovTech indicators, and 8 are highly relevant external indicators from sources that include the EGDl, OSI, TII, HCI and EPI.
World Intellectual Property Organization	Global Innovation Index	The Global Innovation Index uses the EGDl to assess the innovation performance of economies based on information technology uptake and impact.
World Economic Forum	Global Competitiveness Index	The 2020 Global Competitiveness Report uses the E-Participation Index from the 2018 E-Government Survey for the “e-participation” indicator linked to the “broaden access to basic services” concept as part of the “upgrade infrastructure to accelerate the energy transition and broaden access to electricity and ICT” priority (table A1).
Global System for Mobile Communications Association	Mobile Connectivity Index	The Mobile Connectivity Index Methodology 2020 report uses the OSI value from the 2018 E-Government Survey for the “e-government services” indicator within the “local relevance” dimension of the “content and services” enabler (table 1, page 9).
Waseda University: Institute of Digital Government	World Digital Government Ranking Survey	This annual survey assesses the digital government processes and achievements of 66 countries and economies. The survey report utilizes EGDl and EPI data; in the 2022 edition, reference is made to the EGDl in section 4.4 and to the E-Participation Index in section 4.7.
e-Governance Academy	National Cyber Security Index	The National Cyber Security Index is a global index that measures the preparedness of national Governments to prevent and manage cyberthreats and other digital security incidents. Reference is made to the EGDl in connection with the Digital Development Level.
Oxford Insights	Government AI Readiness Index	The Government AI Readiness Index report produced by Oxford Insights assesses how prepared Governments are for the implementation of AI in public services. The 2023 edition, published in December of that year, uses EGDl and TII data.



The wide recognition and integration of Survey metrics in academic research is illustrated in figure 1.2, which charts the exponential increase academic articles that include specific mention of E-Government Survey indices, including the EGDI, OSI, EPI, LOSI and OGDl.

**Figure 1.2** Chart showing the exponential increase in academic articles that include specific mention of indices introduced in United Nations E-Government Surveys since 2003 (matches based on exact word searches)



\* As shown in the figure key, these indices include the E-Government Development Index (EGDI) and E-Participation Index (EPI), as well as the Local Online Services Index (LOSI) introduced in 2018 and the Open Government Data Index (OGDI) introduced in 2020.

### 1.2.3 Evidence of the role of digital government in accelerating implementation of the 2030 Agenda

Digital government, if well implemented, has the potential to reduce administrative bureaucracy, enhance services delivery, and build public trust. The evidence of digital government having played a role in accelerating the implementation of the SDGs is extensive and diverse. One study concludes that the e-government development indicators used to assess online services, telecommunications infrastructure and human capital are positively and significantly related to the attainment of SDGs in Africa.<sup>17</sup>

In past editions of the Survey, correlations between the EGDI and various global metrics have been presented as part of the analytical findings. Table 1.3 includes a list of such correlations; for the SDG Index Score, the Gender Inequality Index, the Corruption Perception Index, and foreign direct investment, the EGDI serves as a proxy measure for metrics related to the assessment of SDG outcomes and impacts.



Table 1.3 Strong EGDl correlations with the SDG Index Score, Gender Inequality Index, Corruption Perception Index, foreign direct investment, public sector expenditure, and gross national income per capita


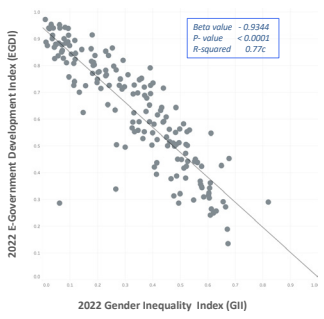

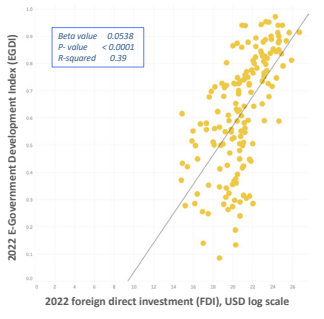

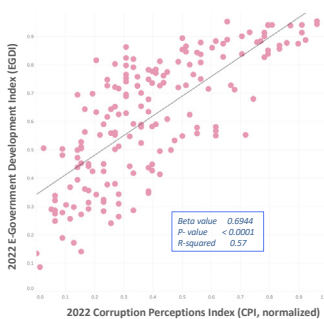

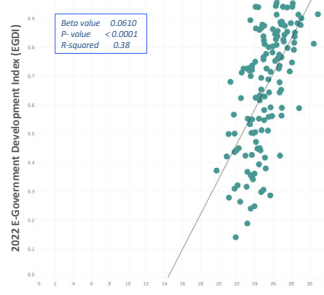

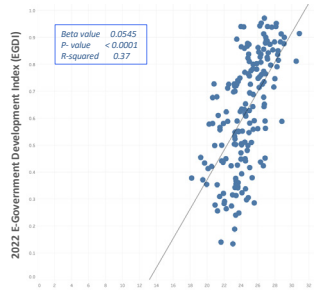
	<p><b>The EGDl as an enabler of all 17 Sustainable Development Goals</b></p> <p>There is a high correlation between the 2024 EGDl and the 2024 SDG Index score.<sup>18</sup> The Sustainable Development Solutions Network and Bertelsmann Stiftung launched the SDG Index and Dashboards (now the Sustainable Development Report) in 2016.</p>
 	<p><b>The EGDl as a proxy measure for assessing gender equality (SDG 5)</b></p> <p>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. There is a strong inverse relationship between the 2022 EGDl and the 2022 Gender Inequality Index (GII),<sup>19</sup> indicating that there is lower gender inequality (SDG 5) in countries with high EGDl values. The GII is a key initiative of UNDP and is linked to its Human Development Report. It is a composite metric of gender inequality incorporating three dimensions: reproductive health, empowerment, and the labour market.</p>
	<p><b>The EGDl as a proxy measure for assessing foreign direct investment</b></p>  <p>Foreign direct investment (FDI) is one of the main sources of finance for developing countries in their efforts to achieve the SDGs. There is a strong positive correlation between the EGDl and FDI. The link between digital government and FDI inflows was supported in a 2021 working paper by the International Monetary Fund.<sup>20</sup> The posited correlation between EGDl values and FDI was tested using EGDl data and World Bank World Development Indicators for 178 countries, and it was concluded that stronger e-government was associated with increased FDI inflows.<sup>21</sup> It was ascertained that efficient e-government would help lower the costs of doing business and increase potential returns on investment.</p>
 	<p><b>The EGDl as a proxy measure for assessing levels of corruption in the public sector</b></p> <p>There is a strong positive correlation between the EGDl and the Corruption Perceptions Index,<sup>22</sup> meaning that countries perceived to have high rates of corruption in the public sector will generally score poorly on their ability to deliver digital government services and on e-participation metrics. SDG target 16.5 calls for countries to substantially reduce corruption and bribery in all their forms.</p>

Table 1.3 (continued)

 <p>2022 E-Government Development Index (EGDI)</p> <p>2022 gross national expenditure, USD log scale</p> <p>Beta value 0.0610 P-value &lt; 0.0001 R-squared 0.39</p>	<p><b>The EGDI and its correlation with public sector expenditure (SDG 16)</b></p> <div data-bbox="636 396 761 623"> <p><b>TARGET 16-6</b></p>  <p>DEVELOP EFFECTIVE, ACCOUNTABLE AND TRANSPARENT INSTITUTIONS</p> </div> <p>There is a strong positive correlation between the EGDI and public sector expenditure. Public spending can be critical for achieving SDGs. SDG indicator 16.6.1 measures primary government expenditures as a proportion of original approved budget, by sector. In most countries, public sector expenditures represent 35 to 60 per cent of gross domestic product.<sup>23</sup></p>
 <p>2022 E-Government Development Index (EGDI)</p> <p>2022 gross national income (GNI) per capita, USD log scale</p> <p>Beta value 0.0545 P-value &lt; 0.0001 R-squared 0.37</p>	<p><b>The EGDI and its correlation with gross national income</b></p> <p>There is a positive correlation between the EGDI and gross national income. However, it is clear (from the number of outliers) that higher national income does not guarantee, nor is it always necessary for, advanced digital government development (refer to chapters 2, 3 and 4 of the present publication for detailed analyses of 2024 EGDI country and city data).</p>

In the annual reports of the Secretary-General on progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels,<sup>24</sup> reference is always made to the EGDI in the action line C7 subsection on e-government (see box 1.2).

#### Box 1.2 Follow-up and implementation of the action line C7 subsection on e-government in the Geneva Plan of Action of the World Summit on the Information Society and the use of EGDI indicators in Statistical Commission discussions on e-government monitoring



The World Summit on the Information Society was organized by the United Nations to strengthen the desire and commitment of Governments to build an inclusive, people-centric and development-oriented global information society. The Summit was held in two phases – the first in Geneva in 2003 and the second in Tunis in 2005. The meetings produced the Tunis Agenda for the Information Society, a Declaration of Principles, and a Plan of Action that incorporated 11 action lines for sustainable development, including the role of governments and all stakeholders in the promotion of ICTs for development (C1), information and communication infrastructure (C2), capacity-building (C4), and several others. Annual forums are held to facilitate the implementation of the action lines. UN DESA is the facilitator for the follow-up and implementation of the action line C7 subsection on e-government. In its reporting, UN DESA has highlighted the primary objective of e-government under action line C7, which is to leverage ICT to improve the efficiency, transparency and accessibility of government services, largely through the development and adoption of national digital government strategies that are aligned with the general and specific needs of people and businesses and that strengthen public engagement (e-participation).

**Box 1.2** (continued)

In the 2024 “Report of the Partnership on Measuring Information and Communication Technology for Development” (E/CN.3/2024/29), it is noted that the UN DESA Division for Public Institutions and Digital Government proposed that the following indicators be added to the Partnership’s core list of ICT indicators in 2021: (a) presence of a national e-government strategy or equivalent; (b) presence of digital identity or similar authentication required to enable access to online services; and (c) presence of a public procurement portal. To better assess the role of ICT in achieving the SDGs, the Partnership has published a thematic list of ICT indicators for the SDGs (including the EGDI) that can be used to measure ICT availability and use in sectors relevant to the SDGs that are not covered in the global SDG indicator framework.

Sources: United Nations, “World Summit on the Information Society (WSIS): ‘WSIS action lines: supporting the implementation of the SDGs’”, Sustainable Development Goals Knowledge Platform, available at <https://sustainabledevelopment.un.org/index.php?page=view&type=30022&nr=102&menu=3170>; ITU, “Basic information: about WSIS”, available at <https://www.itu.int/net/whsis/basic/about.html>; Partnership on Measuring ICT for Development, A thematic list of ICT indicators for the SDGs, available <https://www.itu.int/en/ITU-D/Statistics/Documents/intlcoop/partnership/Thematic ICT indicators for the SDGs.pdf>; United Nations, General Assembly and Economic and Social Council, “Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels” (multiple years). See also UN DESA, “Facilitation Meetings by UNDESA for the action lines C1, C11 and C7eGov”, available at <https://publicadministration.desa.un.org/intergovernmental-support/wsis/facilitation-meetings-undesa-action-lines-c1-c11-and-c7egov>.

### 1.3 Towards a Digital Government Model Framework

In the evolving hybrid digital landscape, digital services have become an imperative for Governments to effectively serve people, businesses and society as a whole, to address the diverse needs of communities, and to pursue optimal outcomes for sustainable development.

Digital government systems and initiatives are now highly pervasive in countries around the world, accounting for a significant share of public sector investment and operations.<sup>25</sup> The rapid advancement and global diffusion of digital technology is impacting the public sector ecosystem, propelling digital transformation across sectors and at all levels.

To create a seamless, inclusive experience for all segments of the population, sometimes with limited public resources, Governments must adopt a systemic, strategic, integrated, whole-of-government approach to digital development that is characterized by policy coherence, supported and strengthened through effective partnerships, and guided by effective principles and business drivers.

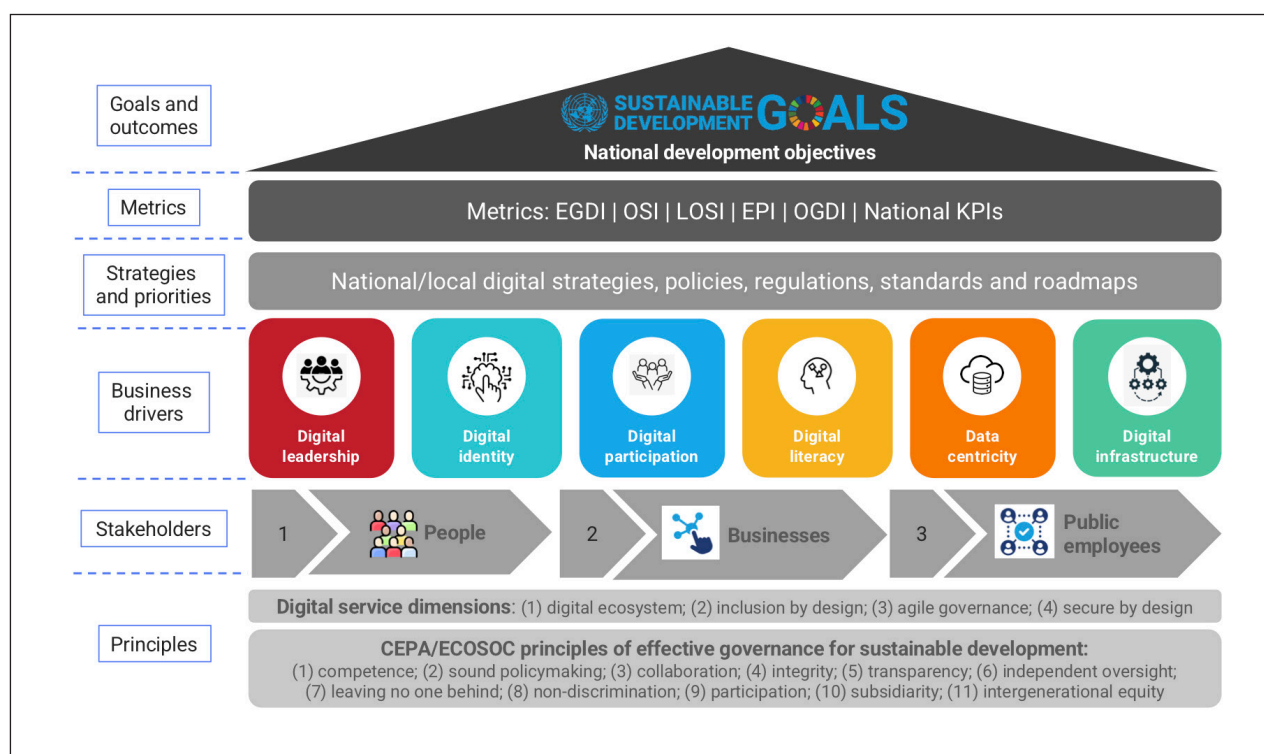
Delivering the desired outcomes and impacts of digital government for sustainable development can be challenging, particularly when risks and threats are not appropriately measured or evaluated. It is no coincidence that countries responding effectively to emergencies or crises such as the COVID-19 pandemic are highly placed in the EGDI rankings.<sup>26</sup> These leading countries have invested in robust digital government platforms capable of managing risks and have demonstrated the potential to exhibit a high level of resilience in the face of future difficulties or obstacles. This highlights the importance of a solid digital infrastructure and governance framework in managing not only present but also future challenges.

A well-developed model framework can offer a systemic road map for implementing effective digital government initiatives – and in strengthening the sustainability of digital government can contribute to broader sustainable development. A number of factors have contributed to the development of the Digital Government Model Framework presented here. Evidence-based analysis has been conducted, lessons have been learned and leveraged, and insights have been gained based on 24 years of data collection and the findings shared in 13 editions of the United Nations E-Government Survey. This wealth of longitudinal knowledge on global digital government development and trends, combined with a comprehensive review of literature on relevant methodologies, resolutions, policies and road maps, has guided the development of the Model Framework, which is designed to provide a robust foundation for developing digital government in a way that reflects and promotes sustainability and inclusivity. This Model Framework is intended to help countries plan and implement successful and sustainable digital government initiatives and to ensure that they are equipped to deal effectively with both present and future challenges.

The Digital Government Model Framework presented in this section is designed to help guide digital government development at multiple stages. As illustrated in figure 1.3, the integrated Model Framework<sup>27</sup> comprises the following layers: principles, stakeholders, drivers, strategies and priorities, metrics, and goals and outcomes.

The Digital Government Model Framework provides Governments with a structured yet flexible approach to pursuing digital transformation in the public sector. A “shared platform” feature allows institutions across sectors and levels to collaborate, avoid or minimize duplication, apply consistent principles and standards, and reuse data and components in the realm of digital services across the 17 SDGs. The Model Framework is meant to be a tool policymakers and digital leaders can use to pursue a systemic (and systematic) approach to understanding, analysing and implementing digital initiatives, including those involving the use of AI and other emerging technologies.

Figure 1.3 United Nations Digital Government Model Framework



### 1.3.1 Principles for sustainable development and digital development

Governments have a responsibility to look after the interests of their constituents. Within the present context, this means ensuring that e-government serves all segments of the population and preserves human dignity while also prioritizing privacy and mitigating cybersecurity and other digital risks. Refer to Box 1.1 on the need for checks and balances to prevent the abuse, misuse or underuse of digital platforms and to guard against intentional or unintentional digital dangers (see box 1.3).

#### Box 1.3 The potential and risks of digital development: key points from the 2023 *World Public Sector Report*

The *World Public Sector Report 2023* highlights the rapid move to digital government that is reshaping the relationships between people and the State, with both positive and negative impacts. Digital transformation played a vital role during the pandemic, enabling public sector agencies to continue operations and deliver services. Digital technologies enabled the transformation of core systems and functions and the development of more efficient processes, such as online interviewing for job recruitment. They also facilitated data analysis to inform decision-making and supported the disbursement of social protection benefits that were of critical importance during the health crisis. Digital technologies and mobile communications were widely used by Governments in their efforts to combat the crisis and deliver a wide range of public services. Major challenges encountered in both developing and developed countries included digital exclusion, limitations on freedom of expression online, digital surveillance, and violations of privacy and data protections, highlighting the disconnection between the protection of human rights online and offline. Legal frameworks and regulatory reforms have not kept pace with developments in digital technology. Efforts are needed at the national and international levels to harness their benefits while upholding human rights. Caution must be exercised to ensure the ethical use of data and prevent discriminatory outcomes, and the need for contextual approaches must be acknowledged.



Source: Largely excerpted from United Nations, *World Public Sector Report 2023: Transforming Institutions to Achieve the Sustainable Development Goals after the Pandemic* (New York, 2023), pp. xv, xix and 4, available at <https://desapublications.un.org/publications/world-public-sector-report-2023>.

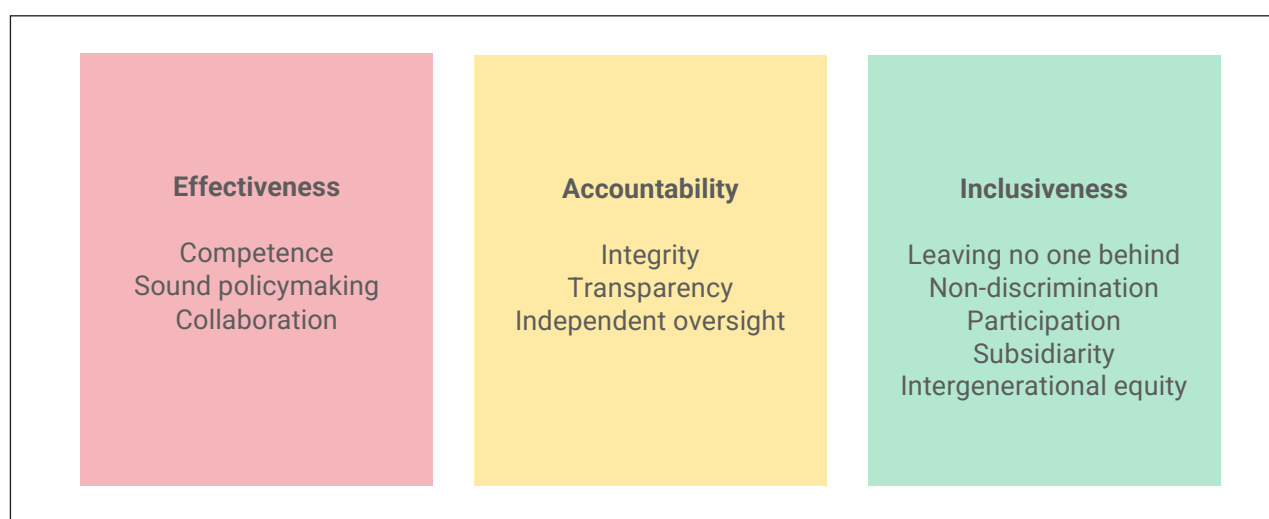
With the diversity of needs and circumstances among different countries, there is no one single formula for building a digital government platform. Governments have taken distinct approaches to developing and delivering digital public services, from engaging different types of stakeholders to managing degrees of digital accessibility. Regardless of which approaches are employed, the digital development process should be guided by a set of people-centric core values or principles.

From the research findings of past editions of the E-Government Survey, a set of common principles has emerged that are instrumental in helping to ensure that digital government platforms achieve the desired sustainable outcomes and development impacts. Applying such principles not only guides implementation but can also identify governance challenges and opportunities emerging around digital transformation and the rapid evolution of a hybrid digital society.

## Principles of effective governance for sustainable development

While digital development is a cross-cutting enabler across all 17 Goals of the 2030 Agenda, principles relating to Goal 16 are most relevant in terms of guiding digital transformation in the public sector. Goal 16 focuses on promoting just, peaceful and inclusive societies and building effective, inclusive and accountable institutions. The 11 principles of effective governance for sustainable development developed by the Committee of Experts on Public Administration and endorsed by the United Nations Economic and Social Council in 2018 can provide useful guidance in this regard, as they address a range of governance challenges associated with the implementation of the SDGs.<sup>28</sup> There are three domains encompassing a total of eleven principles, each of which can be linked to commonly used government strategies, and many of which relate directly or indirectly to digital government. Figure 1.4 offers a graphic depiction of the three domains and eleven principles, and table 1.4 describes both the general application of the principles and their relevance to digital development.

**Figure 1.4 Three domains and eleven principles of effective governance for sustainable development**



*Note:* These 11 principles were developed by the Committee of Experts on Public Administration and endorsed by the Economic and Social Council in 2018.

**Table 1.4 Digital government in relation to the 11 principles of effective governance for sustainable development**

Principles	Description	Commonly used strategies that are directly or indirectly related to digital government
<b>Effectiveness</b>		
1. Competence	To perform their functions effectively, institutions are to have sufficient expertise, resources and tools to deal adequately with the mandates under their authority.	<ul style="list-style-type: none"> <li>Promotion of a professional and digitally competent public sector workforce</li> <li>Training of civil servants to facilitate the acquisition of digital skill sets (see subsection 1.3.3)</li> <li>Digital leadership development (see subsection 1.3.3 on digital leadership)</li> <li>Investment in e-government</li> </ul>
2. 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.	<ul style="list-style-type: none"> <li>Strategic planning and foresight and promotion of coherent policymaking (see subsection on digital ecosystem)</li> <li>Use of digital platforms in monitoring and evaluation systems</li> <li>Data-sharing (see subsection 1.3.3 on data centrality)</li> </ul>
3. 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.	<ul style="list-style-type: none"> <li>Centre of government coordination in digital development (see subsection 1.3.3 on digital leadership)</li> <li>Collaboration, coordination, integration, and dialogue across levels of government and functional areas (see section on digital ecosystem)</li> <li>Network-based governance and multi-stakeholder partnerships (see subsection 1.3.2 on stakeholders)</li> </ul>
<b>Accountability</b>		
4. 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.	<ul style="list-style-type: none"> <li>Anti-corruption practices (see table 1.4)</li> <li>Competitive public procurement through e-procurement platforms (note that the OSI assesses the availability and extent of e-procurement platforms)</li> </ul>
5. 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.	<ul style="list-style-type: none"> <li>Proactive disclosure of information through national portals</li> <li>Budget transparency</li> <li>Use of open government data (see subsection 1.3.3)</li> </ul>
6. Independent oversight	To retain trust in government, oversight agencies are to act according to strictly professional considerations and apart from and unaffected by others.	<ul style="list-style-type: none"> <li>Promotion of the independence of regulatory agencies, including those involved in AI regulation or AI governance (see 2024 Survey addendum on AI in the public sector)</li> <li>Arrangements for review of administrative decisions by courts or other bodies (including the availability of e-justice, assessed in the OSI)</li> <li>Respect for legality (digital identity)</li> </ul>



Table 1.4 (continued)

Principles	Description	Commonly used strategies that are directly or indirectly related to digital government
Inclusiveness		
7. 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.	<ul style="list-style-type: none"> <li>Promotion of social equity (see subsection on inclusion by design)</li> <li>Data disaggregation (see section on data centricity)</li> </ul>
8. 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.	<ul style="list-style-type: none"> <li>Prohibition of discrimination in public services delivery through multilingual services delivery (see subsection on inclusion by design)</li> <li>Accessibility standards (measure of W3C in OSI)</li> <li>Universal birth registration (digital identity)</li> </ul>
9. 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.	<ul style="list-style-type: none"> <li>Multi-stakeholder forums</li> <li>Participatory budgeting</li> <li>Community-driven development (measure of e-participation)</li> <li>Regulatory process of public consultation (measure in e-participation under the element of e-consultation)</li> </ul>
10. 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.	<ul style="list-style-type: none"> <li>Fiscal federalism</li> <li>Strengthening urban governance</li> <li>Strengthening municipal finance and local finance systems through the measure of the Local Online Services Index (LOSI)</li> <li>Enhancement of local capacity for prevention, adaptation and mitigation of external shocks (multilevel governance, capacity-building of local authorities through LOSI findings)</li> </ul>
11. 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.	<ul style="list-style-type: none"> <li>Sustainable development impact assessment (including e-waste management, support of EGDI in sustainable development; see subsection 1.2.3 on evidence)</li> <li>Promotion of long-term territorial planning and spatial development</li> <li>Ecosystem management (see subsection on digital ecosystem)</li> </ul>

*Sources:* The descriptions are excerpted from Geert Bouckaert and others, "Effective governance for sustainable development: 11 principles to put into practice", International Institute for Sustainable Development, SDG Knowledge Hub, 7 August 2018, available at <https://sdg.iisd.org/commentary/guest-articles/effective-governance-for-sustainable-development-11-principles-to-put-in-practice/>. The commonly used strategies are adapted from annex II of United Nations, Economic and Social Council, "Elaborating principles of effective governance for sustainable development", note by the Secretariat, 14 February 2018 (E/C.16/2018/5), available at <https://documents.un.org/doc/undoc/gen/n18/027/26/pdf/n1802726.pdf?token=KB2ZRUFMMjYgGF5bRJ&fe=true>.

*Note:* Parenthetical references in the third column are to sections or subsections within the present chapter or other parts of the 2024 Survey.

## Digital service dimensions: applying the principles of effective governance to digital transformation

The ability of Governments to understand and manage the multidimensional dynamics of digital transformation is critical. The fast and at times disruptive pace of digital development poses various challenges to digital government. There is a need to consider how the comprehensive principles of effective governance could be used to guide digital development in the public sector – for example, by ensuring the responsible and ethical use of technologies such as AI (see the Survey addendum on AI in the public sector).

The subsections below introduce a set of digital dimensions guided by the principles of effective governance. These principles are intended to offer a strong point of reference and a firm foundation for e-government development, helping to ensure that technologies are used adaptively, effectively and ethically to achieve positive outcomes and impacts and to minimize harm.<sup>29</sup>

### *Digital dimension (1): Digital ecosystem*

As evidenced by recent trends, there has been a paradigm shift towards building a digital government ecosystem – a move away from the traditional siloed, top-down models to more networked, collaborative, agile and adaptive systems that can better address complex societal needs in the hybrid digital age.

The building of a digital ecosystem should be guided by the principles on sound policymaking and collaboration espoused by the Economic and Social Council and the Committee of Experts on Public Administration. An ecosystem in digital government involves leveraging digital platforms to facilitate collaboration, coordination and value co-creation among various stakeholders, including government agencies, businesses and individuals.<sup>30</sup> This digital dimension recognizes that effective digital transformation requires not only technology but also new models of effective governance following the principles of effective governance highlighted above, with digital cooperation and collaboration across institutional, sectoral and judicial boundaries. It requires a holistic, collaborative model for delivering public services that leverages interconnected networks of stakeholders and technologies.

As an integral part of the digital ecosystem, whole-of-government and whole-of-society strategies are essential for integrating services and data across ministries, agencies and jurisdictional levels (including regional and local authorities) through interoperability frameworks, enterprise architectures, and multi-stakeholder partnerships. The shift involves transitioning from a multichannel strategy to a “single front door” (omnichannel) strategy to accessing public services and interacting with government. The ecosystem also involves strengthening engagement between governmental and non-governmental actors in addressing complex challenges. Creating networks of interconnected systems and communities rather than relying solely on hierarchical structures leads to more flexible and inclusive digital governance, as well as e-waste reduction and management.

The Government Digital Service (GDS) in the United Kingdom has employed the strategic concept of “Government as a Platform” since 2015 to guide and accelerate its digital transformation, clearly articulating that this provides a route to improving the provision of public services; in a GDS blog, the former executive director of the Service asserts that this supports the delivery of “brilliant, user-centric government services” that explicitly target user needs.<sup>31</sup> Platform Government offers a new way of building digital public services using a collaborative development model that allows partners, providers and communities to share in the development and improvement of digital processes and capabilities for the benefit of society.<sup>32</sup>

*Digital dimension (2): Inclusion by design*

With the rapid advancement of technologies and digital development, e-government is often not fully inclusive. Despite the significant progress achieved in recent decades, the importance of inclusivity has frequently been overlooked. As public services and societal frameworks increasingly pivot towards digital reliance, those deprived of digital access, digital tools or digital literacy face obstacles in navigating the promises and potential of the digital era. The easiest-to-reach groups (usually those with higher incomes and more privileged status) have generally benefited most from the significant advances in digital government, while many among the poorest and most vulnerable populations have been left behind.

Inclusiveness is one of the three domains of ECOSOC/CEPA principles on effective governance, encompassing the four principles of (i) leaving no one behind; (ii) non-discrimination; (iii) participation; and (iv) subsidiarity. It has also been said that the new face of inequality is digital. Digital government can serve as an equalizer, but only if it is accessible to all members of society.<sup>33</sup> This was elaborated in the 2022 Survey, which recommended that “leaving no one behind” should become the guiding principle for digital development. Inclusion by design should be prioritized over digital-by-default strategies ensure that the needs of the most vulnerable are met. It is essential for policymakers to first recognize that those excluded from digital transformation are at increased risk of being left behind and to take proactive steps to ensure meaningful digital inclusion for all, and respecting one’s rights and privacy. An integrated framework focused on optimizing data, design and delivery was introduced in the 2022 Survey to shape inclusive digital development, ensuring that online services are accessible, affordable and user-friendly and benefit all segments of society.

In France, the Digital Republic Act (Loi pour une République numérique) requires that public sector websites be fully accessible by 2025.<sup>34</sup> The General Accessibility Framework for Administrators (Référentiel général d’amélioration de l’accessibilité), based on WCAG 2.0 and 2.1 AA standards, is being implemented to serve as the official guide for improving web accessibility.

*Digital dimension (3): Agile governance*

The development of digital services has seen a significant shift from traditional waterfall methodologies to more dynamic or agile governance.<sup>35</sup> In the 1990s and 2000s, digital initiatives in the public sector were managed based on the waterfall model, and public institutions relying on linear and sequential development processes often struggled with changing requirements and slow decision-making. In the 2010s, many countries adopted more agile governance, which emphasize flexibility, iterative development, and continuous feedback. With agile governance, new requirements can be accommodated late in the development process, and parts of the system can be delivered early, accelerating digital transformation. As articulated in its 2022 Digital Ambition initiative, Canada has adopted agile development to respond to changing business needs and to meet citizens’ evolving expectations in the digital age.<sup>36</sup>

The digital dimension of agile governance tends to be less process oriented, incorporating innovation such as through digital sandboxing and minimal viable product (MVP) strategies. Sandboxing involves the testing of new technologies and regulatory approaches in a controlled environment, fostering innovation while managing risks. Sandboxing is becoming increasingly common and has been applied successfully in many different settings and contexts, as noted in a 2021 UN DESA policy brief.<sup>37</sup> Digital sandboxing is agile in the sense that it enables safe experimentation and iterative learning, which are crucial for developing robust e-government solutions, while MVP involves developing the simplest version of a product that can be released to users to gather feedback and make iterative improvements.

Agile governance and the deployment of foresights will allow Governments to make rapid gains and generate momentum in digital innovation and adaptability, creating flexible governance structures for digital government that can adapt to changing needs and leverage new and emerging technologies, including AI.

#### *Digital dimension (4): Secure by design*

The increased pervasiveness of digital government has led to a worrisome increase in cyberfraud, cybercrime and cyberattacks in recent years. The digital dimension of “Secure by design” involve the integration of security measures into every phase of digital service and infrastructure development, ensuring that security is a core aspect rather than an afterthought. This dimension better protects digital resources, including assets, workflows, accounts, and other sensitive data, and strengthens public trust.

In the national strategy for digital platform government in the Republic of Korea, the zero trust strategy is identified as crucial for establishing a secure digital foundation.<sup>38, 39</sup> In Singapore, the Government Zero Trust Architecture (GovZTA) is a framework for implementing a “never trust, always verify” approach to cybersecurity across government agencies.<sup>40</sup> Developed in response to rising cyberthreats amid accelerated digital transformation, GovZTA is governed by four key principles: applying least privilege and enforcing access control, limiting lateral movement, integrating security automation and orchestration, and enhancing detection and response. The implementation framework consists of five technical pillars (identity, devices, networks, applications and data) and two enablers (visibility and automation plus governance). At the core of the zero trust model is the “zero trust engine”, which comprises two key components – the policy decision point (authority source) and the policy enforcement point (gatekeeper) – that are used to verify and validate every connection or transaction request within the network before access is granted.

### 1.3.2 Stakeholders

Broadly speaking, there are three stakeholder groups in digital government: people, businesses and public employees. Along with these three primary constituents (each with specific needs and objectives addressed through digital government platforms), there are stakeholders such as civil society institutions (including academia) and various international and regional organizations operating in the realm of digital government.

As part of the Digital Government Model Framework, it is essential to identify and assess the specific needs and demands of these stakeholder groups.

#### **Stakeholder: people**

The dynamic connection between the public sector and the first group of stakeholders is sometimes referred as a government-to-citizen or government-to-consumer (G2C) relationship. The 2030 Agenda principle of leaving no one behind recognizes the importance of addressing inequalities and bringing everyone on board to ensure sustainable development. In the sustainable development context of the E-Government Survey, “people” is used as a general term to refer to a group of individuals living in a particular country or region that should be provided basic services (including digital services) by the Government. The term is used to describe the population, regardless of their legal status or rights within a specific country, so residents, visitors, immigrants and refugees, as well as civil society in general, are included along with citizens.

In their interactions with e-government platforms, people generally prefer to have easy access to digital information and services and to complete all transactions fully online through a single, integrated system of services delivery. For example, new parents would like to be able to secure a birth certificate, apply for child benefits, register for parental leave, and access other relevant services

online using one easy process rather than submitting multiple applications and interacting with multiple agencies. Governments can provide a seamless user experience by consolidating separate digital channels into an omnichannel for streamlined services provision, pursuing what is increasingly being referred to as a life-event approach.

As key stakeholders, people play a crucial role in shaping digital development in a country. Their involvement and advocacy, especially through e-participation mechanisms (such as in e-information, e-consultation and e-decision-making), can significantly influence the success and effectiveness of digital initiatives. The validation and continued development of digital services are supported by the strong uptake and usage of online services and high levels of user satisfaction, leading to increased adoption, which in turn can lead to more efficient service delivery and cost savings and greater inclusiveness and accountability.

### Stakeholder: businesses

Digital services are increasingly needed to support businesses in the burgeoning digital economy; this is especially true for micro-, small and medium-sized enterprises. As part of integrated national digital strategies, online platforms are provided for online business registration, licensing, permits, tax filing, procurement processes, and other government-to-business (G2B) transactions. The goal is to simplify administrative procedures, reduce red tape, and improve the ease of doing business through digitalization.

The global digital economy is growing rapidly and substantially, with projections suggesting it could account for 25 per cent of the world economy by 2025.<sup>41</sup> This growth is driven by the increasing integration of digital technologies across various sectors, including commerce, finance, and services. This has led to the demand for Governments to provide digital services and other forms of digitalized support for businesses, including data, a security infrastructure, and regulatory oversight. Digital government is having a growing impact on national economies as value pools shift within and across industries towards a digital economy. Concerted efforts are needed to ensure that both startups and established companies can develop new business models and digitalize their existing operations with ease.

In working with this stakeholder group, Government agencies are having to assume multiple roles – as platform and service providers, facilitators, and enforcers – to support businesses in the hybrid digital world. In the realm of e-government, businesses are engaged at many levels – participating in shaping the development of specific G2B services, collaborating and partnering with public institutions in driving innovation in the public sector through new technologies and practices, and engaging in advocacy and influencing policy for the development of national digital strategies.<sup>42,43</sup>

In China, Beijing Service has been set up as a “digital and international service platform” that offers diverse content available in eight languages and provides streamlined, up-to-date, user-friendly digital services catering to the needs of companies as well as expatriates.<sup>44</sup> Oman has adopted a life-event approach to addressing the needs of businesses, supporting commercial enterprises throughout their life cycle – from incorporation and applying for permits and licences to company dissolution.<sup>45</sup> In Bangladesh, a UN DESA sandboxing project introduced the Smart Business Profile Platform (SBPP), “a revolutionary digital bridge” connecting cottage, micro-, small and medium-sized enterprises (CMSMEs) with financial institutions and other digital services.<sup>46</sup> By simplifying and streamlining the loan application and disbursement process, the SBPP hopes to address the \$3.1 billion financing gap affecting CMSMEs in Bangladesh.

### Stakeholder: public employees

In e-government development, attention is now focused on ensuring that services provision is people-centred and inclusive, but there is another aspect of public administration that is too often neglected. There has not been enough research or emphasis on the need to strengthen the capacities

and capabilities of the public sector workforce in setting up and maintaining digital government operations and engaging in continuous adaptation as new technologies and approaches emerge.

E-government requires digital interactions among institutions and public employees, data-sharing among government agencies, and high levels of coordination, collaboration and efficiency in public governance. The comprehensive digital transformation of the public sector is a complex effort that will involve virtually all public employees at the national and subnational levels, so it is essential that the public sector workforce be provided with the skill sets, competencies and capabilities needed to move the process forward.

The skills required for digitalization extend beyond technological competencies. It is, of course, necessary to support the acquisition of core digital capabilities in areas such as cloud computing, artificial intelligence, machine learning, data security and Web 3.0, but it is equally important to ensure that public employees are strong in terms of data literacy and digital literacy and are able to adopt digital mindsets and participate in a process of continuous evolution. At the higher levels of government, there needs to be an openness to innovation in policy development, regulatory approaches, and institutional restructuring. The FutureGov High Impact Initiative on Building Public Sector Capabilities, supported by UN DESA and UNDP, calls for a sense of urgency and renewed purpose in strengthening and transforming public sectors to accelerate the achievement of sustainable development objectives (see box 1.4).

#### Box 1.4 The adoption of the FutureGov High Impact Initiative at the SDG Summit in 2023

FutureGov is one of twelve high-impact initiatives adopted at the SDG Summit in 2023. FutureGov is co-led by UN DESA and UNDP and is supported by a coalition of Member States as well as the World Bank and various public and private institutions.

Held on 17 September 2023 as part of the SDG Action Weekend, the session on FutureGov brought a renewed sense of purpose and urgency to strengthen and transform public sectors to accelerate sustainable development. The public sector plays an essential role in supporting all institutions providing essential and critical services, including shelter, food, education, social protection, and health care, and in upholding fundamental rights, including gender equality and the right to a clean, healthy, and sustainable environment, with implications for all 17 SDGs and leaving no one behind. It is essential to develop critical public sector capabilities for the future to create and maintain the conditions necessary for countries to effectively navigate the transition to sustainable development. “The FutureGov initiative is designed to support Member States through their public sector ‘transformation journeys’ by building public sector skillsets for resilient institutions, shifting mindsets towards systems thinking and foresight, and facilitating social and policy innovation for results.” Acquiring and strengthening skill sets will allow adaptation and learning at the institutional level in the face of incomplete information and radical uncertainties, changing mindsets will promote higher-level predictive and analytical thinking to improve governance and optimize data and digital solutions, and supporting innovation will promote creative social and policy solutions beyond digitalization.

The Group of Friends of FutureGov, established to engage in advocacy and informal consultation, held its first meeting on 14 February 2024. The meeting was attended by 13 Member States as well as institutional partners such as the World Bank, European Union, and Organisation for Economic Co-operation and Development. The Group of Friends called for immediate action to support Governments in their public sector transformation journeys and requested the FutureGov Facility to provide direct capacity-building support tailored to the needs of each country.

Source of quote: United Nations, “SDG Summit 2023, 18-19 September 2023, New York: FutureGov session details”, available at <https://www.un.org/en/conferences/SDGSummit2023/SDG-Action-Weekend/futuregov>.

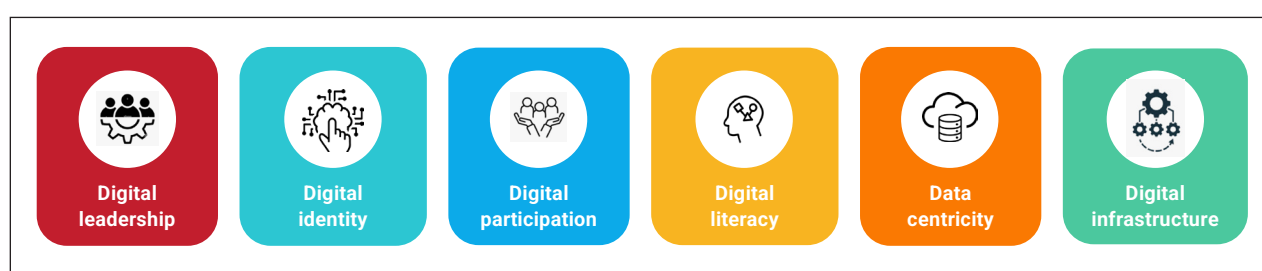


### 1.3.3 Business drivers for digital government

There are many risks, threats and weaknesses that can undermine digital development in the public sector, including a lack of political leadership, data governance gaps in the areas of personal privacy and protection, and the failure of legal frameworks and regulatory reforms to keep pace with rapid developments in digital technology applications (including the use of AI) in the public sector. While the advantages of digitalization are unambiguous and manifold, so are the risks if not managed well.

Six business drivers – digital leadership, data centricity, legal digital identity, effective e-participation, digital literacy, and a robust digital infrastructure – have been identified to ensure the effective deployment of the digital government model framework in creating a seamless, inclusive digital experience serving all segments of the population (see figure 1.5).

Figure 1.5 Six business drivers of the United Nations Digital Government Model Framework



#### Digital leadership

As noted in the 2020 edition of the United Nations E-Government Survey, “a strong political will, strategic leadership, and the commitment to expanding the provision of digital services” can often improve a country’s comparative EGDI ranking.<sup>47</sup> Effective digital development calls for digital leadership that can articulate a common vision, adopt holistic strategies, implement robust digital platforms, and build a vibrant digital ecosystem. Countries at the top of the EGDI rankings – such as Denmark, Estonia, Singapore, Iceland, the Republic of Korea and Saudi Arabia – demonstrate strong digital leadership.

With technologies such as AI continuing to disrupt digital development and public sector operations, digital government leaders need to possess soft skills such as adaptability, problem-solving, critical thinking, and effective communication – and to oversee the development of those competencies within the public sector workforce. To secure internal and external support for digitalization for sustainable development, politicians and senior policymakers need to understand how digital government can address public sector deficiencies. A successful digital transition requires not only a digital mindset, but also the merging of digital and development policymaking at both the national and local levels. Key government positions in digital development vary from one country to another and are reflected in titles such as digital minister, chief information officer, chief digital officer, chief technology officer, chief information security officer, and chief digital information officer, among others.

Responsibility for digitalization cannot be siloed within a single department or division. Instead, a country’s digital transition needs to sit at the heart of political decision-making and preferably be overseen by the office of the head of State or Government or by a minister fully focused on digitalization, given its cross-cutting nature. In New Zealand, responsibility for government



digitalization lies with the Minister for Digitising Government, a portfolio created in 2023,<sup>48</sup> and the Minister is supported by a chief digital officer, a chief data steward and a chief information security officer.

### Legal digital identity

Digital identity is the gateway to digital services. Without a legal digital identity, people are invisible to government agencies and at risk of being excluded from accessing even the most basic services. Comprehensive digital identity systems are also the gateway to digital trade and the development of the digital economy, which are high priorities for many countries in their bid to achieve growth-driven digital transformation.

Recent progress in operationalizing digital identity has been impressive; however, millions of people worldwide still lack the means to establish a digital identity, particularly a legal one; individuals facing the greatest challenges in this regard include those living in least developed countries and conflict zones.<sup>49</sup> Everyone has the right to be recognized as a person before the law, as enshrined in article 6 of the Universal Declaration of Human Rights and article 16 of the International Covenant on Civil and Political Rights. SDG target 16.9 (providing legal identity for all, including birth registrations, by 2030) is key to advancing the 2030 Agenda commitment to leave no one behind. Digital identity plays a central role in digital government development and data applicability, as it provides the basis on which data can be safely and securely shared within and between agencies to improve public services and their delivery. Box 1.5 illustrates how an effective digital identity system in India has increased the efficiency and cost effectiveness of public services provision.

#### Box 1.5 Aadhaar in India – the largest biometric identification system in the world

Aadhaar, the national biometric identification system in India, is the largest of its kind in the world and has been widely praised. The scheme is voluntary, but most Indians have signed up since it was launched over a decade ago. Each of the country's 1.33 billion residents is eligible to receive a unique 12-digit digital identity number. With this number, people can access as many as 300 central government services and up to 400 State-run schemes. The use of this system also reduces public sector expenditure; so far, the Government has saved an estimated 100 billion Indian rupees (\$1.27 billion) simply by paying State benefits directly to citizens, which has greatly reduced bureaucratic red tape and opportunities for corruption. The Aadhaar system has spawned multiple innovations, including the creation of a digital storage facility known as DigiLocker. This app-based service enables citizens to upload key documents, which streamlines their interactions with government bodies and a number of other entities, including fintech services and insurers. DigiLocker now has more than 100 million users and holds more than five billion documents. There are, nonetheless, various challenges in implementing the Aadhaar system, especially on the inherent risks of security and privacy to personal data, as well as concerns of the exclusion and denial of public services due to various forms of digital divides.<sup>50</sup>



### Digital participation

The 2030 Agenda for Sustainable Development emphasizes the importance of participatory processes. In the 2020 Survey, e-participation is highlighted as a key dimension of governance and one of the pillars of sustainable development.<sup>51</sup> Within the Survey framework, e-participation is assessed based on features relating to the online provision of public information, e-consultations, and e-decision-making, generally through e-government portals and other government websites.

Two decades of experience with e-participation have demonstrated the critical importance of linking digital participation, or e-participation, initiatives with formal institutional processes, as this allows both the Government and constituents to see that public participation can have an impact. Integrating e-participation activities in regular tasks and processes within public organizations, as opposed to siloing public engagement so that it is detached from the workings of government, is very important for changing the administrative culture and mindset around public engagement so that it becomes a core component of e-government and sustainable over time. One reason for the relatively slow growth of effective e-participation in e-government is that the process of institutionalizing e-participation remains poorly understood. There are challenges on the consumer end as well, as the willingness of people to engage in digital forms of participation in public affairs (particularly on a sustained basis) depends on their level of trust in government institutions and their trust of digitalization in general and of certain components of participation platforms such as social media.

### Enhancing digital literacy

Low levels of digital literacy, particularly in vulnerable and marginalized communities, pose a challenge to the implementation of inclusive digital government. In today's hybrid digital age, every individual needs some level of digital literacy – as reflected in SDG indicator 4.4.1, which measures how many youth and adults have the right information technology skills.

Past editions of the E-Government Survey have addressed the importance of digital literacy. In the 2020 Survey, it is observed that “developing cybersecurity and broader digital literacy capacities should enable e-government users, including vulnerable groups and minorities, to become more secure online, to demand data security and safety protections, and to defend themselves against threats”.<sup>52</sup> The 2022 edition of the Survey asserts that “in formulating [digital] policies, it is particularly important to promote digital literacy and narrow the digital-skills gaps of older people through tailored peer-to-peer or intergenerational training programmes. In the fast-changing digital environment, developing, strengthening, and maintaining digital literacy requires a life-course approach.” It is also emphasized that “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”.<sup>53</sup>

Very often, the first step in achieving digital literacy is building digital awareness. Some segments of the population may not even know that digital services are available or that there are avenues for acquiring or improving digital literacy skills, so campaigns that promote awareness can help drive digital inclusion efforts. Capacity-building programmes are necessary to educate and empower people to effectively utilize digital services, ensuring that no one is left behind in a rapidly digitalizing world. Digital government solutions should be adapted to work in different contexts for people with varying levels of digital capacity. Digital transformation is not just about harnessing technology; it also requires having the requisite digital skills to adapt to new innovations. Box 1.6 provides a brief description of the e-government literacy subindex newly incorporated into the HCI and EGDI in 2024.

#### Box 1.6 Introducing the concept of e-government literacy in the E-Government Survey

In its 2024 edition, the United Nations E-Government Survey introduces e-government literacy (EGL) as new area of assessment. As a subindex of the HCI, the EGL measures the ability of all segments of the population, especially vulnerable groups, to take full advantage of available e-government services and e-participation opportunities. Although the new indicators are more focused on the supply side, it is important that e-government literacy be promoted on the demand side as well, and through both push and pull factors.

## Data centrality

Data centrality is the concept and practice of positioning data as a core strategic asset in all digital development, services and applications, regardless of the technologies used. Data-centric institutions see data as a central, independent asset.<sup>49</sup> The increased adoption of data-centric approaches is evident in the strengthening of data governance, the opening of government data, and the leveraging of big data and new technologies such as AI in many countries around the world. The 2020 edition of the Survey highlights the importance of data-centric e-government, noting that optimizing government data allows public institutions to become more productive, accountable and inclusive.<sup>50</sup> Data-centric government also builds public trust and strengthens the trustworthiness of public institutions. An integrated national data governance framework that addresses relevant policies, institutions, people and processes is needed to maximize the benefits of data sharing including through open government data, and to minimize the risks associated with data governance, in particular those related to data security and personal data privacy.

One important concept in data centrality is the “single source of truth” (SSOT), which in the digital context refers to the aggregation of all government data into one central, digitally accessible location, enabling sharing across the public sector. In practical term, this relates to a single, unified, and authoritative source for each data point or piece of information within the Government’s systems and databases. Key aspects of SSOT in digital development include (a) providing centralized data management, (b) ensuring consistency so that all users and applications can access the same up-to-date information, (c) reducing redundancy by eliminating duplicates or conflicting versions of data across different systems, (d) improving data quality by maintaining data accuracy and integrity, and (e) enhancing efficiency through streamlined data access and updates across government agencies. Several countries – including Egypt, Fiji, Poland, South Africa, Tonga, Singapore and Uzbekistan – indicated in the Member States Questionnaire responses submitted for the 2024 Survey that they have incorporated SSOT as part of their digital government strategy.<sup>51</sup>

## Building and maintaining a robust digital Infrastructure

Another key driver supporting the implementation of the digital government model framework is a robust digital infrastructure, which is developed not only through updating and modernization but also by integrating and streamlining digital services across the whole of government and the digital ecosystem.

A shared digital infrastructure enhances efficiency by enabling faster service deployment and reducing costs through the centralization of resources. It also ensures robust digital security and compliance, promotes consistency and interoperability, and facilitates seamless data exchange and collaboration between institutions and agencies. With a fully integrated system, advanced technologies such as AI can be leveraged more effectively to improve digital services and business workflows.

Very often, a shared digital infrastructure includes platforms and common “building blocks” or “stacks” that are established to enable different parts of government and external partners to work together more effectively and efficiently, including through sectoral networks and across levels of government. The foundational layers of most digital infrastructure platforms include digital identity and data management, as well as digital payment platforms. With modular, open-source digital public infrastructure, countries can adopt next-generation, interoperable systems – and those with antiquated legacy systems can catch up by leapfrogging through a generation of digital development. GovTech Singapore has introduced the Government on Commercial Cloud (GCC) platform to facilitate and expedite the adoption of cloud as an unified platform, enhancing observability, auditability, and monitoring capabilities for institutions.<sup>57</sup> Notably, over 70 per cent of eligible government systems are already on the commercial cloud in Singapore. At the global level, the United Nations recently launched an initiative aimed at strengthening digital public infrastructure (see box 1.7).

### Box 1.7 The United Nations High Impact Initiative on Digital Public Infrastructure



The United Nations High Impact Initiative on Digital Public Infrastructure was launched in 2023 with the aim of facilitating digital transformation globally and enhancing public services delivery. Digital public infrastructure (DPI) is still an evolving concept, but there is a growing consensus on it being a combination of (a) networked open technology standards built for the public interest, (b) enabling digital governance, and (c) a community of innovative and competitive market players working to drive innovation, especially across public programmes. Key components of DPI include digital identity, payment systems, and data exchange mechanisms.

In 2023, UNDP and India's G20 Presidency published a compendium and a playbook on DPI to help countries move forward in their digital transformation journeys. An interim report produced through a multi-stakeholder process outlined the first draft of the high-level principles of DPI safeguards, presenting an actionable framework to guide implementation but noting the urgent need for guardrails.

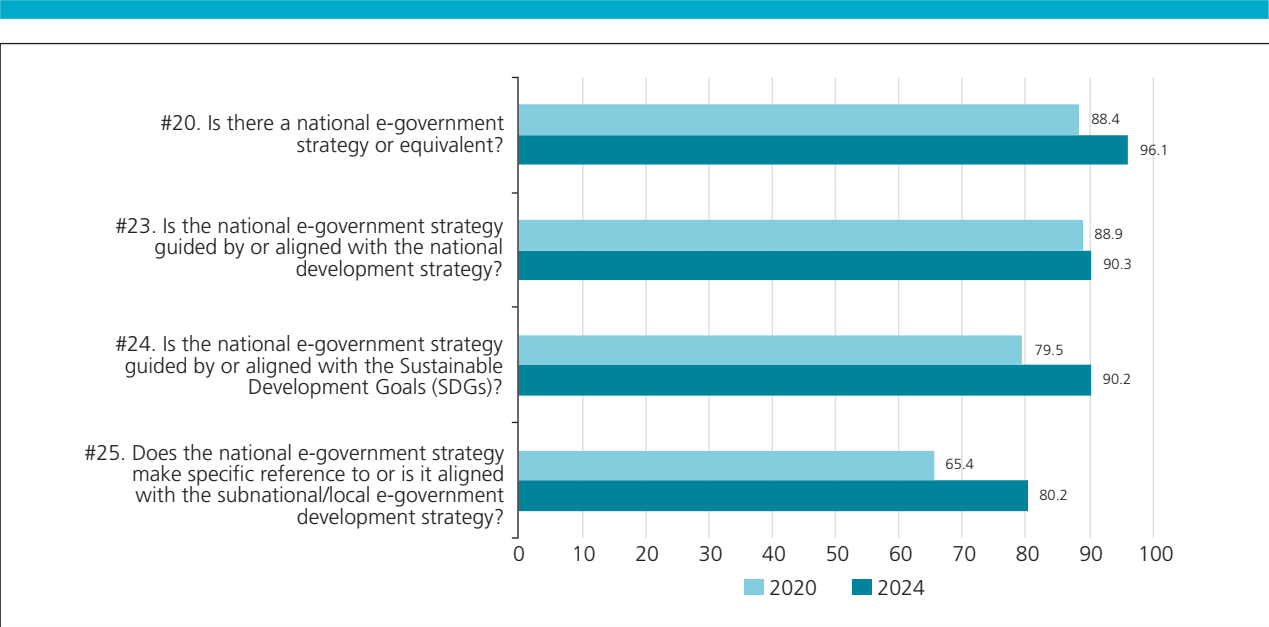
Sources: Some content is loosely excerpted from UNDP, "Digital public infrastructure", available at <https://www.undp.org/digital/digital-public-infrastructure>. Sources for information on the compendium, playbook and safeguards include UNDP and India's G20 Presidency, *Accelerating the SDGs through Digital Public Infrastructure: A Compendium of the Potential of Digital Public Infrastructure* (New York, 2023), available at <https://www.undp.org/publications/accelerating-sdgs-through-digital-public-infrastructure-compendium-potential-digital-public-infrastructure>; and United Nations, Office of the Secretary-General's Envoy on Technology, Digital Public Infrastructure – Universal Safeguards, "Interim report launched", available at <https://www.dpi-safeguards.org/>.

### 1.3.4 Digital policies, strategies and priorities

A robust and evidence-based approach to policymaking for digital government is essential to ensure its success in delivering desired outcomes. A number of factors shape the development of digital policies, including the alignment of digital strategies and policies with the SDGs and national development objectives, the evolution of digital technologies, digital capacities and capabilities, the availability of public resources, and the cultural diversity, geographical challenges, and development conditions prevailing in each country. More significantly, the political ethos, ideology and public governance systems of a country also influence the development and implementation of digital government initiatives. The public values and beliefs held by the Government and its stakeholders can shape the digital government landscape based on the levels and modalities of stakeholder engagement in digital services improvement, and the political ideology can determine the extent to which digital services are inclusive and address digital divides to ensure that no one is left behind. It is essential for Governments to assess where capacity-building might be needed to ensure that institutions are equipped to implement digital government systems in an effective, inclusive, and accountable manner.

Figure 1.6 illustrates the changes that have occurred since 2020 in the proportions of affirmative responses to selected questions in the Member States Questionnaire that are related to digital government strategies and policies. The proportion of countries with a national e-government strategy has increased significantly, rising from 88.4 per cent in 2020 to 96.1 per cent in 2024. While there has been no significant change in the number of countries maintaining that their national e-government strategy is guided by or aligned with the national development strategy, the proportion of countries aligning their e-government strategy with the SDGs has increased from 79.5 to 90.2 per cent. This supports the earlier key message on how digital government has supported the accelerated implementation of the SDGs. The proportion of countries making specific reference in their national e-government strategy to their subnational (local) e-government development strategy has jumped from 65.4 to 80.2 per cent since 2020.

Figure 1.6 Increasing proportion of countries responding affirmatively to Member States Questionnaire queries relating to digital government strategies and policies, 2020 and 2024



Chapter 3 explores regional trends in digital policy development, highlighting policy initiatives supported by various United Nations regional commissions and other international organizations. Chapter 4 of the present Survey examines local e-government strategies and policies and provides some examples of their application.

The United Nations E-Government Survey is a dynamic development tool established in support of the mandate of the UN DESA Division for Public Institutions and Digital Government (DPIDG), which includes research and advocacy in the realm of digital policy development. The primary data and findings gathered from the Member States and the Survey analyses and assessments have informed the contributions of UN DESA, DPIDG and other United Nations entities to strengthening digital development and cooperation, largely through the provision of advisory services and capacity-building initiatives. Examples of the support provided include the UN DESA Project on Frontier Technology Policy Experimentation and Regulatory Sandboxes in Asia and the Pacific (2020-2024)<sup>58</sup> and the United Nations Peace and Development Trust Fund project on developing institutional capacities for digital data management and cooperation to advance progress toward the Sustainable Development Goals.<sup>59</sup>

### 1.3.5 Measuring and evaluating digital government

In building and strengthening digital government to achieve sustainable development, delivering the desired outcomes and impacts can be challenging and complex. It is necessary to address not only the lack of progress in e-government development itself, but also the failure of many developed and developing countries to appropriately measure and assess their digital development so that targeted remedial strategies can be adopted where needed. A 2021 study asserted that many digital government initiatives were considered complete or partial failures, but the failure factors and their root causes were not identified or well articulated.<sup>60</sup>

Engaging in the regular measurement and evaluation of digital government initiatives is crucial to ensure public accountability and justify the investment of public resources, which in turn strengthen public trust in digital government. The right metrics and KPIs (quantifiable measures) will help

identify areas where digital initiatives are succeeding or falling short and can be leveraged to optimize resource allocation, bridge digital divides, inform continuous improvement in the quality and provision of services, and improve the user experience.

This is the rationale behind the design of the EGDl as a global metric for digital development. The EGDl and its component indices allow countries to benchmark their progress against that of other countries or within the regional or global context, fostering healthy competition and knowledge-sharing. Data and analytical findings from the present and past editions of the E-Government Survey can help inform policy decisions and shape future digital transformation strategies. More information is available on the metrics used in the Survey; table 1.1 in the present chapter lists the EGDl components and their subindices, chapter 2 offers a global analysis of EGDl composite and component values, rankings and other findings, chapter 3 evaluates the same indices and outcomes from a regional perspective, and chapter 4 assesses e-government development at the local level using the LOSI, with emphasis given to providing essential services and promoting social inclusion.

It is important to emphasize that while the EGDl and its components offer a detailed global snapshot of digital development and the Survey provides a comparative analysis encompassing all Member States, there are aspects of e-government development that are not captured within this framework, such as the uptake of specific e-services (usage), indicators relating to usability and usefulness, and various contextual factors at the national and subnational levels in each country.<sup>61</sup> It is recommended that Governments clearly define their national KPIs and introduce regular internal and external auditing, monitoring, and evaluation processes, as well as other observational and assessment tools such as user surveys, mystery shoppers and sentiment analysis using social media and big data. This process involves systematically collecting and analysing data to assess how well digital government initiatives are meeting their objectives and serving constituents. Box 1.8 offers a brief glimpse of how Thailand is using national KPIs to monitor and evaluate e-government development in the country.

#### Box 1.8 Use of key performance indicators in Thailand to monitor and evaluate digital government initiatives

In Thailand, the Office of the Public Sector Development Commission (OPDC) has adopted a set of national key performance indicators (KPIs) to encourage all government agencies meet high standards in the implementation of government initiatives. Digital government transformation is one of the key processes selected for monitoring and evaluation within this framework. Government agencies have been urged to advance digital government under a scheme referred to as “Government 4.0”. The OPDC came up with an incentive – the Public Sector Management Quality Award 4.0 – to encourage all government agencies to contribute effectively to efforts to transform the country’s public services in accordance with the guidelines governing Government 4.0.

*Sources:* From information provided by Thailand in response to the Member States Questionnaire for the *United Nations E-Government Survey 2024*; Thailand, Office of the Public Sector Development Commission, “Strategic Plan of the Public Sector Development B.E. 2564-2565 (2021-2022)” (<https://www.opdc.go.th/?lang=en>) and “Public sector excellence awards” (<https://www.opdc.go.th/content/Mjc4MQ/?lang=en>); and Thailand, National Statistical Office, “Bureaucratic development”, including information on the award, available at [https://www.nso.go.th/nsoweb/category/7A?set\\_lang=en](https://www.nso.go.th/nsoweb/category/7A?set_lang=en).

## 1.4 The apex of the Digital Government Model Framework: achieving Sustainable Development Goals and national development objectives

The apex of the Digital Government Model Framework, shown in figure 1.5, is of paramount importance, as it focuses on two essential goals: achieving the SDGs, guided by the 2030 Agenda targets and indicators, and meeting national development objectives.

Digital government initiatives are proving to be powerful tools in accelerating the implementation of the SDGs. By leveraging technology, Governments can become more effective, inclusive and accountable, strengthening services provision and accessibility across sectors and contributing directly to the achievement of all 17 SDGs. There are numerous examples illustrating how digitalization in general, and digital government in particular, can accelerate progress towards sustainable development. For SDG 1 (no poverty), digital platforms can help alleviate economic and other hardships associated with poverty by providing access to financial services and social benefits and enabling targeted social protection. SDG 2 (zero hunger) benefits from digital agriculture initiatives that enhance food security, such as the Digital Green project in Ethiopia,<sup>62</sup> which provides farmers with vital information on how to increase crop yields. SDG 8 (decent work and economic growth) is supported by digital government initiatives that promote economic development by streamlining and facilitating business processes (including company registration and tax compliance) and access to financial services, as exemplified by the e-Business Register platform in Estonia. SDG 10 (reduced inequalities) is addressed through digital inclusion programmes designed to improve access to public services, such as the Be Connected initiative for older residents in Australia.<sup>63</sup> The list extends to other Goals, providing broad and widely diverse evidence of the strong catalytic role digital government plays in accelerating the implementation of the SDGs.

The proposed Digital Government Model Framework represents an opportunity for both developed and developing countries to accelerate digital transformation and the realization of national development goals. The Framework recognizes that each country needs to decide on the level, extent and nature of digital government development in line with its national development priorities and strategies for achieving the SDGs. In some cases, countries can leverage existing or emerging technologies (such as AI) and other digital resources to address commonplace challenges and even “wicked problems” in the public sector, but Governments must be ready to continue to evolve and adapt to shifting contextual factors, including global trends and developments in data, digital governance, and global digital cooperation. In implementing the Model Framework, countries can be guided by norm-setting bodies such as the United Nations Committee of Experts on Public Administration, which can provide Member States with policy guidance and support. This organization prioritizes digital policy issues – reflected in the deliberations at its twenty-third session on the role of Governments in ensuring the transparency and accountability of AI systems in public administration and in the discourse at its twenty-second session on stimulating public sector innovation through digital technology and measuring the impact of digital government.

The 2024 E-Government Survey, exemplifying the flexibility necessary to address the dynamic shifts surrounding the evolution of technology and e-government, includes an annex on the application of complex network analysis in expanding the list of factors affecting digital development.



## 1.5 Key recommendations

- *Digitalizing public institutions and services has never been more urgent.*

The empirical findings and anecdotal evidence from successive United Nations E-Government Surveys suggest that digitalizing public institutions and services has never been more urgent. Governments must make every effort to meet people's rising expectations in a rapidly digitalizing world, accelerate progress towards achieving the SDGs, and become more resilient and efficient in the face of intersecting and compounding crises such as those related to food, fuel, health and inflation.

- *Each country has its own resource constraints, legal and regulatory frameworks, and cultural, political and social norms that can have a significant impact on how digital government is adopted and implemented to align with national development priorities and strategies for achieving the SDGs.*

The concept of digital government is no longer new, but it has grown progressively more complex as the boundaries between physical and digital government and across sectors and jurisdictions have become increasingly blurred and interconnected. Moreover, digital government as a construct can mean different things to different administrations and in different contexts. Consequently, the conceptualization and implementation of digital government strategies and initiatives may be very diverse and are therefore challenging to assess and evaluate for effectiveness, inclusiveness and accountability. For Governments, researchers, analysts, and others exploring or assessing e-government, it is important not only to keep up with global trends and developments, but also to understand that each country has its own resource constraints, legal and regulatory frameworks, and cultural, political and social norms that can have a significant impact on how digital government is adopted and implemented to align with national development priorities and strategies for achieving the SDGs.

- *The United Nations Digital Government Model Framework can offer countries the opportunity to accelerate digital transformation for sustainable development, guided by the principles of effective governance for sustainable development and a set of digital dimensions and key business drivers in advancing digital government.*

The United Nations Digital Government Model Framework can offer both developed and developing countries the opportunity to accelerate digital transformation for sustainable development. The application of the Framework, guided by the principles of effective governance for sustainable development, can promote and facilitate the sharing of limited public resources, best practices, experiences, methods, and standards and can also reduce turnaround times and costs for digital government initiatives. A set of key business drivers – digital leadership, data centricity, digital identity, effective e-participation, enhanced digital literacy, and building and maintaining a robust digital infrastructure – have been established to guide the implementation of the Model Framework so that the needs of all stakeholders are best served.

## Endnotes

- <sup>1</sup> United Nations, Division for Public Economics and Public Administration, and American Society for Public Administration, *Benchmarking E-Government: A Global Perspective – Assessing the Progress of the UN Member States*, (New York, 2002), p. 4, available at <https://desapublications.un.org/publications/benchmarking-e-government-global-perspective-2001>.
- <sup>2</sup> In line with past editions of the United Nations E-Government Survey, “e-government” and “digital government” are used interchangeably throughout the present edition. There is no formal distinction made between the terms among academics, policymakers and practitioners.
- <sup>3</sup> United Nations, *World Sector Report 2023: Transforming Institutions to Achieve the Sustainable Development Goals after the Pandemic* (New York, 2023)
- <sup>4</sup> The United Nations Department of Economic and Social Affairs (UN DESA) convened the Third Global Forum on Reinventing E-Government in collaboration with the Government of Italy; the meeting was held in Naples in March 2001 (see <https://publicadministration.desa.un.org/capacity-development/global-forum/3rd-global-forum>).
- <sup>5</sup> United Nations, Division for Public Economics and Public Administration, and American Society for Public Administration, *Benchmarking E-Government: A Global Perspective*.
- <sup>6</sup> UN DESA, “Opening remarks: Fourth World Internet Conference (Wuzhen Summit)”, 3 December 2017, available at <https://www.un.org/en/desa/opening-remarks-fourth-world-internet-conference-wuzhen-summit>.
- <sup>7</sup> UN DESA, “UN General Assembly resolutions on WSIS and its follow-up”, available at <https://publicadministration.desa.un.org/intergovernmental-support/wsis/un-general-assembly-resolutions-wsis-and-its-follow>.
- <sup>8</sup> United Nations, “The age of digital dependence: report of the UN Secretary-General’s High-level Panel on Digital Cooperation”, available at <https://www.un.org/en/pdfs/DigitalCooperation-report-for%20web.pdf>. See also United Nations, “Secretary-General’s High-level Panel on Digital Cooperation: the UN Secretary-General’s roadmap on digital cooperation”, available at <https://www.un.org/en/sg-digital-cooperation-panel>.
- <sup>9</sup> United Nations, “Our Common Agenda”, background information, available at <https://www.un.org/en/common-agenda>; see also United Nations, *Our Common Agenda: Report of the Secretary-General* (New York, 2021), available at [https://www.un.org/en/content/common-agenda-report/assets/pdf/Common\\_Agenda\\_Report\\_English.pdf](https://www.un.org/en/content/common-agenda-report/assets/pdf/Common_Agenda_Report_English.pdf).
- <sup>10</sup> United Nations, “Secretary-General’s roadmap for digital cooperation: introduction”, available at <https://www.un.org/en/content/digital-cooperation-roadmap/>. See also United Nations, General Assembly, “Road map for digital cooperation: implementation of the recommendations of the High-level Panel on Digital Cooperation”, 29 May 2020 (A/74/821), available at <https://documents.un.org/doc/undoc/gen/n20/102/51/pdf/n2010251.pdf?token=OYNd8MEgYAP0Gi3f3k&fe=true>.
- <sup>11</sup> United Nations, Division for Public Economics and Public Administration, and American Society for Public Administration, *Benchmarking E-Government: A Global Perspective*.
- <sup>12</sup> Rodrigo Sandoval-Almazan and others, *Building Digital Government Strategies: Principles and Practices*, Public Administration and Information Technology series, vol. 16, Christopher G. Reddick, ed. (Cham, Switzerland, Springer International Publishing, 2017).
- <sup>13</sup> UN DESA, *UN Global E-Government Readiness Report 2004*, p. 14.
- <sup>14</sup> United Nations, Division for Public Economics and Public Administration, and American Society for Public Administration, *Benchmarking E-Government: A Global Perspective*, p. v.
- <sup>15</sup> India, Ministry of Electronics and Information Technology, “E-Government Development Index (EGDI) under global indices”, available at <https://www.meitv.gov.in/e-government-development-index-egdi-under-global-indices>.
- <sup>16</sup> Uruguay Digital, “UN E-Government Survey 2022”, 10 March 2022, available at <https://www.gub.uy/uruguay-digital/en/politicas-y-gestion/government-survey-2022>.
- <sup>17</sup> Samuel Olorunfemi Adams and Chima Paul, “E-government development indices and the attainment of United Nations sustainable development goals in Africa: a cross-sectional data analysis”, *European Journal of Sustainable Development Research*, vol. 7, No. 4 (2023), em0234, available at <https://doi.org/10.29333/ejosdr/13576>.
- <sup>18</sup> Jeffrey D. Sachs, Guillaume Lafortune and Grayson Fuller, *Sustainable Development Report 2024: The SDGs and the UN Summit of the Future* (Paris, Sustainable Development Solutions Network, and Dublin, Dublin University Press, 2023), DOI:10.25546/108572, available at <https://s3.amazonaws.com/sustainabledevelopmentreport/2024/sustainable-development-report-2024.pdf>.
- <sup>19</sup> United Nations Development Programme, “Gender Inequality Index (GII)”, Human Development Reports page (2022), available at <https://hdr.undp.org/en/content/gender-inequality-index-gii>.
- <sup>20</sup> Ali J. Al-Sadiq, “The role of e-government in promoting foreign direct investment inflows”, IMF Working Papers, No. 16 (Washington, D.C., International Monetary Fund, January 2021).
- <sup>21</sup> Ibid., p. 8.

- 22 Transparency International, Corruption Perceptions Index 2022, available at <https://www.transparency.org/en/cpi/2022>.
- 23 TheGlobalEconomy.com, “Government spending, percent of GDP – country rankings”, available at [https://www.theglobaleconomy.com/rankings/government\\_size](https://www.theglobaleconomy.com/rankings/government_size); IMF, “Government expenditure, percent of GDP”, available at <https://www.imf.org/external/datamapper/exp@FPP/SGP?zoom=SGP&highlight=SGP>; World Bank, “General government final consumption expenditure (current US\$)”, available at <https://data.worldbank.org/indicator/NE.CON.GOV.T.CD>; World Bank, “Expense (% of GDP)”, available at <https://data.worldbank.org/indicator/GC.XPN.TOTL.GD.ZS>.
- 24 United Nations, General Assembly and Economic and Social Council, “Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels” (multiple years). See also UN DESA, “Facilitation Meetings by UNDESA for the action lines C1, C11 and C7eGov”, available at <https://publicadministration.desa.un.org/intergovernmental-support/wsis/facilitation-meetings-undesa-action-lines-c1-c11-and-c7egov>.
- 25 David Amaglobeli, Ruud de Mooij and Mariano Moszoro, “Harnessing GovTech to tax smarter and spend smarter”, IMF Blog post on macro-fiscal policy, 7 September 2023, available at <https://www.imf.org/en/Blogs/Articles/2023/09/07/harnessing-govtech-to-tax-smarter-and-spend-smarter>.
- 26 UN DESA, *United Nations E-Government Survey 2020*, see addendum on COVID-19 response, pp. 215-229.
- 27 The proposed model framework is a conceptual structure that combines both a model and a framework to provide a comprehensive approach to understanding, analysing and implementing digital government.
- 28 United Nations, Economic and Social Council, “Elaborating principles of effective governance for sustainable development”, note by the Secretariat, 14 February 2018 (E/C.16/2018/5), available at <https://documents.un.org/doc/undoc/gen/n18/027/26/pdf/n1802726.pdf?token=KB2ZRUFMMjYgGF5bRJ&cfe=true>.
- 29 Note: The OECD Digital Government Policy Framework was introduced in 2020 to help governments transition to digital maturity across six dimensions: digital by design, data-driven public sector, government as a platform, open by default, user-driven, and proactiveness. It is built on the 2014 OECD Recommendation on Digital Government Strategies. Source: <https://www.oecd.org/en/topics/digital-government.html>
- 30 Vladislav Boutenko, Julia Jacobson and Martin Reeves, “An ecosystem approach for city governance”, Boston Consulting Group (BCG) article, 31 May 2022, available at <https://www.bcg.com/publications/2022/modernizing-city-governance-ecosystem-approach>.
- 31 Mike Bracken, “Government as a Platform: the next phase of digital transformation”, United Kingdom Government Digital Service blog post, 29 March 2015, available at <https://gds.blog.gov.uk/2015/03/29/government-as-a-platform-the-next-phase-of-digital-transformation/>.
- 32 Government as a Platform (GaaP) was first introduced by Tim O’Reilly in 2010. GaaP is described by Mike Bracken (ibid.) as a “new vision for digital government: a common core infrastructure of shared digital systems, technology and processes”. This approach incorporates or supports a route to better public services, the breaking down of organizational silos, a toolkit for civil servants, an open platform to build upon, a new public infrastructure, a shorthand for the co-production of policy, and mechanism designed to help pave the way for the creation of new institutions that are fit for the digital age.
- 33 UN DESA, *United Nations E-Government Survey 2022*.
- 34 From information provided by France in response to the Member States Questionnaire for the *United Nations E-Government Survey 2024*.
- 35 Shravan Pargaonkar, “A comprehensive research analysis of software development life cycle (SDLC) agile & waterfall model advantages, disadvantages, and application suitability in software quality engineering”, *International Journal of Scientific and Research Publications*, vol. 3, No. 8 (August 2023), available at <https://www.ijsrp.org/research-paper-0823.php?rp=P14012999>.
- 36 From information provided by Canada in response to the Member States Questionnaire for the *United Nations E-Government Survey 2024*; Canada, “Canada’s Digital Ambition 2022”, available at <https://www.canada.ca/en/government/system/digital-government/government-canada-digital-operations-strategic-plans/canada-digital-ambition.html>.
- 37 Wai Min Kwok and others, “Sandboxing and experimenting digital technologies for sustainable development”, UN DESA Policy Brief, No. 123 (December 2021), pp. 2-3 (referencing the United Nations Development Account Project on policy experimentation and regulatory sandboxes, jointly implemented by UN DESA and the United Nations Economic Commission for Asia and the Pacific), available at <https://www.un.org/development/desa/dpad/publication/un-desa-policy-brief-123-sandboxing-and-experimenting-digital-technologies-for-sustainable-development/>.
- 38 The zero trust security model is a cybersecurity framework based on the principle “never trust, always verify”. It assumes that threats can come from both inside and outside the network, so by default, no user or device should be trusted. Instead, every access request must be authenticated, authorized and continuously validated.

- 39 From information provided by the Republic of Korea in response to the Member States Questionnaire for the *United Nations E-Government Survey 2024*.
- 40 Singapore Government Development Portal, “Government Zero Trust Architecture (GovZTA)”, available at <https://www.developer.tech.gov.sg/guidelines/standards-and-best-practices/government-zero-trust-architecture>.
- 41 Rumana Bukht and Richard Heeks, “Defining, conceptualising and measuring the digital economy”, *International Organisations Research Journal*, vol. 13, No. 2 (2017), pp. 143-172.
- 42 Ebenezer Agbozo. 2019. The Private Sector as an E-Government Enabler. In Proceedings of the 12th International Conference on Theory and Practice of Electronic Governance (ICEGOV ‘19). Association for Computing Machinery, New York, NY, USA, 508–509. <https://doi.org/10.1145/3326365.3326443>
- 43 Mensah IK, Zeng G, Mwakapesa DS. Understanding the drivers of the public value of e-government: Validation of a public value e-government adoption model. *Front Psychol*. 2022 Sep 13;13:962615. doi: 10.3389/fpsyg.2022.962615. PMID: 36176811; PMCID: PMC9513459.
- 44 The People’s Government of Beijing Municipality, “BeijingService’: WeChat account of official web portal for People’s Government of Beijing Municipality officially unveiled”, news, 2 September 2023, available at [https://english.beijing.gov.cn/latest/news/202309/t20230902\\_3243833.html](https://english.beijing.gov.cn/latest/news/202309/t20230902_3243833.html).
- 45 From information provided by Oman in response to the Member States Questionnaire for the *United Nations E-Government Survey 2024*.
- 46 UN DESA, “Empowering small businesses in Bangladesh through digital innovative solutions”, article, 29 February 2024, available at <https://capacity.desa.un.org/article/empowering-small-businesses-bangladesh-through-digital-innovative-solutions>.
- 47 UN DESA, *United Nations E-Government Survey 2020*, chap. 6.
- 48 From information provided by New Zealand in response to the Member States Questionnaire for the *United Nations E-Government Survey 2024*; New Zealand, “Minister for Digitising Government”, available at <https://www.digital.govt.nz/digital-government/leadership/minister-for-government-digital-services/>.
- 49 Risa Arai, Piyush Verma and Rajesh Sharma, “Why legal identity is crucial to tackling the climate crisis”, blog post, 15 May 2024, available at <https://www.undp.org/blog/why-legal-identity-crucial-tackling-climate-crisis>.
- 50 K. Sudhir and Shyam Sunder. “What Happens When a Billion Identities Are Digitized?”, Yale Insights, available: <https://insights.som.yale.edu/insights/what-happens-when-billion-identities-are-digitized>.
- 51 UN DESA, *United Nations E-Government Survey 2020*, chap. 5.
- 52 Ibid., p. 161.
- 53 UN DESA, *United Nations E-Government Survey 2022*, pp. 121 and 133.
- 54 Adams and Paul, “E-government development indices and the attainment of United Nations sustainable development goals in Africa: a cross-sectional data analysis”.
- 55 UN DESA, *United Nations E-Government Survey 2020*, chap. 6.
- 56 From information provided by the countries listed in response to the Member States Questionnaire for the *United Nations E-Government Survey 2024*.
- 57 Singapore Government Developer Portal, Government on Commercial Cloud (GCC) - A “Wrapper” Platform for Onboarding of Government Services into the Cloud, available at <https://www.developer.tech.gov.sg/products/categories/infrastructure-and-hosting/government-on-commercial-cloud/overview.html>.
- 58 UN DESA, “UN DESA Project on Frontier Technology Policy Experimentation and Regulatory Sandboxes in Asia and the Pacific (2020-2024)”, Public Institutions/Projects page, 1 September 2022, available at <https://publicadministration.desa.un.org/projects/un-desa-project-frontier-technology-policy-experimentation-and-regulatory-sandboxes-asia>.
- 59 UN DESA, “Developing institutional capacities for digital data management and cooperation to advance progress toward the Sustainable Development Goals” (project funded by the Peace and Development Trust Fund), Public Institutions/Project page, 22 March 2024, available at <https://publicadministration.desa.un.org/projects/developing-institutional-capacities-digital-data-management-and-cooperation-advance-0>.
- 60 Joseph Nyansiro, Joel S. Mtebe and Mussa M. Kissaka, “E-government information systems (IS) project failure in developing countries: lessons from the literature”, *The African Journal of Information and Communication*, vol. 28, No. 28, pp. 1-29, available at <https://doi.org/10.23962/10539/32210>.
- 61 Aaron Maniam, “What digital success looks like: measuring & evaluating government digitalisation”, *ETHOS* Issue 21 (July 2019), Singapore Civil Service College, available at <https://knowledge.csc.gov.sg/ethos-issue-21/what-digital-success-looks-like-measuring-evaluating-government-digitalisation/>.
- 62 Ethiopia, “Digital Green”, available at <https://digitalgreen.org/ourwork/ethiopia/>.
- 63 Australia, Department of Social Services, “Be Connected – improving digital literacy for older Australians”, available at <https://www.dss.gov.au/seniors/be-connected-improving-digital-literacy-for-older-australians>.

