UNSW SYDNEY

UTS

# TRUSTWORTHY DIGITAL SOCIETY HUB

## Measuring Digital Government Maturity

The Case for a Global Trust Index

# Measuring Digital Government Maturity

**Digital government maturity** refers to the level of capability and effectiveness with which governments utilize digital technologies. Frameworks for measuring digital government (e-Gov or GovTech) maturity typically aim to compare countries across multiple dimensions by assigning numeric scores or tiers.

These measurement frameworks serve several purposes:

## Comparative Assessment

Enabling governments to objectively evaluate their digital capabilities against international standards and peers

## Strategic Planning

Highlighting capability gaps to inform evidence-based decision-making for transformation initiatives

## Progress Monitoring

Establishing transparent metrics to track digital evolution over time and demonstrate the impact of technology investments

# Digital Government Maturity Frameworks

The first index for measuring digital government maturity was published by the United Nations in 2001, becoming the biennial UN E-Government Development Index. Numerous frameworks have since been developed, employing a range of methodologies to evaluate various aspects of digital government.

| Framework | Source | Published | Coverage | Methodology |
|---|---|---|---|---|
| **United Nations E-Government Development Index (EGDI)** | United Nations Department of Economic and Social Affairs | Biennially since 2001 | All 193 United Nations member states | Composite index based on three subindices |
| **World Bank GovTech Maturity Index (GTMI)** | World Bank Group | 2020, 2022 | 198 economies (states and distinct economic jurisdictions) | Tier system (A-D) based on four subindices |
| **OECD Digital Government Index (DGI)** | Organisation for Economic Co-operation and Development | 2020, 2023 | 38 OECD member countries | Composite index based on six subindices |
| **EU Digital Economy and Society Index (DESI)** | European Commission | Annually since 2014 | EU member states | Composite index based on four subindices (economic and social) |
| **European Commission eGovernment Benchmark** | European Commission | Annually since 2012 | EU member states + Iceland, Norway, Switzerland, Turkiye, UK | Comparative qualitative assessment across four e-Gov dimensions |
| **Waseda-IAC International Digital Government Rankings** | Waseda University (Japan) and International Academy of CIO (AIC) | Annually since 2014 | 66 countries and regions | Composite index based on ten subindices |
| **McKinsey Government Digitization Index** | McKinsey & Company | Various reports since 2014 | G20 and OECD economies (20-30) | Scoring system for three dimensions of government digitization |
| **World Economic Forum Network Readiness Index (NRI)** | World Economic Forum (published by Portulans Institute since 2019) | Annually since 2002 | 130+ economies | Composite index based on four subindices (economic and social) |

# United Nations E-Government Development Index

# EDGI

Reports

2024 2022 2020 2018 2016 2014 2012 2010 2008 2005 2004 2003 2001

The UN **EGDI** is a **comparative** framework, giving the e-government performance of countries relative to one another.
It combines equally-weighted, normalized subindices for **online services**, **telecommunications infrastructure**, and **human capital.**

## Online Services Index

**Capability and willingness to provide services and communicate with citizens electronically**

**Services Provision, 45% (SP):** standard of e-government capabilities including civil documentation, administrative processes, social services provision & utilities management, and their availability through digital channels including web portals & mobile

**E-participation Index, 35% (EPI):** presence of digital engagement & transparency tools – e.g. open data portals, budget information, e-petitions, forums – and evidence of their meaningful impact on policy decisions. Three components: ***E-information*** (public information access), ***E-consultation*** (citizen engagement), ***E-decision-making*** (citizen empowerment in policy design and service delivery)

**Institutional Framework, 10% (IF):** presence of legal frameworks for e-government (data protection, cybersecurity, and open data regulations), national government portals, digital identity systems, transparency & integration across government bodies, strategies for national digital governance implementation

**Technology, 5% (TEC):** technical quality and user experience of government digital platforms; responsive design, navigability, security, user support, recency of updates, ability of users to access and modify personal information

**Content Provision, 5% (CP):** comprehensiveness of content across government websites, availability of official documents, multilingual support, accessibility for users with disabilities, frequency of updates, multimedia content

The EDGI is a based on a comprehensive Survey of **all 193 UN member states.**


*A related **Local Online Services Index** (LOSI) assesses municipal e-government services for the largest city in each of the 193 member states*

## Telecommunications Infrastructure Index

Existing infrastructure required for citizens to participate in e-government.

**Internet users, 25% (IU):** percentage of population

**Mobile subscriptions, 25% (MS):** per 100 inhabitants

**Active mobile-broadband subscriptions, 25% (AM):** per 100 inhabitants

**Affordability, 25% (AF):** composite of voice / mobile broadband data price (cheapest plan providing at least 2GB monthly using at least 3G technology & 140 minutes of voice) and fixed-broadband internet price, as a percentage of per capita Gross National Income

Data sourced from International Telecommunications Union (ITU)

## Human Capital Index

Readiness of a population to engage with e-government initiatives.

**Expected years of schooling, 20% (EYS)**

**Mean years of schooling, 20% (MYS)**

**Gross enrolment ratio, 20% (GER):** percentage of population

**Adult literacy, 20% (AL):** percentage of population

**E-government Literacy, 20% (EGL):** assesses key features on government portals including Internal search mechanism, Online user support, Social Networking features, Live chat support, Privacy policy, Information on online services use, Digital identity management, Facilitation of free Internet access, Open data metadata, User Guidance, Service Personalization

# World Bank GovTech Maturity Index

**GTMI**

**Reports**
2021: Full Report
2022: Update

The World Bank **GTMI** was launched in support of the **World Bank GovTech Global Partnership Initiative**. It is a comparative framework for **198 economies**, combining four equally-weighted, normalized subindices, based on 48 key indicators (8 externally-sourced)

## Core Government Systems Index

Digital foundations of government systems and platforms

1. **Cloud Platform Availability**
2. **Enterprise Architecture Framework**
3. **Interoperability Framework**
4. **Service Bus Platform**
5. **Operational FMIS** (Financial Management Information System)
6. **TSA** (Treasury Single Account) **Supported by FMIS**
7. **Tax Management Information System**
8. **Customs Management Information System**
9. **HRMIS** (Human Resources Management Information System) **with Self-Service Portal**
10. **Payroll System Linked with HRMIS**
11. **Social Insurance System**
12. **e-Procurement Portal**
13. **Debt Management System (DMS)**
14. **Public Investment Management System (PIMS)**
15. **Open-Source Software (OSS) Policy / Action Plan**
17. **National Strategy on Disruptive / Innovative Technologies**

16. **UN Telecommunication Infrastructure Index (TII)** *EDGI component*

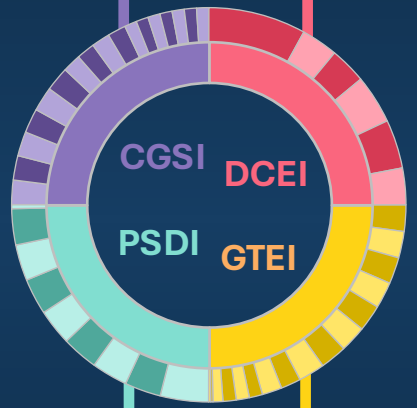
## Digital Citizen Engagement Index

Extent of government-citizen digital engagement & interaction

27. **UN E-Participation Index (EPI)** *EDGI Online Service Index component*

28. **Open Government Website / Portal**
29. **Open Data Portal**
30. **National Platforms for Citizen Participation in Decision-Making**
31. **Government Platforms for Citizen Feedback on Service Delivery**
32. **Publication of Citizen Engagement Statistics and Performance**

The GTMI assigns economies a grade (A-D) and is not intended to be used for rankings




*A pilot parallel subnational government (SNG GTMI) survey of 122 states and municipalities was launched in 2022*

## Public Service Delivery Index

Quality & accessibility of online public services

18. **UN Online Service Index (OSI)** *EDGI component*

19. **Online Public Service Portal**
20. **Tax Online Service Portal**
21. **e-Filing for Tax/Customs**
22. **e-Payment Services**
23. **Single Window Customs Online Service**
24. **Social Insurance / Pension Online Service Portal**
25. **Job Portal**

26. **Digital ID for Remote Authentication** *Sourced from World Bank's Identification for Development (ID4D) Initiative*

## GovTech Enablers Index

Institutional and strategic enablers supporting transformation

33. **GovTech-Focused Government Entity**
34. **Dedicated Entity for Data Governance/Management**
35. **GovTech / Digital Transformation Strategy**
36. **Whole-of-Government Approach**
37. **Right to Information (RTI) Laws for Public Data**
38. **Data Protection / Privacy Law**
39. **Data Protection Authority**
42. **Digital Signature Regulation and Public Key Infrastructure (PKI)**
45. **Strategy / Program to Improve Digital Skills**
46. **Strategy / Program to Improve Public Sector Innovation**
47. **Government Entity Focused on Public Sector Innovation**
48. **Policy to Support GovTech Startup / Private Investments**

40. **National ID System** *Sourced from ID4D*
41. **Digitization of National ID Records** *Sourced from ID4D*
43. **ITU Global Cybersecurity Index (GCI)** *Sourced from International Telecommunications Union (ITU)*
44. **UN Human Capital Index (HCI)** *EDGI component*

# OECD Digital Government Index

**DGI**

**Reports**
[2020 (2019 results)]
[2023 (2022 results)]

The Organization of Economic Co-operation and Development **DGI** aims to benchmark the efforts made by 33* OECD member states to establish the foundations for digital transformation of the public sector. The index assesses **strategic approach**, **policy levers**, **implementation** and **monitoring**, across six equally-weighted dimensions of digital government maturity.

**1. Digital by Design:** How digital government policies are designed to enable the public sector to use digital tools and data

| Strategic Approach | Policy Levers | Implementation | Monitoring |
|---|---|---|---|
| Existence of national digital government strategies (NDGS) and alignment with other national strategies | Governance structures, co-ordination bodies & legal frameworks for digital government | Actions taken to implement digital government policies, including skills development and cybersecurity | Tracking progress and evaluating the impact of digital government initiatives |

**2. Data-Driven Public Sector:** Advancements in developing the governance & enablers needed for public sector data access, sharing and re-use

| Strategic Approach | Policy Levers | Implementation | Monitoring |
|---|---|---|---|
| Availability of public sector data strategies and alignment with national goals | Data leadership roles, data quality frameworks, and legal requirements for data sharing | Practical use of data interoperability systems and ethical data management initiatives | Quality of data inventories and compliance with data-sharing requirements |

**3. Government as a Platform: Deployment of common building blocks such as guidelines, tools, data, digital identity and software**

| Strategic Approach | Policy Levers | Implementation | Monitoring |
|---|---|---|---|
| Strategic goals related to digital public infrastructure, such as cloud and digital identity strategies | Standardised models for project management, procurement, and digital service design | Deployment of digital infrastructure, including digital identity and cloud solutions | Tracking the progress and cost-benefit analysis of digital projects |

**Data for five of the 38 OECD members were not available for the 2023 report*

**4. Open by Default:** Availability of open data & efforts to promote public engagement, transparency, collaboration & open-source technology

| Strategic Approach | Policy Levers | Implementation | Monitoring |
|---|---|---|---|
| Existence of open data strategies and policies promoting open-source software use in public sector | Legal requirements for open data publication and algorithmic transparency | Practical release of high-value datasets and mechanisms for data rights (e.g. data access requests) | Assessing the impact of open government data and compliance with open data requirements |

**5. User-Driven:** Ability to design & deliver services centered around user needs; efforts to reduce digital divides & ensure accessibility & inclusivity

| Strategic Approach | Policy Levers | Implementation | Monitoring |
|---|---|---|---|
| Strategies to reduce digital divides and involve users in policy design, with action plans for marginalized groups | Formal requirements for user testing of services, standards for accessible design and frameworks of co-designing | Initiatives to co-design services with users, digital literacy programs and tools to gather user feedback | Measuring user needs and monitoring the progress of digital divide action plans |

**6. Proactiveness:** Capacity to anticipate user needs & deliver proactive services, including use of AI, data analytics and risk assessments

| Strategic Approach | Policy Levers | Implementation | Monitoring |
|---|---|---|---|
| Existence of national strategies for AI in the public sector and proactive service goals | Ethical guidelines for AI use and mechanisms for proactive service delivery | Use of AI and predictive analytics to anticipate user needs and improve government services | Risk assessments for digital projects and oversight of AI use in the public sector |

# Waseda-IAC International Digital Government Rankings

Reports

2014 2015 2016 2017 2018 2020 2021 2022 2023 2024

One of the longest-running surveys of digital government has been conducted by Wasada Univeristy (Japan). Their annual reports give comprehensive analyses of the government digitization efforts of a wide range of developed and developing economies (66 in 2024), with an overall index scored on ten dimensions using 37 indicators.

**2. Management Optimization, 12%**
Contribution to administrative & financial reforms, optimization of administrative management

- 2-1 Optimization progress
- 2-2 Integrated EA model
- 2-3 Administrative budget system

**1. Network Infrastructure Preparedness, 8%**
Building and maintenance of public network

- 1-1 Internet subscribers
- 1-2 Broadband users
- 1-3 Digital mobile phone subscribers

**10. Emerging technology in digital government, 12%**
Utilization of advanced ICT

- 10-1 Cloud utilization
- 10-2 IoT utilization
- 10-3 Big data utilization
- 10-4 The Application of AI

**9. Cybersecurity, 10%**

- 9-1 Legal response
- 9-2 Society
- 9-3 Organization

**8. Open Government Data & DX, 10%**
Open data & digital transformation

- 8-1 Legal response
- 8-2 Society
- 8-3 Organization

**3. Online Services, 14%**
Progress of various online applications & services

- 3-1 Electronic bidding system
- 3-2 Electronic tax payment
- 3-3 Electronic payment / customs clearance system
- 3-4 eHealth system
- 3-5 One-stop service
- 3-6 e-Disaster, e-Mobility & Smart city
- 3-7 Usages of AI & Web3

**7. E-Participation, 8%**
Enrichment of citizens' administrative participation by ICT

- 7-1 Information Sharing Mechanism
- 7-2 Exchange / Discussion
- 7-3 Participation in decision making

**4. National Portal, 6%**
Convenience of homepage & portal site

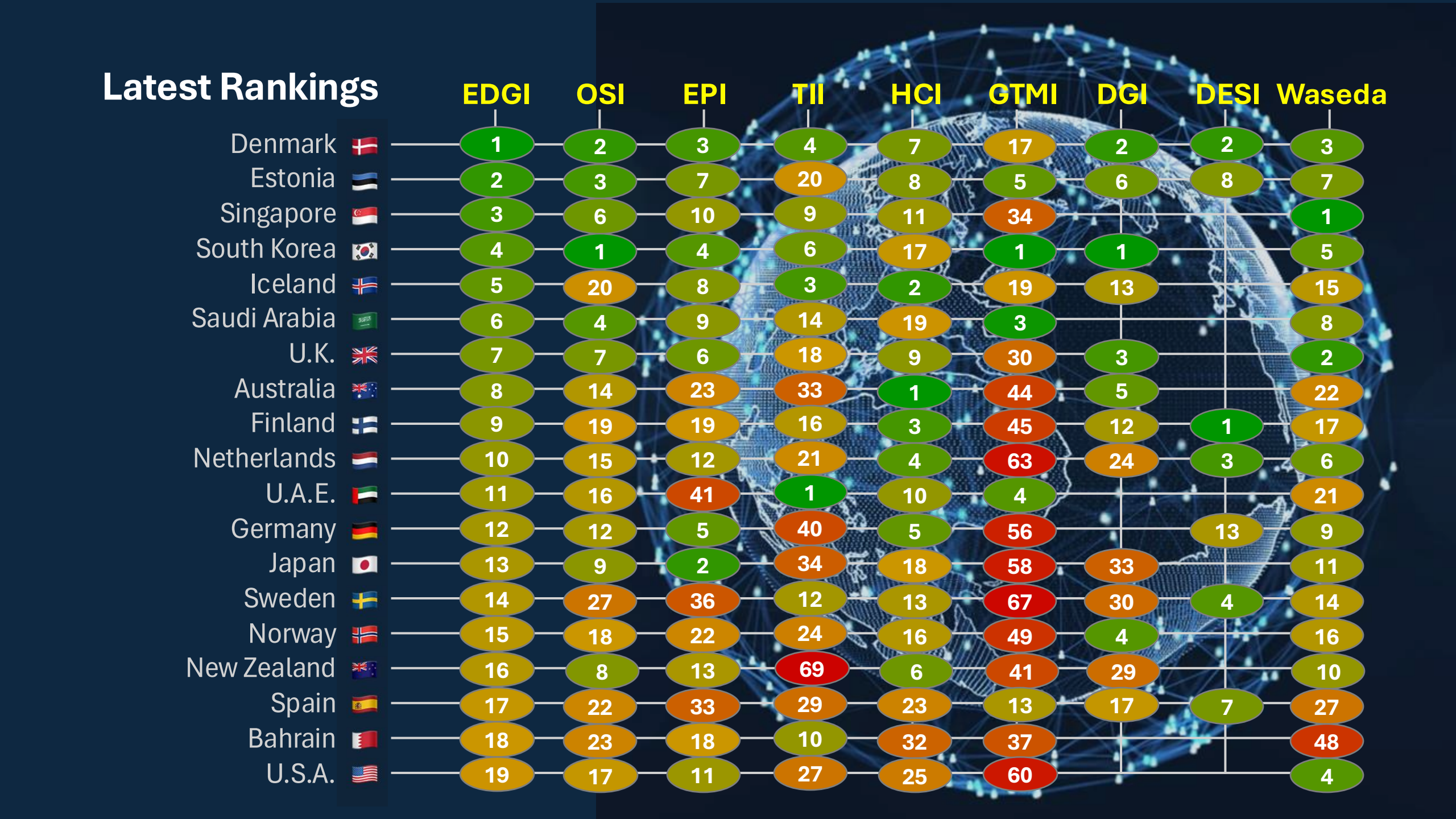
- 4-1 Information
- 4-2 Technical
- 4-3 Functionality

**5. Government Chief Information Officer, 10%**
Government CIO Activity

- 5-1 Introduction of CIO
- 5-2 CIO Authority
- 5-3 CIO Organization
- 5-4 CIO Human Resources Development Plan

**6. Digital Government Promotion, 10%**
Promotion of Digital Government

- 6-1 Legal response
- 5-2 CIO Authority
- 5-3 CIO Organization
- 5-4 CIO Human Resources Development Plan


Latest Rankings
EDGI
OSI
EPI
TII
HCI
GTMI
DGI
DESI
Waseda
Denmark 1 2 3 4 7 17 2 2 3
Estonia 2 3 7 20 8 5 6 8 7
Singapore 3 6 10 9 11 34 1
South Korea 4 1 4 6 17 1 1 5
Iceland 5 20 8 3 2 19 13 15
Saudi Arabia 6 4 9 14 19 3 8
U.K. 7 7 6 18 9 30 3 2
Australia 8 14 23 33 1 44 5 22
Finland 9 19 19 16 3 45 12 1 17
Netherlands 10 15 12 21 4 63 24 3 6
U.A.E. 11 16 41 1 10 4 21
Germany 12 12 5 40 5 56 13 9
Japan 13 9 2 34 18 58 33 11
Sweden 14 27 36 12 13 67 30 4 14
Norway 15 18 22 24 16 49 4 16
New Zealand 16 8 13 69 6 41 29 10
Spain 17 22 33 29 23 13 17 7 27
Bahrain 18 23 18 10 32 37 48
U.S.A. 19 17 11 27 25 60 4

# **Trust** in Digital Government

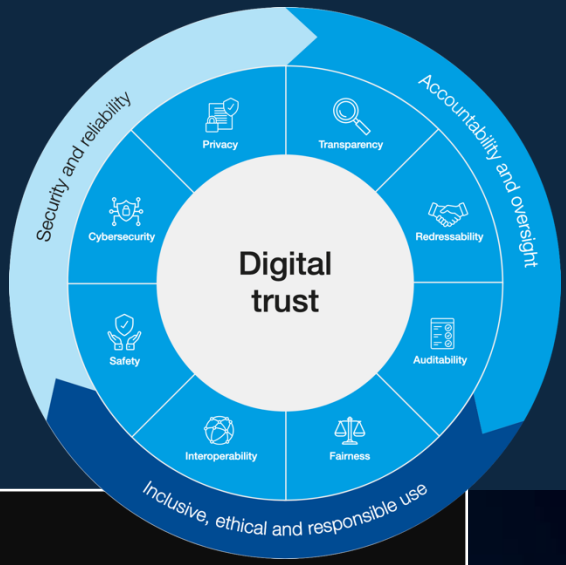
Digital government maturity frameworks primarily focus on the technical implementation, adoption and effectiveness of digital government services. As digital government matures, and digital interactions become mandatory rather than optional for accessing essential services, **public confidence in the integrity, ethics and accountability of digital systems becomes increasingly important.**

***Digital Trust*** **is the expectation by individuals that digital technologies and services – and the organizations providing them – will protect all stakeholders' interests and uphold societal expectations and values.**

Existing maturity frameworks usually incorporate some legal and institutional elements, but they are not designed to measure the degree of trust felt by users of digital government systems. A **digital trust gap** emerges where systems are technically mature but lack strong foundations in public confidence. The trust dimensions of digital government must address both the objective conditions necessary for trust in digital systems, as well as subjective public perceptions of their trustworthiness.

# A Framework for Measuring Digital Trust

The 2023 World Economic Forum White Paper ***Measuring Digital Trust:*** *Supporting Decision-Making for Trustworthy Technologies* identifies three goals in measuring digital trust: **security & reliability**, **accountability & oversight**, and **inclusive, ethical and responsible use**. It proposes a number of measures for digital trust, recognizing that trust is both retrospective (based on past experiences) and prospective (based on governance capabilities).




| **Progress toward digital trust goals**<br>Subjective and retrospective measures assessing strength and resilience of organization-user relationships | |
|---|---|
| **Perception Measures**<br>*Could be collected by survey* | **Satisfaction, Feedback, Confidence, Loyalty, Enthusiasm, Comprehension of Data Flow** |
| **Behavioral Measures**<br>*Could be collected during use of an organization's digital products or service* | **Adoption, Engagement (e.g. user setting & support activity), Retention, Promotion** |

**Maturity of digital trust dimensions**

Objective and prospective measures assessing strength and resilience of organization-user relationships

| 1. Cybersecurity | 2. Safety | 3. Transparency | 4. Interoperability | 5. Auditability | 6. Redressability | 7. Fairness | 8. Privacy |
|---|---|---|---|---|---|---|---|
| Ensuring digital systems, infrastructure, and data remain protected from unauthorized access and breaches. | Guarding against harm that could be caused by digital products or services—be it emotional, psychological, or physical. | Providing stakeholders with clear, understandable information about how a technology or service operates, and what data it uses or collects. | Building systems that can work seamlessly with others, ensuring data and services can be accessed and exchanged without unnecessary barriers. | Allowing both internal and external parties to review and confirm that a system or process operates as intended. | Establishing clear and effective ways for users to seek remedy if they experience harm or dissatisfaction. | Recognizing and mitigating how digital technologies (especially those involving data analytics and AI) can result in disparate impacts or bias. | Respecting and upholding user autonomy over personal data, ensuring proper controls, user-friendly consent, and alignment with contextual norms. |

# A Framework for Measuring Digital Trust

The key dimensions of digital trust identified by the WEF are not holistically considered by existing digital maturity indices. These indices do not incorporate data reflecting users' perception of systems and largely rely on surveys completed by government officials. With reliance on digital government accelerating, a dedicated **Global Trust Index** can help address the emergence of digital trust gaps, guiding the evolution of robust systems and institutions.

| Dimension | Objectives | Capabilities | Existing Related Metrics |
|---|---|---|---|
| **1. Cybersecurity** | • **Incident prevention**<br>• **Incident response** | • Robust protocols for securing infrastructure, data, and applications (e.g., encryption, access controls)<br>• Defined plans for breach detection, containment, and post-attack recovery (e.g., RPO/RTO benchmarks) | Global Cybersecurity Index (ITU)<br>EGDI & DESI Subcomponents<br>WEF Network Readiness Index |
| **2. Safety** | • **Incident prevention**<br>• **Incident response** | • Risk assessments and safeguards to minimize physical, emotional, or societal harm (e.g., threat modeling)<br>• Preparedness for incidents, including corrective actions and support for affected stakeholders | Microsoft Digital Civility Index<br>Child Online Safety Index (DQ Institute) |
| **3. Transparency** | • **Appropriate disclosure**<br>• **Informative disclosure** | • Policies determining what, when, and how information is shared (e.g., beyond regulatory mandates)<br>• Audience-tailored explanations of data flows and system operations (e.g., FAQs, plain-language policies) | Open Data Barometer (World Wide Web Foundation)<br>OECD OURdata Index<br>Google Transparency Report |
| **4. Interoperability** | • **Technical interoperability**<br>• **Community participation & engagement** | • Systems enabling seamless data exchange and portability (e.g., APIs, open-source tools)<br>• Participation in industry standards and collaborative ecosystems (e.g., open-source contributions) | EU DESI Subcomponent<br>EU Open Data Maturity Report<br>UN EDGI Subcomponent |
| **5. Auditability** | • **Effective process**<br>• **Effective remediation** | • Structured evaluations of high-risk areas (e.g., scoping, roles, timelines)<br>• Accountability frameworks to address findings and drive improvements | World Bank Worldwide Governance Indicators<br>UN EGDI Subcomponent |
| **6. Redressability** | • **User-friendly support**<br>• **Incorporation of user feedback** | • Multi-channel grievance resolution (e.g., self-service portals, escalation paths)<br>• Mechanisms to integrate user concerns into product/service design (e.g., recurring issue analysis) | World Justice Project Rule of Law Index<br>EU Justice Scoreboard |
| **7. Fairness** | • **Process fairness**<br>• **Outcome fairness** | • Inclusive design reviews to prevent bias (e.g., accessibility assessments)<br>• Bias testing and documentation of fairness decisions (e.g., algorithmic audits) | OECD Inclusive Growth Report |
| **8. Privacy** | • **User functionality**<br>• **Organizational functionality** | • Tools for data control (e.g., consent management, access requests)<br>• Privacy-by-design practices and impact assessments (e.g., GDPR alignment) | GDPR Compliance & Readiness Indicators |

# A Global Trust Index

Sovereign risk assessments evaluate exposure to sudden disruptions (event risks) and the strength of institutional and governance structures. The comprehensive digitization of government profoundly affects how these factors must be analyzed, with digital systems becoming crucial to the stability and effectiveness of governance. By quantifying trust in digital governance, a Global Trust Index can offer critical insights to refine evaluations of governmental creditworthiness. Linking credit markets to public confidence in digital government will incentivize efforts to build a trustworthy digital future.

The major ratings agencies – **Moody's**, **Standard & Poors** and **Fitch** – all utilize external metrics to assess factors including government effectiveness, regulatory quality, rule of law, and control of corruption. External metrics used by these agencies include the World Bank's Worldwide Governance Indicators, the World Economic Forum's Global Competitiveness Index, Transparency International's Corruption Perceptions Index, and the World Justice Project's Rule of Law Index. These and other external and internal metrics are incorporated into ratings agencies' proprietary assessment frameworks.

None of the major ratings agencies currently employ measures specifically focused on digital governance or digital trust. This represents a gap as government operations become increasingly digitized.