



PAS 2009:2024

Digital maturity for government organizations – Guide

TDRA

هيئة تنظيم الاتصالات والحكومة الرقمية
TELECOMMUNICATIONS AND DIGITAL
GOVERNMENT REGULATORY AUTHORITY

bsi
Documents
Document Sharing Hub

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2024
Published by BSI Standards Limited 2024

ISBN 978 0 539 23849 5

ICS 35.020, 03.100.01

No copying without BSI permission except as permitted by copyright law.

Publication history

First published February 2024

Contents

Foreword	iii
0 Introduction	v
0.1 General	v
0.2 Digital transformation of government organizations	v
0.3 Data and digital technologies	vi
0.4 Digital transformation opportunities	vi
0.5 Digital transformation challenges	vii
0.6 Implementing digital transformation	viii
0.7 Digital maturity assessment tools	viii
1 Scope	1
2 Normative references	4
3 Terms and definitions	5
4 Characteristics of digital maturity	6
4.1 General	6
4.2 Implementing digital maturity	9
4.3 Evidence of digital maturity	14
5 Measuring digital maturity	18
5.1 General	18
5.2 Digital maturity measurement scales	19
5.3 Using all available evidence of digital maturity	19
5.4 Developing digital maturity through learning journeys	20
5.5 Differentiating digital maturity by roles and responsibilities	20
5.6 Interpreting digital maturity consistently	20
5.7 Managing uncertainty in estimating digital maturity	21
6 Selecting and using digital maturity assessment tools	22
6.1 General	22
6.2 Selecting digital maturity assessment tools	22
6.3 Appropriateness of digital maturity assessment tools to meet needs	23
6.4 Compatibility between digital maturity assessment tools	23
6.5 Data and information security	23
6.6 Digital maturity assessment tool parameters	23
6.7 Application	24
6.8 Drivers	24
6.9 Availability of benchmark data	24
6.10 Using tools to measure digital maturity	24
6.11 Continuous improvement and monitoring progress towards targets	27
Annexes	
Annex A (informative)	
Examples of digital technologies	28
Annex B (informative)	
Case studies	29
Annex C (informative)	
Digital maturity assessment tools	45
Annex D (informative)	
Ministry- and department-specific considerations	52

Bibliography.....	54
-------------------	----

List of figures

Figure 1 – Delivering digital government.....	1
---	---

List of tables

Table 1 – Types of digital technologies used in government.....	vi
Table 2 – Scope of digital maturity in government organizations.....	2
Table 3 – Characteristics of digital maturity in government organizations	6
Table 4 – Evidence of preparing for digital transformation.....	14
Table 5 – Summary of recommendations for measuring digital maturity.....	18
Table 6 – Examples of digital maturity measurement scales	19
Table 7 – Examples of subjective and objective evidence of digital maturity	19
Table 8 – Summary of recommendations for selecting digital maturity assessment tools.....	22
Table 9 – Recommendations for using digital maturity assessment tools	25
Table A.1 – Examples of digital technologies.....	28
Table B.1 – Case study: Transport for London, Open Data and Digital Partnership, United Kingdom	29
Table B.2 – Case study: UAE Verify and UAE API Marketplace, UAE	31
Table B.3 – Case study: Hackathon, UAE	33
Table B.4 – Case study: Altinn Digital, Norway.....	35
Table B.5 – Case study: Singpass, Singapore	36
Table B.6 – Case study: MySkillsFuture, Singapore	37
Table B.7 – Case study: Next Generation, UAE	39
Table B.8 – Case study: GovTech Advisory and Guidance Tool.....	41
Table B.9 – Case study: Local Digital Project: Chatbots and AI, United Kingdom	42
Table B.10 – Case study: Government Innovation Platform: ibtekr.org, UAE.....	44
Table C.1 – Digital Government Exchange Working Group.....	45
Table C.2 – Government of South Australia	46
Table C.3 – Organisation for Economic Co-operation and Development (OECD)	47
Table C.4 – Organisation for Economic Co-operation and Development (OECD) Tax Administration	48
Table C.5 – UAE Government	49
Table C.6 – UK Government.....	50
Table C.7 – World Bank	51
Table D.1 – Ministry- and department-specific considerations.....	52

Foreword

This PAS was sponsored by the Telecommunications and Digital Government Regulatory Authority (TDRA), United Arab Emirates (UAE). Its development was facilitated by BSI Standards Limited, and it was published under licence from The British Standards Institution. It came into effect on 29 February 2024.

Acknowledgement is given to Ravi Gidoomal and Dr Steven Barr of Edge Digital Manufacturing Limited, as the technical authors, and the following organizations that were involved in the development of this PAS as members of the Steering Group:

- Age Check Certification Scheme
- Charity Digital
- CollaborANTS
- Digital Catapult
- Digital Research Technologies
- Institute of Export and International Trade
- Kent County Council
- rradar
- Sharjah Private Education Authority
- Telecommunications and Digital Government Regulatory Authority, UAE
- University of Kent
- University of Salford, Salford Business School

Acknowledgement is also given to the members of a wider review panel who were consulted in the development of this PAS.

The British Standards Institution retains ownership and copyright of this PAS. BSI Standards Limited, as the publisher of the PAS, reserves the right to withdraw or amend this PAS on receipt of authoritative advice that it is appropriate to do so. This PAS will be reviewed at intervals not exceeding two years.

This PAS is not to be regarded as a British Standard. It will be withdrawn in the event it is superseded by a British Standard.

The PAS process enables a standard to be rapidly developed in order to fulfil an immediate stakeholder need. A PAS can be considered for further development as a British Standard, or constitute part of the UK input into the development of a European or international standard.

Information about this document

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at knowledge.bsigroup.com, or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

Use of this document

As a guide, this PAS takes the form of guidance and advisory recommendations. It is not to be quoted as if it were a specification or a code of practice.

Presentational conventions

The guidance in this document is presented in roman (i.e. upright) type. Any recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Additional commentary, explanation and general informative material is presented in smaller italic type.

Where words have alternative spellings, the preferred spelling of the *Shorter Oxford English Dictionary* is used (e.g. "organization" rather than "organisation").

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

0 Introduction

0.1 General

This PAS provides guidance on increasing digital maturity in government organizations, including in their internal operations, external interfaces and service delivery. The scope of these guidelines includes:

- terms used in the context of digital maturity in government organizations (Clause 3);
- characteristics and evidence of digital maturity: aspects for organizations to take into account when planning and adopting digital technologies, and the ways in which they can demonstrate their digital maturity, including research, collaboration and organizational processes (Clause 4);
- measuring digital maturity: how organizations measure their maturity in optimizing their use of digital technologies (Clause 5); and
- selecting and using digital maturity assessment tools: the factors for organizations to take into account when selecting and using digital maturity assessment tools in optimizing their use of digital technologies (Clause 6).

0.2 Digital transformation of government organizations

Governments and international bodies have highlighted the role of digital transformation in responding effectively to the needs of citizens. All aspects and instruments of government are involved, including policy making, governance, public management and public service delivery [1].

Government responses to the COVID-19 pandemic and other crises have demonstrated the potential for rapid adoption of new practices and technologies, for example the availability of real-time data to support public health decision-making. Progress has been made in other areas, for example in the availability and use of digital channels to access government services.

It is important that government organizations continue to strive to:

- use digital technology to recast the relationship between government and citizens (including foreign individuals and organizations), redesigning public services around people's needs;
- engage citizens, businesses and civil society in the design and, where appropriate, the delivery of services, policies and regulations;
- adopt inclusive design approaches in the delivery of government services, incorporating user-centred design (UCD) practices;
- make interaction with government as easy as possible for all, avoiding the need to navigate multiple departments and agencies, and to fill out duplicate forms;
- build better services for less, making services simpler and more flexible, drastically reducing costs, and re-engineering processes to become more environmentally friendly;
- research and innovate, with private and public organizations, appropriate provision for value-based application of digital technology and systems;
- remain aware of potential new technologies or threats, and continuously look for emerging technologies that have the potential to be effective in delivering government objectives [2];
- adopt national and international standards on digital services, technology, data and cybersecurity, for use across government; and
- share software with other parts of government and other governments, by openly allowing others to access programmes and adopting an open access culture ([3], [4]).

0.3 Data and digital technologies

Table 1 provides an overview of data and digital technologies typified by their purpose/use in government. A more detailed list of technologies is included for reference in Annex A.

Table 1 – Types of digital technologies used in government

Digital government function	Typical purpose/use of digital technology	
Service delivery - Understanding and predicting the needs of citizens - Enabling citizens to use digital services - Delivering digital services in real time	Communication - Online services - Service automation - Performance monitoring - Predictive asset maintenance	Core infrastructure - Data engineering - Data capture - Data management - Data security - Data sharing - Data analysis
Internal operations - UCD - Leadership and strategy - People and culture - Legislation and governance	Collaboration - Productivity - Simulation - Training - Reporting	

Data and digital technologies comprise mature technologies with a strong track record of adoption in government, and emerging technologies at an early stage of development or application in government. Whether a technology is considered mature or emerging is largely subjective, and its interpretation depends on the digital maturity of a government organization, as well as developments in the digital technology industry.

0.4 Digital transformation opportunities

Emerging technologies and new trends bring opportunities for organizations to transform their digital services and improve citizen satisfaction. They might improve quality of life through enabling inclusive and accessible, user-centred, next-generation services. Some emerging technologies are related to artificial intelligence (AI) and machine learning to process big data, personalize services or anticipate events. Other developments, such as linked open data, could contribute to building public value on open data portals. Crowdsourcing and blockchain could contribute to improving the citizen-organization interaction.

Digital transformation has the potential to deliver significant cost savings and labour efficiency gains to government. Examples of quantified impacts include:

- the UK Government identified potential savings of around £1 000 million through investments in digital transformation ([5], [6]);
- the EU has launched a multi-year Digital Decade policy programme [7]. In Italy, e-procurement systems led to cost savings of €3 000 million; and
- in Denmark, electronic invoicing saves taxpayers €150 million a year and businesses €50 million a year and the estimated annual savings if introduced across Europe could exceed €50 000 million [7].

Digital transformation requires the development of standards and assurance; capability, leadership and culture; accountability and productivity; and appropriate ethical frameworks to build public trust [8]. All of these factors have the potential to deliver further benefits to government and citizens.

Environmental, social, and corporate governance (ESG) aspects of finance and other regulated industries are receiving attention from governments. Since publishing its 17 Sustainable Development Goals (SDGs) in 2015, the United Nations has noted the importance of digital technologies in achieving SDGs including ESG aspects through digital financial inclusion [9]. The World Bank has highlighted the need for digital technologies to be used to increase energy efficiency (SDG 7) to offset increasing global energy demand [10].

A selection of publicly available case studies is included in Annex B for reference. These case studies illustrate different aspects of digital maturity for government organizations.

0.5 Digital transformation challenges

The challenges of implementing digital transformation are recurring themes in recent reviews and guidelines issued by and for government organizations ([11], [12]), and include:

- cost implications and budget constraints;
- whether current technology would be better suited than a novel or emerging technology to meet an organization's needs;
- evaluating the cost and benefit of maintaining or upgrading legacy systems;
- skills and resources in the organization to manage and adapt as technology evolves, particularly at a local authority or department level;
- the implications of emerging technology failing or being discontinued;
- data ethics and regulatory implications;
- making solutions user-centred;
- low risk appetite;
- privacy implications; and
- security implications.

There are a large number of broader barriers to digital transformation that could slow or stop progress. These might apply to the organization and impact internal users or external users. These include:

- lack of awareness of digital technologies and their relevance;
- perceived complexities of integrating digital technologies;
- dependency on legacy technologies;
- misconceptions of costs;
- technical debt;
- lack of capability or capacity;
- accessibility and availability of technology;
- ineffective digital skills training;
- political constraints;
- legal constraints;
- procurement processes;
- lack of proper governance framework and enforcement;
- inadequate documentation (e.g. enterprise architecture);
- customer constraints; and
- poor leadership, for example through a narrow strategy or lack of a cross-functional digital roadmap; failure to engage staff or poor organizational change processes; and/or selecting inappropriate or ineffective digital technologies.

0.6 Implementing digital transformation

Integrating data and digital technologies into existing government systems and processes requires not only understanding the technical context, but also addressing internal and external factors, such as:

- agreeing and following one vision or objective, with associated strategic leadership, financial and operational support;
- aligning plans to fit within any organizational constraints and/or context;
- adopting good practice and compliance with legal, governance and infrastructure frameworks in delivering new services that require shared data, processes, integration and systems;
- ascertaining how the technology will work with government service management;
- deciding which skills and capabilities the government organization needs to deliver, support and continuously improve the new technology;
- incorporating proposed technologies into UCD to promote good practice and compliance with national and international standards (e.g. W3C);
- configuring any use of automated decision-making so that it adheres to an ethical framework;
- investigating whether other organizations across government are using or planning to use the same technology [12]; and
- preparing existing data for migration to new technologies, for example through data cleansing, verification and/or validation.

0.7 Digital maturity assessment tools

Digital maturity assessment tools support progress by formalizing both the measurement of organizational maturity and an understanding of the areas where improvement is necessary and could benefit through greater use of data and digital technologies. The optimization of digital maturity is contextual, relating to the needs and opportunities of a specific organization and the availability of appropriate technologies.

A strong digital maturity indicates that the organization has chosen the right digital technologies to exploit its opportunities, has implemented them effectively, and is maximizing value in terms of its objectives. A weak digital maturity indicates that action is required to improve shortcomings in strategy, planning and/or implementation in order to avoid failure to achieve an adequate return on investment in digital technologies.

1 Scope

This PAS provides guidance on measuring and increasing the digital maturity of government organizations. It is based on the UAE Digital Government Maturity Model [13] and is consistent with similar frameworks. This PAS describes six dimensions for government organizations to address in order to develop their capabilities with respect to digital technologies.

The guidance in this PAS is intended to inspire any leader of a government organization (including departments, agencies and publicly funded programmes and service providers) to make progress with digital transformation. The descriptions herein are written with the needs of the end-users of government services – private citizens, businesses and civil society – in mind. This PAS is also of benefit to developers and providers of digital maturity assessment tools for use by government organizations. The guidelines on the concepts of digital maturity measurement and the selection and use of appropriate tools to support digital transformation are potentially applicable to any organization, regardless of sector.

Figure 1 illustrates the alignment of the six dimensions of digital maturity with activities associated with users, enablers and operations delivering digital government.

Figure 1 – Delivering digital government

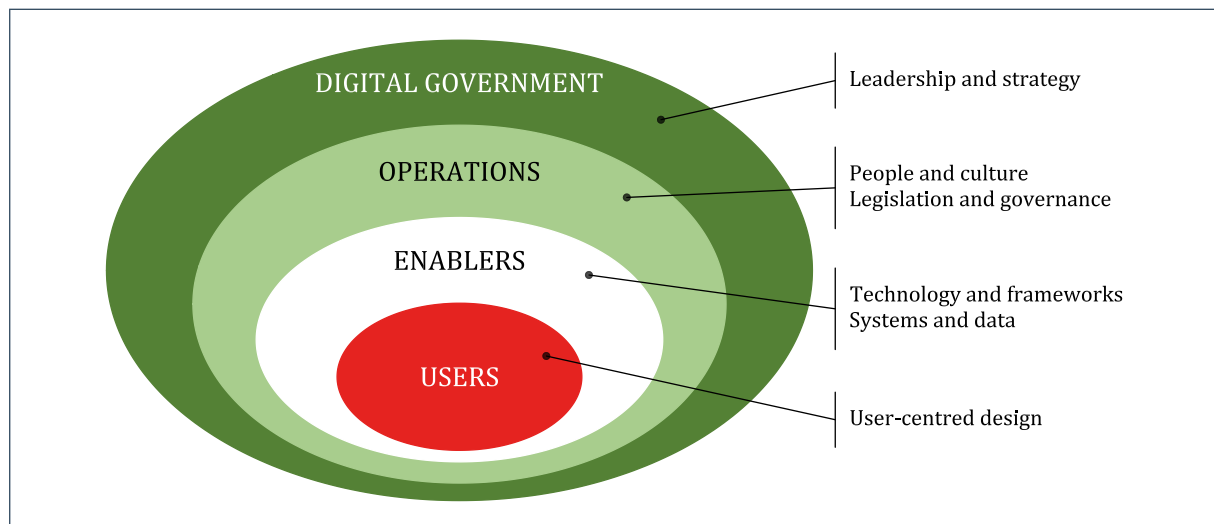


Table 2 outlines the scope of each dimension of digital maturity in government organizations and indicates where more detailed information can be found in later subclauses of this PAS.

Table 2 – Scope of digital maturity in government organizations

Dimension	Description	Subclause number
Leadership and strategy, including: • vision for effective operational use of data and digital technologies; • strategic alignment with organizational goals; and • resource allocation and funding commitment.	Leaders at all levels of government are the stewards of digital transformation in the development and delivery of public services. Leaders set appropriate strategic objectives for digital government, oversee the coherent use of technology across policy areas and levels of government, and strengthen capacities to support better implementation of digital government strategies.	4.2.2
People and culture, including: • personal skills; • team capacity, change management and knowledge-sharing processes; and • organizational training and workforce development, recruitment and decision-making processes.	Individuals and teams are at the heart of how government organizations develop and deliver public services. People's attitudes, behaviours, capabilities, collaboration, decisions, innovation and learning determine the success of digital government strategies and their impact on citizens, businesses and civil society. Data and digital technologies are both developed by and help to develop people in all these influential characteristics.	4.2.3
Legislation and governance, including: • regulatory and governance frameworks; • compliance with standards, guidelines, and international and inter-departmental protocols; and • service definitions, contracts and partnership agreements.	Government organizations develop and implement legislation that governs public services and the operation of departments, agencies, public programmes and service providers. The breadth of legislative and governance frameworks covers all aspects of public services, and inter-governmental and inter-departmental activities. Measures are applied to protect the interests of the public and individuals, including a nationwide technology-based risk register, with thorough risk assessment of emerging technologies, evolving cybercrime risks to people, and enforced regulations and controls using enablers such as government accelerators.	4.2.4

Table 2 – Scope of digital maturity in government organizations (*continued*)

Dimension	Description	Subclause number
Technology and frameworks, including: • infrastructure, hardware, software and services; • integration with services, remote working and operational functions; and • risk management, cybersecurity, data privacy, technology resilience, adoption of existing and novel/emerging data and digital technologies.	Data and digital technologies are the building blocks of effective and efficient government business and public services. These technologies should integrate with existing activities and operations or drive the digital transformation of government organizations to achieve step-changes in performance. The security of data is assured by appropriate technologies and frameworks, as well as by the behaviours of people and services using them.	4.2.5
Systems and data, including: • enterprise and data architecture, cloud systems, data transfer systems and application programming interface (API) ecosystem management; • data management, data quality, data verification and trust, and data maturity; and • data asset management, data-driven and data-enabled services.	Data and the systems that store data are the basis for evidence-based, real-time decision-making in government and service delivery. Designing and testing the processes of data acquisition, verification, storage, analysis, sharing and application for quality assurance purposes. Transactions and engagement between organizations [business-to-business (B2B)] and between organizations and citizens [business-to-customer (B2C), in both directions] are dependent on trust in these processes. This dimension of digital maturity also takes into account systems and data classes specific to some government departments and authorities.	4.2.6
UCD, including: • service innovation and design standards; • openness, transparency, inclusiveness, accessibility, respect, engagement, user feedback, participation and communication; and • development and use of digital identity.	UCD fully recognizes the requirements of all users of government systems and services in the development of public services, and of government business. It facilitates user input to the design of services, promoting enhanced innovation, assurance and trust, and takes into account the needs and capacities of different user groups in the design process.	4.2.7

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this PAS, the following terms and definitions apply.

3.1 digital government

use of digital technologies to provide public services to citizens and other persons in a country or region

NOTE Various terminologies are used to describe some or all aspects of digital government. Examples include "e-government", "GovTech", "data government", "smart government", "electronic government", "online government", "Government as a Platform (GaaP)" and "connected government".

3.2 digital maturity

measure of the readiness of an organization to use digital technologies (and associated enablers) through its operational processes to monitor its progress and ultimately to achieve its objectives

3.3 digital maturity assessment tool

formalized tool for assessing digital maturity in respect of defined organizational aspects and objectives

3.4 digital strategy

plan or approach which sets out how an organization will use data and digital technologies to achieve its organizational goals

3.5 digital technology

electronic device, hardware, software or service that uses digital information when performing a function

NOTE Also referred to as "technology" or "data and digital technology".

3.6 digital transformation

strategic implementation of digital technologies across an organization to deliver its digital strategy

3.7 government organization

department, agency, team or contractor organization providing government services to citizens, businesses, civil society or other government departments

3.8 leader

individual with responsibility and/or accountability to enable an organization to establish and/or achieve its organizational goals

3.9 user-centred design (UCD)

processes that focus on the requirements of all users (those in government and the businesses and citizens served) in the development of digital government systems and services

NOTE Users have a broad range of characteristics (e.g. gender, disability, age, ethnic or language minority), with diverse needs and opportunities to access digital services according to their situation.

4 Characteristics of digital maturity

4.1 General

This clause introduces a framework of characteristics of digital maturity relevant to government organizations and other organizations that use digital technologies.

NOTE As with all organizations, government organizations have processes that are designed to achieve objectives. The nature of these processes differs according to the scope of services that are to be delivered, such as public works programmes and projects, and the internal activities necessary to deliver them. All of a government organization's operational processes in the service of achieving its objectives are important aspects or components of a purposeful ecosystem and can be viewed holistically.

Table 3 indicates some characteristics of organizations with weak and strong digital maturity. Organizations should assess their digital maturity in each dimension to identify both opportunities for improvement and the nature of digital technologies that could be appropriate.

Table 3 – Characteristics of digital maturity in government organizations

Dimension	Weak digital maturity	Strong digital maturity
Leadership and strategy	• Lack of digital strategy or roadmap • Short-term plans • Roles and responsibilities for digital technology not defined • No defined budget or return on investment for digital transformation • Poor prioritization of digital initiatives and projects • Lack of awareness of the potential benefits of digital technologies • Only some parts of the organization providing input • Leaders not involved in the design stages • Lack of political support • No ongoing review or monitoring of plans	• Digital transformation strategy with long-term perspective and alignment with overall organizational goals and strategy • Clarity on roles and responsibilities, including identified individuals • Digital transformation fully budgeted and prioritized within strategy, with clear targets for return on investment • Benefits of digital technologies clearly communicated throughout the organization • Input and involvement from across the organization, users and external partners • Leaders involved in the design stages • Political support for digital transformation • Ongoing review and monitoring of performance and progress

Table 3 – Characteristics of digital maturity in government organizations (*continued*)

Dimension	Weak digital maturity	Strong digital maturity
People and culture	• No encouragement for employees and contractors to innovate • No digital champions or role models identified and supported in the organization • Digital skills and training not prioritized • Few, if any, learning and development opportunities • Digital literacy not prioritized • Recruiters do not take into account candidates' experience of digital technologies • Few, if any, individuals hold knowledge or experience of digital technologies	• Employees are encouraged to experiment with new digital technologies as part of a learning journey • Digital champions identified and supported across the organization, and representative of the diversity of the workforce and users • Effective learning and development policies and practices in place, following national and international good practice, with a focus on developing digital skills and digital literacy • Recruiters seek to hire candidates who are literate in digital technologies • Strong knowledge-sharing processes across the organization in relation to digital skills and digital technologies
Legislation and governance	• Policies and legislation not updated to reflect digital government • Frameworks and standards not applied consistently across government • No procurement processes in place • No assessment or monitoring of digital maturity of contractors • Weak data security processes	• Policies, legislation and frameworks established to support the adoption of digital technologies and external partnerships • Alignment with national and international standards governing the adoption, use and optimization of digital technologies • Procurement processes in place to support decision-making and investment in digital technology • Commitment to robust and secure data governance and security, including ethical considerations • Assessment and management of risks associated with digital technology, including business continuity, incident response and disaster recovery

Table 3 – Characteristics of digital maturity in government organizations (*continued*)

Dimension	Weak digital maturity	Strong digital maturity
Technology and frameworks	• Lack of resources and budgets to support the use of technology • Teams do not have access to appropriate hardware, software and services to perform roles and responsibilities • Lack of awareness of which digital technologies are relevant • Weak business continuity, incident response and disaster recovery plans, processes and controls • Lack of cybersecurity policies, plans, processes and controls, with unacceptable risk of a data security breach and key areas not covered (e.g. remote working, access control, device management)	• Resources and budgets in place to support the use of technology • Teams have access to infrastructure, hardware, software and services required to perform roles and responsibilities • Support readily available to make good use of digital technologies • Trialling new digital technologies to allow early adoption and continuous improvement in performance • Robust business continuity, incident response and disaster recovery plans, processes and controls in place • Effective cybersecurity policies, plans, processes and controls in place covering key areas (e.g. remote working, access control, device management)
Systems and data	• Poor leadership of and access to technical support, leading to system downtime and lack of integration across systems • Poor or little use of data, requiring manual processes and services • Little or no availability of real-time data • Little or no use of dashboards and data visualization • Data management approach and policies poorly, or not, defined, reducing the ability to share data within and outside the organization	• Robust enterprise and data architecture, with evidence of technical leadership and appropriate support structures in place • Service level agreements and evidence of measuring and monitoring the performance of systems • Integrated systems • Data-driven decision-making and data-driven services through access to real-time data • Effective use of dashboards and data visualization • API ecosystem supported and encouraged • Commitment to open data, with appropriate data-sharing policies and processes embedded across the organization

Table 3 – Characteristics of digital maturity in government organizations (*continued*)

Dimension	Weak digital maturity	Strong digital maturity
UCD	• User needs not included in the design and delivery of digital services • Little or no evidence of engagement or communication with users • Accessibility (physical and virtual) requirements not taken into account • Reactive, inconsistent design processes • No adoption of relevant standards • Services delivered in silos • Poor access to digital services and low levels of digital inclusion	• Design and delivery of digital services fully responsive to all user needs • Users involved in service design, with effective channels for communication with, and feedback from, users • Proactive adherence to relevant good practice and regulations • Use of design standards and design thinking to address complexity in services and develop cross-functional, holistic solutions • High uptake of digital services and high levels of digital inclusion

4.2 Implementing digital maturity

4.2.1 General

Organizations should undertake an assessment of their maturity in each dimension to understand their readiness to adopt digital technologies and identify potential improvements.

4.2.2 Leadership and strategy

Leaders at all levels of government are the stewards of digital transformation in the development and delivery of public services. Leaders should set appropriate strategic objectives for digital government, oversee the coherent use of technology across policy areas and levels of government, and strengthen capacities to support better implementation of digital government strategies. To strengthen leadership and develop effective strategies for digital transformation, government organizations should take account of the following aspects.

- a) A vision for effective operational use of data and digital technologies, for example by:
 - 1) appointing senior decision makers and/or non-executives with relevant experience in using data and digital technologies;
 - 2) involving leaders from across government and users (employees, businesses, civil society and citizens) in the design stage of digital transformation;
 - 3) undertaking regular risk analysis, establishing crisis management procedures and staff training, and holding simulation exercises;
 - 4) engaging, motivating, building commitment and mobilizing leaders and resources at all levels for the successful implementation of a digital strategy and associated sub-strategies; and
 - 5) taking into account the societal impact of digital initiatives, evaluating potential risks and unintended consequences, and proactively addressing concerns and negative impacts.
- b) Strategic alignment with overall organizational goals and strategy, for example by:
 - 1) providing ongoing endorsement and support for digital transformation from the top of the organization and involving leaders from across government, aligned with national and departmental priorities;

- 2) shaping plans to achieve organizational goals that are consistent with a digital strategy, including plans for communication to stakeholders and ongoing review and monitoring of progress against defined measures of success;
 - 3) sharing information about the benefits of digital transformation with relevant people in all government departments and agencies; and
 - 4) reducing implementation barriers and incentivizing internal and external collaboration and partnerships.
- c) Resource allocation and funding commitment, for example by:
- 1) taking a long-term, sustainable perspective;
 - 2) defining essential roles and responsibilities for action;
 - 3) budgeting with fully defined and prioritized tasks and objectives; and
 - 4) reviewing and optimizing types of spend, such as capital expenditure and operational expenditure.

4.2.3 People and culture

Individuals and teams are at the heart of how government organizations develop and deliver public services. Therefore, their attitudes, behaviours, capabilities, collaboration, decisions, innovation and learning determine the success of digital government strategies that impact on citizens, businesses and civil society. Data and digital technologies are both developed by and help to develop people in all these influential characteristics. To develop personal capabilities and establish an appropriate culture for digital transformation, government organizations should take into account the following factors.

- a) Personal skills, for example by:
- 1) seeking to recruit people who have an understanding and experience of digital technologies, and are willing to continue to develop their digital capabilities;
 - 2) encouraging a digital mindset in individuals encompassing a wide range of technical and non-technical skills and capabilities; and
 - 3) designing personal development as a continuous, learning journey towards long-term digital capability.
- b) Team capacity, change management and knowledge-sharing processes, for example by:
- 1) creating an environment that encourages innovation and experimenting with digital technologies;
 - 2) removing barriers and allocating resources and budget to enable experimentation with new digital technologies, increase digital maturity, and empower employees to look for further improvements and opportunities;
 - 3) identifying digital champions, representative of the diversity of the workforce and users, and enabling them to promote innovation from within their organizations;
 - 4) creating a culture that encourages mentoring and coaching;
 - 5) implementing an agile approach to proof-of-concepts, pilots and projects to enable new technologies to be introduced at an early stage and without fear of failure; and
 - 6) recognizing digital transformation as a non-linear learning journey.
- c) Organizational training and workforce development, recruitment, and decision-making processes, for example by:
- 1) investing systematically and consistently across the organization in digital skills, training and personal development;