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Data Strategy Primer:

Framework and Best Practices for Developing a Data Strategy

Prepared by the United Nations Network of Economic Statisticians

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Framework and Best Practices for Developing a Data Strategy

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I. Overview

1. With data[1] being an important part of everyday life, it is essential to provide citizens with the services and information that they need. Good data practices allow governments to develop evidence-based policies, make informed decisions, and ensure the security, privacy, and confidentiality of the data assets that they hold. Optimizing data practices also improves the delivery of effective, equitable, and inclusive programs and services, among many other benefits.

2. The COVID-19 pandemic highlighted the importance of making high-quality data easily understandable and accessible. It also accelerated a shift towards working, learning, and engaging with the government online. To respond to the rapidly evolving needs of people and businesses, government organizations worked together to quickly develop and deliver new services. This showed the importance of strong data foundations for the public service to improve efficiency and responsiveness—foundations in data strategy, data stewardship, and data governance.

3. A clear, results-driven data strategy is necessary for a 21st-century government. The public service must lead by example in the stewardship, management, security, and use of the data entrusted by citizens. By nature of their mandates and expertise, National Statistical Offices (NSOs) play a leadership role in helping governments build data strategies that serve the current and future needs of citizens.

4. This Primer is a basic introduction to the purpose, framework, key components, and applications of a data strategy. While the content is presented primarily from the NSO and the public service (that is, government) perspective, the guidance, tools, and tangible lessons learned offer insights for any organization seeking to develop or update a data strategy. The document has been compiled by the United Nations Network of Economic Statisticians in collaboration with representatives of NSOs from Canada, the United States, New Zealand, and the Maldives.

5. The primer features foundational information about data strategies, including the purpose and value propositions behind them, types of data strategies, framework considerations, and the main elements of a strategy. The material is oriented around several "big" data strategy questions: Why? Who? What? How? With whom? What's next? Content highlights include the following:

    - Key concepts that enable successful data strategies, the importance of collaboration in these strategies, and the basics of data strategy implementation;
    - Aspects of effective data stewardship for decision-making, improving user experience, and maintaining trust by enabling secure data-driven services;
    - Descriptions of how a data strategy empowers the public service via talent and tools, the need for governance and accountability (roles and responsibilities), proactive communication, and feedback mechanisms for stakeholders;

[1] Data is a collection of discrete or continuous values gathered by observations, measurement, research or analysis. It may consist of facts, numbers, intervals, names, figures, or even description of things.

- Future trends and considerations in data strategy, stewardship, and management; and
- Real-life examples from data strategies used by NSOs and their partners, including central governments, government agencies, intergovernmental departments, and public-private initiatives.

II. Data Strategy: Definition, Purpose, and Types

II.A. Definition

6. A data strategy is a formalized course of action for organizing, governing, analysing, and leveraging data assets and expertise to steward resources, protect privacy and security, maintain public trust, and ensure the optimal use and reuse of data to provide service and value to citizens (DalleMule & Davenport, 2017; StatCan, 2019; United States Government, 2020). A robust data strategy must be aligned with the organization's purpose and objectives, as well as support their delivery. Data strategies are important because they:

    - Establish a central vision for using data as a strategic asset;
    - Enable data-driven policy, decision-making, and services;
    - Provide a consistent approach across departments and agencies/organizations;
    - Provide a roadmap for business planning; and
    - Assign clear roles, responsibilities, and accountabilities for implementing data strategies and creating performance indicators, vital to sound data governance.

7. Data strategies emphasize the use of data as a strategic asset and are based on a set of foundational objectives, guiding principles, processes, mechanisms, and elements. This typically includes governance and oversight, data stewardship and management, technical infrastructure, ethics and inclusivity, and people and culture (including data literacy). It is around these foundational components that key, progressional activities are planned and a roadmap is set to ensure that the data strategy achieves tangible outcomes within a specific period.

II.B. Purpose (Why?)

8. Governments are responsible for developing and delivering programs and services and making evidence-based decisions for the public's benefit. These responsibilities require the effective production, use and reuse, governance, stewardship, and management of data. Governments hold vast amounts of data that, when employed strategically, contribute to social, economic, and environmental progress. Deriving more value from existing data for its citizens is the overarching driver for governments to develop a formal data strategy. It also serves as a shared direction and plan for government data systems focused on improving outcomes for citizens.

9. Managing existing data effectively is one benefit of having a data strategy, another is the ability to plan the development/acquisition of data to meet existing information needs when the data does not exist. Starting with the policy requirement, and working through the data supply chain (see below) ensures that the collection and processing of data are designed to meet the information needs attached to the policy.

Policies assessed →

Information Requirements →

Analytical Strategy →

Data Required →

Data Processing →

Data Colelction/extraction Process →

Data Sources (survey, admin data, etc.) →

Data Owners (persons, private corporations)

10. For the benefit of citizens, governments must use data responsibly to ensure:
    - Evidence-based decision making
    - Effective and efficient policy development and program delivery
    - Economic growth, innovation, and competitiveness
    - Emergency preparedness
    - Citizen support in adapting to the new digital data economy

11. The imperative to leverage data for these ends, while also ensuring that privacy is protected and data are used ethically, is essential to public trust and social license or acceptability. To respond to these needs, governments must identify the necessary drivers of, and develop, formalized data strategies to enable them to mobilize data with efficacy and efficiency (see New Zealand's

drivers above)[2]. Otherwise, they risk their reputation as producers, suppliers, and ethical users of high-quality data, ultimately inhibiting their ability to perform their civic duty to citizens.

12. The remainder of this section describes some of the objectives of data strategies, their impacts, and the related outcomes.

13. **Quality data by design.** "Data by design" is both the aspiration and the outcome of a data strategy, where data considerations are integrated into the planning and design stages of projects and initiatives, rather than being an afterthought or prioritized at only certain stages. This approach ensures that data collection, usage, and management are purposefully and proactively aligned with organizational goals and objectives from the onset. As a result, governments can more effectively capture the necessary data to inform decisions and innovate solutions.

14. The impacts include more efficient processes, as systems are built to handle data optimally, and greater compliance with data protection standards, as privacy and security are considered from the start. This enhances the quality of data collected and streamlines and secures data handling processes, leading to trusted and sustainable data ecosystems.

15. **Data-driven services**. Data-driven services transform service delivery, making it more responsive and tailored to the needs of citizens. By leveraging data analytics and ensuring that data flows securely through the administrative machine, governments can identify trends, predict needs, and allocate resources more efficiently. They can also iterate service improvements with agility and advance cohesive, whole-of-government approaches to data management.

16. For example, data-driven insights can optimize healthcare by predicting public health needs, improve urban planning with real-time traffic data, or highlight the needs of under-served populations through disaggregated data.

17. The impact is a more agile government that can respond quickly to changing circumstances and better meet the needs of its population. Additionally, these services often lead to cost savings and greater citizen engagement. Ultimately, this enhances public trust in government operations. Finally, prioritizing data-driven services provides an opportunity to set clear expectations for responsible, transparent, and ethical data stewardship to maintain trust.

18. **Data-driven decision-making.** Data-driven decision-making allows policymakers to base their choices on empirical evidence, rather than on intuition or incomplete information. This reduces guesswork and speculation, leading to more informed, transparent, and accountable governance.

19. To achieve this, governments must develop various tools and frameworks to ensure that data are accessible for analytical use when and where they are needed. Examples include systemizing the management of data across government, authorizing accepted practices for using data analysis for decision-making, and adopting common data standards to enhance data interoperability. In addition, a well thought out data strategy could help address the need for data integration and the breaking down of organizational silos to respond to complex issues.

[2] For more information see Table 3.

20. The impact is that decisions are more likely to achieve their intended goals. This enables more effective policies across all sectors, from economic development to environmental protection. Over time, the impact of data-driven decision-making is a more robust and dynamic policy environment where strategies are continuously refined based on ongoing data analysis and feedback.

21. **Economic growth, innovation, and competitiveness.** Better service provision and decision-making from better data use will spur economic growth and foster innovation. By leveraging big data, governments will unlock new avenues for growth in fields like finance, healthcare, manufacturing, and more. Data-driven innovation involves using insights gained from data to create new products, services, and processes that improve efficiency and competitiveness. Furthermore, it promotes research and development in emerging technologies such as IoT, AI, and blockchain. These outcomes will enable the adaptation to the growing digital, data economy, keeping countries at the forefront of technological advancements, and ensuring sustainable growth and competitiveness on a global scale.

22. **Emergency preparedness.** Good data stewardship and governance results in higher data quality and better data access, including delivering timely data for recovery purposes. This ensures that an organization is agile and able to respond to unforeseen events—like natural disasters, cyberattacks, and system failures. Key aspects include creating and regularly updating disaster recovery plans, maintaining data backups in secure and geographically dispersed locations, and training staff to handle emergencies. A cohesive data strategy paired with a well-executed emergency preparedness plan increases resilience, minimizes downtime, and reduces risk of data loss. Ultimately, this preparation protects an organization's assets and reinforces its long-term sustainability.

23. **Adapting to the new digital economy.** A data strategy should foster digital literacy and ensure inclusive access to technology-driven opportunities to support citizens as they adapt to the new digital economy. This involves educational programs, resources, and tools that help individuals understand the value and use of data in everyday life. It also includes initiatives to enhance access to data and tools, particularly for underprivileged communities. The outcomes include increased digital participation, reduced inequality in technology access, and a more informed citizenry capable of making better decisions based on data. This empowers individuals and promotes a more vibrant and inclusive digital economy, driving broader social and economic benefits.

II.C. Data Strategy Types (Who?)

24. Data strategies can vary widely based on who is involved as well as the scope of the strategy and its goals. In general, data strategies should align with and contribute to an organization’s mandate. A data strategy’s purpose, including its objectives and targeted outcomes, depends greatly on the type of data strategy. For example, a government department might have an organizational data strategy designed to improve retention of members of employment equity groups, an objective that would fall under their mandate of improving diversity and inclusion. Table 1 describes common data strategy types, in ascending order according to scope. For more

information on who is involved in developing and implementing data strategies, see "III.A.2. Leadership Structures."

Table 1. Data Strategy Types

Type	Description
Project based	Leverages data strategically to achieve highly specific and targeted data goals; typically, related to data sharing and linkage.
Organizational	Focuses on data management and leveraging data strategically within an organization. Example: United States' Department of Education Data Strategy.
Joint or inter-organizational	Focuses on formalizing a data sharing relationship between two or more organizations to prioritize data governance and stewardship best practices and achieve specific business objectives. Example: Pan-Canadian Health Data Strategy.
Government/public sector	Focuses on a coordinated and strategic approach to leverage the value of the entire portfolio of data assets within a government. Example: New Zealand Government Data Strategy and Roadmap.
National	Focuses on addressing data governance and data use across an entire nation, including governmental organizations at the municipal, state/provincial/territorial, and federal levels as well as the private sector and civil society. It is also concerned with data sovereignty and dataflows into or out of the country. Example: United Kingdom's National Data Strategy.
Regional	Coordinates data initiatives across multiple countries (for example, data strategies by regional commissions) or within areas nationally (for example, among various jurisdictions of proximity).
International or intergovernmental	Strategies developed by international bodies that have been established by a treaty or other type of instrument to harmonize data practices within their organization and across countries. Example: Data Strategy of the United Nations; Secretary-General.

III. Data Strategy Framework (What?)

25. As mentioned above, a successful data strategy framework typically includes data governance and oversight, data stewardship and management, technical infrastructure, ethics and inclusivity, and people and culture (including data literacy). This section provides insights into these components. First, there is a description of data governance and data stewardship, including the similarities and differences between the two concepts and the general and operational guiding principles of the data framework. Then, there is an overview of the key features of a data strategy, broken into three broad categories—data and technical infrastructure, ethics and inclusivity, and people and culture. Many of these components are cross-cutting, and the groupings here are only one way to frame these concepts.

III.A. Data Governance and Data Stewardship

26. The concepts and practices of data governance and data stewardship are vital to a sound data strategy. This section presents the similarities and differences between data governance and data stewardship. This includes a look at how an organization could consider these authorities and accountabilities.

III.A.1. Concepts, Principles, and Distinctions

27. While data stewardship and data governance[3] are intertwined, they play distinct and complementary roles within a data strategy. Data governance frames the principles, decision making structures, rules, standards, and policies for data stewardship and management. Data stewardship puts this guidance into practice. Together, these disciplines support a robust data strategy framework that maximizes the value of data as a strategic asset.

28. **Data governance.** Data governance coordinates the people, processes, and technologies throughout the data lifecycle. It establishes decision rights, accountabilities, and high-level policies to ensure that data management aligns with organizational objectives and complies with relevant laws and regulations. The overarching goal of data governance is to establish the data strategy framework to enable, guide, and enforce data stewardship and data management activities, as well as safeguarding information to establish and maintain trust with data providers and data users. This data strategy framework is based on general and operational data principles.

29. **Data stewardship.** Data stewardship involves the management and operational implementation of data governance policies and standards. It covers a range of functions, including managing data access, security (including protection of data providers), interoperability, integrity, and overall quality. Data stewardship is pivotal in executing a data strategy, maintaining organizational trust, and fostering accountability.

30. These concepts have a mutually enabling relationship and are guided by an overarching set of principles. On the surface these principles may seem broad and more aspirational; however, they

[3] For practical examples of data stewardship and data governance see Table 3.

also have implications that are more tangible and practice oriented. Box A describes some of these guiding principles, calling out the general principle as well as operational connections.

Box A. Data Governance and Data Stewardship: Guiding Principles

This box describes some of the guiding principles for developing the data strategy framework that flow through to data governance and data stewardship. This includes general data principles and operational implications.

Trust. Establish a reliable environment where data are managed responsibly and ethically to maintain the confidence of stakeholders. Data quality, including strict adherence to the scientific approach, is critical for maintaining trust.

Equity. Enable fair access to data and its benefits for all segments of society, reducing disparities in data availability and use. Ensure that data acquisitions and processing methods are transparent, accountable, and sustainable.

Value. Recognize and enhance the utility of data as a strategic asset to drive economic development, innovation, and public welfare. Increase data utility by enhancing data interoperability and comparability and facilitating data linkage.

Transparency. Maintain open practices about how data are collected, used, and shared to ensure stakeholders understand data processes and decisions. Increase data discoverability and access by eliminating common barriers to data access, sharing, and reuse and streamlining the dissemination of data and information.

Data security and privacy. Uphold strict standards to protect individuals' personal information from unauthorized access and misuse. Use data in a secure and private manner in line with these standards.

User-centered design. Design data systems and processes that are accessible and meet the needs of end-users, enhancing user experience and effectiveness. Implement centralized management of data and metadata based on data ethics, regulations, legislation, and policies to discover data, track data use, and understand data relationships.

31. While data governance and data stewardship reflect common principles and are similar in scope, they are not synonymous. The distinction between them is important, both conceptually and practically. Table 2 describes some of these differences.

Table 2. Data Governance and Data Stewardship:
Overarching Principles and Conceptual and Practice Differences

Aspect	Data Governance	Data Stewardship
Definition	Establishes the strategic framework of decision-making structures, policies, standards, and processes to manage data assets effectively and to provide oversight to ensure compliance, accountability, and quality.	Manages and maintains data assets by: • directing resources and people to achieve organizational goals and • hands-on operational execution of policies, standards, and practices defined by data governance. It is a key component of data governance.
Focus	Establishes **"what"** needs to be accomplished and **"why",** through frameworks, policies, and accountability structures	Focuses on the **"how"** to achieve the governance objectives by ensuring data are accurate, consistent, and properly maintained. The "**with whom"** ensures collaboration and partnerships with other organizations, government departments or agencies, and international bodies and is vital for sharing knowledge, data, and best practices.
Scope	Strategic and high-level oversight of data-related processes across the organization	Tactical and operational activities ensuring compliance with governance policies
Functions	• Defines data policies and standards • Establishes roles and responsibilities (e.g., data owners, stewards) • Ensures compliance with regulations (e.g., GDPR) • Aligns data strategy with business objectives	• Ensures data quality • Identifies data owners • Manages data access and security on a day-to-day basis • Collaborates with stakeholders to ensure data standards are followed • Resolves data issues and ensures data lineage
Roles	• Chief Data Officer • Data Governance Council • Data stewards • Policy makers • Data architects • Business leaders	• Data owners • Data custodians • Analysts and operational data professionals • Data scientists and statisticians
Accountability	Enables decision-making and policy enforcement	Ensures accountability for implementing and maintaining the

Aspect	Data Governance	Data Stewardship
		standards and policies in daily operations
Metrics	• Policy compliance rate • Governance maturity level • Regulatory compliance success	• Data quality • Resolution time for data issues • Consistency in adhering to data standards
Output	Formalized frameworks, policies, and governance structures	Accurate, reliable, and well-maintained data for business use
Example	Setting up a policy to ensure all personal data is anonymized before being shared externally	Ensuring that data used in a specific report have been anonymized according to the policy

III.A.2. Leadership Structures

32. In implementing data governance and data stewardship accountabilities and authorities, several structures can be considered depending on the size of the organization and program. For a large-scale organizational strategy, a typical leadership is described below.

33. **Data Governance Committee.** This group is responsible for integrating data governance into the overall strategic objectives of the organization and that there is a top-down commitment to data management practices. This body typically consists of Senior Governance Executives who provide strategic oversight and make high-level policy decisions, including:

    - **Chief Data Officer (CDO).** The CDO is commonly the chair of the data governance committee and is responsible for overseeing the overall data strategy, policy, and governance. The CDO acts as the bridge between executive vision and operational data management.
    - **IT executives.** Includes the Chief Information Officer (CIO) or Chief Technology Officer (CTO) who focuses on the technical infrastructure necessary to support data governance.

34. **Data Stewardship Committee.** Data stewardship is typically managed by data stewards assigned to specific domains. These individuals are often experts in their areas and are responsible for the operational aspects of data management within their purview. Collectively, they are led by the Data Stewardship Committee and may include:

    - **Domain-specific data stewards**. These are individuals with in-depth knowledge of data in specific areas such as official statistics and sectoral administrative statistics. They ensure that the data in their domains are accurate, accessible, and used appropriately according to governance policies.
    - **Data manager or data management team.** Especially in larger organizations, there may be a designated manager or a team under the CDO's leadership that coordinates the activities of data stewards across domains.

35. If data governance and data stewardship authorities are vested in one group, all leaders and experts (i.e., CDOs, IT executives, domain data stewards, and data management professionals) would be present. If these are separate committees, the data stewardship committee may report to the data governance committee, or they may be horizontal groups that ensure close collaboration through shared membership or regular engagements. Regular meetings and communications between the data governance and data stewardship structures are essential for implementing data strategies effectively and adjusting them, as necessary.

III.B. Key Features

36. This section describes the crucial aspects of a data strategy that shape how a program collects, manages, and utilizes data to achieve its objectives. These features are often embedded in the overall framework of the data strategy, depending on its type and scope.

III.B.1. Data and Technical Infrastructure

37. The interconnected features presented in this section tie closely to data governance and oversight and to data stewardship and management.

38. **Data access and sharing.** Data access and sharing aims to increase the availability and utility of data by making it more accessible and shareable within government organizations and with external stakeholders. This includes establishing data-sharing agreements, creating common data platforms, and developing protocols so data can be exchanged efficiently and securely while protecting privacy and managing risk for unauthorized use of data. Establishing data sharing agreements still takes significant time due to legal concerns. If standards around privacy-enhancing technologies could be developed, then that would speed up the process for agreed data sharing. This fosters collaboration, improves transparency, and enhances decision-making across various sectors by allowing more stakeholders to access valuable data resources. Key initiatives often involve building integrated data systems that support real-time data sharing and developing APIs that facilitate seamless data exchange between different government departments and the public.

39. **Data privacy and security.** Robust data security and privacy measures are crucial to protect sensitive information from cyber threats such as unauthorized access, data breaches, and leaks. Measures typically include encryption, strong access controls, regular security audits, and the development of incident response protocols. These controls should align with legal and regulatory requirements, such as the General Data Protection Regulation (GDPR) in the European Union or the Health Insurance Portability and Accountability Act (HIPPA) in the United States. Ensuring privacy and security helps maintain public trust and encourages more open participation in data-sharing initiatives.

40. **Data quality.** Data quality emphasizes the accuracy, reliability, completeness, and timeliness of data collected and used by government entities. This ensures that decisions made, and services provided, are based on the most accurate and current information available. Achieving high data quality requires the implementation of comprehensive standards and protocols for data collection, processing, and maintenance to reduce errors and inconsistencies that could lead to poor decision-making and inefficiencies. Effective data quality management also includes

regular audits, validations, and updates to maintain the integrity of data over time. By prioritizing data quality, governmental bodies can trust the data they use to develop policies, deliver services, and engage with the public, thereby strengthening the effectiveness and credibility of government operations.

41. **Data integration and interoperability.** Data integration and interoperability ensure that data from various sources and systems work together seamlessly. This is critical for comprehensive analysis and effective decision-making. Activities include standardizing data formats, protocols, and architectures to allow data from diverse sources to be combined and used more effectively.

42. **New data sources.** Using new data sources, such as big data and real-time analytics, alongside traditional administrative and survey data, enriches data insights and improves the responsiveness of government services. This involves integrating high-volume, high-velocity data from various sources, including social media, sensors, and mobile devices to provide a more comprehensive view of real-world dynamics. The strategic use of these diverse data sources supports more nuanced policymaking and service delivery.

43. **Relevant and actionable insights.** Focusing on relevant and actionable insights means collecting and analyzing data that directly support the goals and needs of the organization or project. This approach ensures that data initiatives are not just about gathering information but are also about turning that information into actionable plans that drive real-world outcomes and improvements.

44. **Transparency and accountability.** Open data and transparency initiatives aim to make government-held data freely available to the public to enhance transparency, foster innovation, and encourage civic engagement. By providing access to open datasets, governments can empower citizens, researchers, and businesses to develop new applications, insights, and services that benefit society. Transparency is also achieved by publishing data about government operations and decisions, thereby holding public officials accountable and improving public services through community feedback.

III.B.2. Ethics and Inclusivity

45. **Ethical use of data.** Ethical data use involves establishing guidelines and practices for how data are collected, shared, and used, ensuring that these activities do not harm individuals or communities. This includes considerations around consent, anonymization, and the equitable use of data so that all actions are justifiable and responsible. Ethical guidelines help maintain public trust and support sustainable data practices by codifying the implicit agreement that a data owner provides when consenting to share their information, or information that has been trusted to them by another party.

46. **Equity and inclusion.** A focus on equity and inclusion ensures that the benefits of data are equitably distributed across all segments of society, including historically marginalized communities. Effectively leveraged data are necessary to understand various systemic barriers (i.e., gender gaps, racism, ableism, religious discrimination, etc.) and to measure progress in addressing them. Promoting equity and inclusion also involves addressing and bridging digital divides by enhancing access to data and technology for everyone. Finally, strategies must be in

place to prevent biases in AI algorithms and to ensure that decisions made by automated systems do not discriminate against any individual or group.

III.B.3. People and Culture

47. **Data culture.** Developing a strong data culture focused on continuous improvement within organizations emphasizes the value of data-driven decision-making and encourages a more analytical approach to solving problems. This involves cultivating an environment where data are seen as a critical asset and where questioning, experimenting, and learning from data are encouraged. Initiatives may include regular training, workshops, and creating roles dedicated to data stewardship and data governance to embed data-centric thinking across all levels of an organization.

48. **Data literacy.** Investing in data literacy programs ensures that government staff and the public are equipped to understand, interpret, and use data effectively. This is vital for more informed decision-making and participation in data-driven initiatives. Training programs are designed to improve skills in data analysis, interpretation, and hands-on application. These efforts increase the confidence and competence of the workforce and the public when working with data.

49. **Capacity building.** Capacity building extends beyond training statisticians and data analysts; it involves enhancing the skills of all data users. Programs are often designed to cover a wide range of skills, from basic data literacy for new employees to advanced analytics techniques for data scientists and IT professionals. This fosters a workforce that can manage modern data ecosystems effectively and adapt to new data challenges and opportunities. Training programs should also cover the details of data governance to equip individuals with the knowledge needed to understand and implement necessary legal and ethical standards. This helps to prevent legal issues related to data misuse and ensures transparent and accountable data handling processes.

IV. Mechanisms for Implementation (How?)

50. The implementation of a data strategy must be managed and monitored. This section outlines mechanisms to ensure the effective implementation and maintenance of a data strategy.

51. **Implementation plan.** The execution of a data strategy relies heavily on a detailed implementation plan that serves as a roadmap for all stakeholders. Key to any implementation plan's success, is adequate consultation with stakeholders to ensure the plan is achievable. The plan breaks down each component of the data strategy into manageable actions—each with assigned responsibilities, work items, specific deliverables, clear timelines, and performance indicators that align with the strategy's objectives.

52. For example, if one of the objectives is to enhance data security across various databases, the implementation plan should detail the steps required to achieve this, such as conducting security audits, upgrading encryption technology, and training staff in cybersecurity best practices. Each step should be broken down into concrete actions. So, training staff in cybersecurity best practices might include an activity to develop a training course. Another activity could describe the way training will be delivered to staff, etc. Performance indicators might include the number

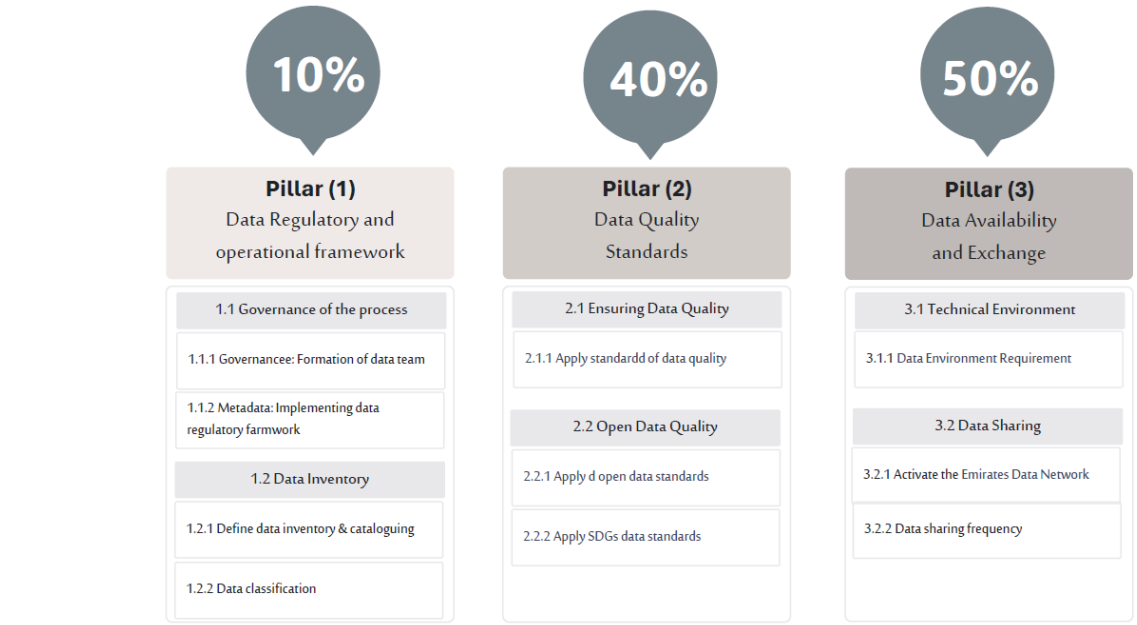
of databases audited and secured, reductions in data breach incidents, and feedback scores from staff on the effectiveness of the training provided.

53. **Monitoring.** Monitoring is crucial to assess data strategy effectiveness and to manage change by ensuring alignment with evolving technological landscapes and policy goals. The implementation plan includes a monitoring framework that uses the defined performance indicators to regularly evaluate progress and impact. This framework facilitates both qualitative and quantitative assessments to provide a comprehensive view of the strategy's implementation.

54. Regular monitoring allows for the early identification of areas where the strategy may not be performing as expected, enabling timely adjustments. For instance, if data sharing between partners is less efficient than anticipated, the issue can be diagnosed and addressed promptly. Monitoring is supported by tools and systems that collect relevant data on strategy implementation and produce reports that are easily understandable and actionable.

55. The monitoring process involves feedback mechanisms from all relevant stakeholders so that the strategy remains relevant and effective. This iterative process of monitoring and feedback ensures that a strategy evolves in response to new challenges and opportunities, thus maintaining its relevance and effectiveness over time.

56. In addition to the monitoring of specific activities within a data strategy, there are also monitoring tools that may be leveraged to assess the results of a data strategy's efforts. Data maturity assessments can be a great way to determine how effective a strategy's planned actions have been in achieving desired outcomes. The United Arab Emirates' Federal Competitiveness and Statistics Centre – has developed a Data Maturity Index to the data management practices across the federal government, monitoring 6 key dimensions of data management across 3 pillars.



57. **Reporting.** Reporting mechanisms are essential to ensure that the actions taken align with set goals and public expectations. Regular updates and progress reports are critical for maintaining transparency and enabling stakeholders to track the process. Reports should detail what has been accomplished, outline challenges, and provide a forecast of upcoming activities. This facilitates accountability and fosters a culture of openness and trust between partners.

58. To implement effective reporting, a structured schedule is established where updates are disseminated regularly (e.g., quarterly, or bi-annually). These updates are accessible through multiple platforms such as public websites, press releases, and public consultations or forums. Incorporating visual data presentations such as dashboards that show real-time progress can enhance understanding and engagement from non-specialist audiences. Each report compares current progress against the benchmarks set out in the implementation plan to provide clear, actionable insights into any deviations from the expected outcomes.

59. **Financing and sustainability.** For a data strategy to be effective and enduring, it must be properly financed and designed for sustainability. This involves securing initial funding for the strategy's launch and early stages and ongoing financial support to cover maintenance, updates, and scaling of successful initiatives. This also means designing data systems that are economically viable, socially responsible, and environmentally sound. Budget planning should consider the costs associated with staffing, training, technology upgrades, and other resources necessary for the long-term management of the data infrastructure. This includes optimizing data storage and processing to minimize energy consumption and implementing policies for data minimization to reduce the carbon footprint of data centers.

60. Financing strategies might include a mix of government funding, public-private partnerships, and international grants or loans, especially in areas that align with global data initiatives. It is

crucial to demonstrate the value generated by the data strategy to secure continuous funding. This can be achieved by quantifying the improvements in government efficiency, economic growth, and social welfare attributable to better data management and use. Sustainability can also be fostered through flexible systems that can adapt to new technologies and changes in data governance regulations. By ensuring that the strategy is both financially viable and adaptable, organizations can maintain robust data practices that support ongoing innovation and development.

61. **Capacity building and skills development.** Human resources are the key ingredient to successfully implementing a data strategy. Attracting skilled workers and ensuring continuous training of employees needs to be factored into the planning. Although an organization can attract specialist in this area, it is important that employees responsible for implementing a data strategy have a deep understanding of the organization, its data holdings, data providers and clients in order for the process to be effective and aligned with the objectives or the organization.

V. Importance of Collaboration (With Whom?)

62. Collaboration and partnerships both internally and externally with other organizations, government departments or agencies, and international bodies are vital for sharing knowledge, data, and best practices. Collaborative development leverages collective expertise and resources, facilitates comprehensive solutions to complex challenges, and enhances the overall effectiveness of data-driven initiatives. A data strategy is only successful if there is buy-in from partners and stakeholders. This is necessary to ensure that data are consistently managed, leveraged, and shared through a common vision. To build this vision, the needs of the various stakeholders must be brought together, discussed, prioritized, and considered so that the outcomes of a data strategy are widespread.

63. Mechanisms for fostering a coordinated and collaborative data strategy approach include:

- Formal groups such as inter-agency working groups or data governance councils to oversee a strategy's implementation, resolve conflicts, and ensure that the activities of different stakeholders are synergistically aligned with the goals.
- Advisory panels to guide the development of data collection methods and data use policies.
- Training and capacity-building programs tailored to enhance data literacy skills, empowering communities to manage and use data effectively.
- Regular workshops, seminars, and joint projects to keep stakeholders engaged and informed about ongoing efforts and emerging challenges.

64. By embedding collaborative practices into a data strategy, governments and organizations foster trust and strengthen relationships with diverse populations and other special interest groups. This ensures that data services and policies are inclusive and equitable.

65. The remainder of this section highlights several purposes of collaboration and partnerships.

66. **Shared systems and resources.** Data strategies can support joint initiatives through shared data platforms that serve multiple departments, reducing costs and improving data accessibility. Such platforms can enhance inter-agency communication and enable more comprehensive data analysis, leading to better informed decision-making at all levels. These efforts extend beyond just governmental bodies to partnerships with academia, industry, and non-governmental organizations. For example, Foster Moore is working on developing an interoperable register platform that will facilitate real collaboration by authorities, necessary to develop compliance services that are fit for the 21st century. MetaReg is a single platform to provide interoperability and data exchange between registers. There is no requirement for storage of data centrally and it provides an easy on-boarding process. The platform also has no requirement for local implementations and allows for sharing of register and identity services. These partnerships and platforms can bring in additional expertise, innovative technologies, and alternative perspectives that enrich the data strategy and its implementation.

67. **Data standards and common architectures.** Another critical aspect is the development of interoperability standards and common data architectures that facilitate data sharing and integration across different federal organizations. By adopting these standards and establishing data sharing infrastructure, federal agencies can more easily exchange data, enhancing their ability to collaborate on cross-cutting issues like public health, economic development, and security. Data hubs, such as the Central Database Hub (PADU) developed by Statistics Malaysia, leverage architecture and standards to increase interoperability and enable more effective and efficient data sharing and access. Statistics Malaysia's PADU is a secure, comprehensive and near real-time national primary database for digitalization and periodic analytical output. PADU is a result of the consolidation and integration of data from over 455 public sector agencies to create a single reference profile for the Malaysian population. Fostering a collaborative approach through standardization, data sharing architecture, and well-structured partnerships ensures that a data strategy is not just a directive from above, but a technology and tool-enabled collective endeavor that leverages the full potential of data for advancement.

68. **Alignment with broader government commitments.** Aligning data strategies with broader government or organizational commitments such as equity, diversity, and inclusion brings more value to a strategy. For example, data collected about minority groups should be used to benefit those communities directly (e.g., informing healthcare, education, and economic development programs that are culturally appropriate and community driven). In Canada's Data Strategy for the Federal Public Service 2023-2026, there is a commitment to advancing a whole-of-government approach to the management and sharing of indigenous data. This includes empowering Canadian Indigenous peoples (First Nations, Inuit, and Métis Nations) to realize their respective visions for control over their own data, or data sovereignty. The importance of this work is reflected by the fact that aside from discussions around Indigenous data sovereignty, the federal Data Strategy is subject matter agnostic. Generally speaking, best practice in data governance and stewardship is encompassing and unimpacted by the subject matter of the data

or information it stewards or governs. Indigenous data sovereignty and enabling self-determination represents a sphere of particularity that we have the responsibility to address in the context of data stewardship and the federal Data Strategy. This means consulting these groups and ensuring they have meaningful control over how their data are used. This ensures that the data strategy is culturally and contextually relevant and reinforces the government's commitment to upholding the rights of all its citizens, fostering a more cohesive and just society.

69. **Support for domain-specific strategies.** A data strategy that is well-aligned with domain-specific strategies (and links to domain-specific data sharing spaces) can significantly enhance the capacity of these sectors to meet their unique challenges and objectives. In the health sector, for example, a robust data strategy can improve the management of patient data, enhance disease surveillance systems, and support health research, ultimately leading to better health outcomes and more efficient healthcare services. Similarly, in the context of climate change, data strategies can enable better monitoring of environmental changes, support research on sustainable practices, and improve the planning and implementation of climate policies. Platforms for data sharing work in support of this, providing a safe and reliable way to share data, to improve efficiency of data-driven decision-making and facilitate innovation. An example of this is the Common European Data Spaces, which allows data from across the EU to be made available and exchanged in a trustworthy and secure manner. EU Businesses, public administrations, and individuals will control the data they generate. At the same time, these data holders will benefit from a safe and reliable framework to share their data for innovation purposes.

70. By designing a data strategy to support these domain-specific needs, the government optimizes data use across various sectors, thus maximizing the societal benefits. This cross-sectoral enhancement of data capabilities can drive innovation and synergy and create new opportunities for growth and problem-solving. For instance, data insights gained from healthcare can inform policies in social services and vice versa. Ultimately, by aligning the data strategy with domain-specific strategies and broader digital transformation initiatives, a nation can ensure a cohesive, comprehensive approach to data that supports sustainable development and enhances the quality of life for its citizens.

71. **Advancing international strategic initiatives.** Data strategies have far-reaching implications that extend beyond the immediate goals of improving data governance and use. Aligning a data strategy with federal/national and international digital transformation efforts ensures consistency with broader technological and policy developments and amplifies the impact of these transformations. For instance, a well-integrated data strategy can improve digital infrastructure projects, smart city initiatives, and cybersecurity measures by providing a unified data framework for these endeavors.

72. Alignments with international standards and collaborations can also bolster a country's position on the global stage by facilitating participation in multinational data-sharing and technology initiatives. This alignment is especially influential in domains like climate change and global

health where data play a pivotal role in informing policies, tracking progress, and fostering global partnerships to tackle these universal challenges. By harmonizing its data strategies with international best practices and commitments, a nation or organization can leverage global knowledge, avoid redundancies, and enhance the credibility and effectiveness of its own digital policies.

VI. Challenges and Risks

73. Developing, and especially implementing a data strategy does not come without challenges and risks. The lack of infrastructure, data privacy protection legislation, standards and financial resources, could significantly hamper any initiatives that aim at improving the ability of an organization to leverage its data holding. Lack of trained personnel may pose challenges to develop a strategy that is well tailored to the organization's need.

An important risk is the lack of trust that may exist between data providers and data stewards. Work needs to be done to address this important barrier before any other steps could be taken towards implementing a data strategy.

Developing countries specifically, face some of the significant barriers outlined above due to their heavy reliance on donors and development partners for funding. This situation leads to uncertainty and lack of continuity in project work which limits the ability of statistical organization to develop comprehensive, forward-looking data strategies.

VII. Future Trends in Technology (What's Next?)

74. The data landscape is continuously evolving, driven heavily by innovations in IT infrastructure and advanced technologies. Key considerations are described below.

75. **Decentralized data architectures.** There has been a shift toward more decentralized data architectures, such as those enabled by edge computing, that allow data processing to be located closer to the source of data. This reduces latency, increases processing speed, and enhances privacy by limiting the distance data must travel.

76. **Privacy-enhancing technologies (PETs).** PETs (like homomorphic encryption, secure multi-party computation, trusted execution environments or differential privacy) can enable access and operations on data without revealing individual records or transferring any records. International standards on PETs would be important to enable cross-border data sharing between different jurisdictions.

77. **Federated learning models.** The adoption of federated learning models, where AI algorithms are trained across multiple decentralized devices or servers without exchanging data samples, is also becoming more prevalent. This approach safeguards privacy and is part of a broader move towards privacy-preserving data science.

78. **Data fabrics and data meshes.** Organizations increasingly rely on data fabrics and data meshes for a more flexible and resilient architecture to manage data across diverse environments. These

frameworks support a distributed approach to data management, where governance, access, and orchestration are handled consistently but storage and processing can be decentralized.

79. **AI and machine learning.** Technological advancements such as AI, blockchain, and IoT are profoundly impacting data strategies across various sectors. AI and machine learning enable predictive analytics and decision-making capabilities that were previously unattainable. These technologies can analyze vast datasets to identify patterns and insights, leading to more informed and proactive decision-making processes.

80. **Blockchain technology.** Blockchain technology offers a great opportunity to enhance data integrity and security. By allowing data to be stored in a tamper-evident, distributed ledger, blockchain facilitates a level of transparency and security that is especially valuable in areas like supply chain management, healthcare records, and public sector applications. It ensures that data cannot be altered retroactively without the change being immediately apparent to all users.

VIII. Best Practices

81. Box C summarizes key takeaways from the Primer into a set of data strategy best practices.

Box C. Putting It Together: Data Strategy Best Practices (ends)

When developing and implementing a data strategy, adhering to established best practices is a key to success, ensuring that data initiatives are effective, sustainable, and beneficial for all. Some key best practices are as follows:

Ensure legal and regulatory compliance. Continuously update the data strategy to comply with laws and regulations. This is crucial for maintaining public trust and legal integrity.

Establish clear governance structures. Effective data governance is crucial. Establish roles such as a Chief Data Officer who oversees a data strategy. This structure should also include various stakeholders from different sectors to ensure a holistic approach to data management.

Prioritize data security and privacy. Implement robust data protection measures to safeguard personal and sensitive data. This includes following international standards like GDPR, ensuring compliance across all data-handling activities, and fostering a culture of security across all participating entities.

Encourage multi-sector collaboration. Establish partnerships with academia, industry, and non-profits to tap into a wider pool of expertise, technology, and resources. This can lead to innovative data use and improved public services. Fostering public and stakeholder engagement ensures the strategy is well-rounded, inclusive, and enjoys broad support.

Ensure interoperability and standardization. Develop standards for data formats, quality, and interoperability to facilitate efficient data sharing and integration across different government agencies and with external stakeholders.

Box C. Putting It Together: Data Strategy Best Practices (continued)

Invest in infrastructure. Build or upgrade necessary digital infrastructure to support data collection, storage, processing, and analysis. Ensure that this infrastructure is scalable and flexible to adapt to future needs.

Promote open data and transparency. Make data openly available to enhance transparency, stimulate innovation, and allow public monitoring and feedback on performance.

Develop comprehensive training and capacity building. Implement ongoing training programs to enhance data literacy and technical skills across all levels of government and among the public to ensure that data tools and resources are used effectively.

Regularly monitor performance. Set up mechanisms to regularly assess the implementation of the data strategy, measuring performance against clear, predefined metrics to ensure continuous improvement.

Adopt a phased and scalable approach. Roll out the data strategy in manageable phases to ensure each component is implemented thoroughly and effectively. This approach allows for learning and adjustments as the strategy evolves.

Leverage advanced technologies. Utilize emerging technologies like AI and machine learning to enhance data analysis capabilities. These technologies can provide deeper insights and improve decision-making processes.

Align with international best practices and frameworks. Consider frameworks such as the United Nations' Principles on Personal Data Protection and Privacy to align with global standards, enhancing the strategy's credibility and effectiveness.

Incorporate risk management. Develop a comprehensive risk management plan that addresses potential security risks, data breaches, and privacy concerns. This plan should include preventive measures and response strategies.

Focus on sustainable financing. Secure sustainable funding sources so the data strategy can be maintained and scaled over time. This might involve budget allocations, public-private partnerships, or international funding.

Promote data-driven culture. Cultivate a data-driven culture to encourage data use in everyday decisions and operations. This cultural shift is vital for the long-term success of the data strategy.

Expand public access to data. While ensuring security and privacy, increase public access to data to foster transparency and accountability and to encourage civic engagement and innovation.

Prioritize impactful sectors. Identify and prioritize sectors where data can have the most impact, such as healthcare, education, and public safety, to direct resources and efforts where they are needed most.

IX. Conclusion

82. This Primer has laid out foundational information for developing a successful data strategy, including the purpose and value propositions, framework considerations and key features, the importance of collaboration, mechanisms for implementation, future trends, and best practices. While the content presented is primarily from the government perspective, the guidance, tools, and tangible lessons learned offer insights for any organization seeking to develop or update a data strategy.

X. Country Examples

83. Table 3. provides a list of country examples of data strategy projects that illustrate a variety of applications, and provide the reader with an appreciation of the potential benefits that could be derived from leveraging information based on a systematic approach.

Table 3. Country Examples of Data Strategy Projects

Country / Organization	Project Description	Objective	Outcome
Australia/ABS	The Foundational Four, Starting an ongoing data improvement journey describes the relationship between data governance and data management. The Foundational Four are: • Leadership: A senior leader is responsible and accountable for data across the agency • Strategy: An agency has a clear vision and plan for using data to achieve objectives • Governance: Mechanisms exist to oversee data management • Asset Discovery: Data assets have been identified and recorded	is a strategy to guide government agencies to realize the value of data.	Agencies are asked to test themselves against the Foundational Four. For those who have some or all of the elements in place, it is a good opportunity to reflect on how effective they are and whether there are opportunities for improvement. If they don't have all of the elements in place, then action is needed.
Canada/StatCan	In 2018, the first **Data Strategy Roadmap for the Federal Public Service** was developed by two Government of Canada (GC) central agencies and Statistics Canada. The renewed **Data Strategy for the Federal Public Service 2023-2026** was strengthened with the addition of a data governance model and a senior body with authority for data and information governance in the GC. This body provides the required oversight and accountability to deliver	Establish a "whole-of-government approach to creating, protecting, using, managing, and sharing data as a strategic asset".	The 2018 data strategy roadmap resulted in several positive outcomes for the Government of Canada (GC): - All GC organizations developed their own data strategies; - Most GC organizations named Chief Data Officers or other like data authorities; - Statistics Canada launched the Virtual Data Lab to improve researcher access to microdata via a secure

	on the strategy's goals and tasks assigned to departments and agencies.		connection and a protected environment; - The Canada School of Public Service launched the Digital Academy to deliver training to the GC; One significant outcome of the 2023-2026 federal data strategy is the establishment of Government of Canada data reference standards. They are mandatory for departments and agencies when designing a new system or dataset to create reliable, high-quality data.
Common European Data Spaces (DS)	Create a genuine single market for data in which both personal and non-personal data, including sensitive business data, will be able to flow seamlessly across borders and sectors in a safe and secure manner, in line with EU rules and values, for the benefit of European businesses – notably AI innovators – and citizens. The data spaces would be prioritized for a number of strategic fields: health, agriculture, manufacturing, energy, mobility, finance, public administration, skills, and the European Open Science Cloud. The green deal data space also stresses meeting the Green Deal's objectives as a key priority.	They will allow data from across the EU to be made available and exchanged in a trustworthy and secure manner. EU Businesses, public administrations, and individuals will control the data they generate. At the same time, these data holders will benefit from a safe and reliable framework to share their data for innovation purposes.	EU Businesses, public administrations, and individuals will benefit from a safe and reliable framework to share their data for innovation purposes. It will improve the efficiency of leveraging data for decision making purposes across the EU, and it will amplify the benefits that come from having secure access to a wealth of information.
Foster Moore	Foster Moore is working on developing an interoperable register platform that will facilitate real collaboration by authorities which must happen to develop compliance services that are fit for the 21st century. MetaReg is a single platform to provide interoperability / data exchange between registers. There is no requirement for storage of data centrally, and it provides an easy on-boarding process. The platform has no	Building a domain agnostic global data exchange platform, owned by registers, for registers.	This project is still in development but once completed, it is expected to deliver to the custodians of registers what they want - a service to help them regulate the entities on their registers, with relationships outside their jurisdictions.

	requirement for local implementations and allows for sharing of register and identity services		
Global Legal Entity Identifier Foundation (GLEIF)	The Legal Entity Identifier (LEI) is a 20-character, alpha-numeric code based on the ISO 17442 standard developed by the International Organization for Standardization (ISO). It connects to key reference information that enables clear and unique identification of legal entities participating in financial transactions and other official interactions. GLEIF's Data Quality Framework aims to support user of the LEI by: - Checking for duplicates - Data Governance Pre-Check - Provide Common Data File formats and the XML Schema - Provide Data Monitoring Dashboard - Make publicly available Data Quality Monthly Reports - Extends the ability to trigger updates to the LEI record	- Strengthen the transparency on businesses in countries by improving their registration - Improve the availability of unique business identifiers in administrative data sources in countries - Promote access to and sharing of administrative data for statistical business registers - Demonstrate the importance and benefit of linking national identifiers with global identifiers, such as the LEI	The Global LEI Index is free for all to access. This means anyone anywhere in the world can know if a private or public organization is who it claims to be. This information allows legal entities to fully trust each other, safeguarding all sorts of investment and trade decisions, along with other interactions. By optimizing the quality, reliability and usability of LEI data, including in automated, digital use-cases, market participants are empowered to benefit from the wealth of information available with the LEI population.
Malaysia/Statistics Malaysia	Statistics Malaysia developed a **Central Database Hub** (PADU) which is a secure, comprehensive and near real-time national primary database for digitalization and periodic analytical output. PADU is a result of the consolidation and integration of data from over 455 public sector agencies to create a single reference profile for the Malaysian population.	Enhance the efficiency of government service delivery and optimize the utilization of limited resources.	The following outcomes were achieved: - Improved the management of assistance and subsidies - Strengthened disaster and crisis management - Improved preparedness for an aging population - More strategic national budget management - A catalyst for Digital Government
Nepal/ National Statistics Office	In the context of developing and implementing e-governance, the Government of Nepal has put in place a **Digital Nepal Framework** in 2019. This framework is a strategic action plan that builds on the foundations laid by the ICT Policy 2015. It	1. Strengthening the digital infrastructure, such as broadband internet and telecom networks. 2. Leveraging digital tools for precision farming,	Some key government services that have been digitalized in Nepal. Below are some examples: - Online Tax Payment

	operationalizes the policy by providing specific projects, initiatives, and sector-specific strategies to accelerate digital transformation in Nepal. Essentially, it serves as the implementation roadmap for achieving the goals outlined in the ICT Policy.	market access, and improving agricultural productivity. 3. Modernizing healthcare delivery through telemedicine, e-health services, and electronic health records. 4. Enhancing the education system by integrating ICT into teaching and learning. 5. Ensuring smart energy management, improving grid efficiency, and promoting renewable energy. 6. Promoting tourism through digital platforms and online services. 7. National payment gateway; mobile wallet service; single window for business & industry promotion etc. 8. Municipality mobile App; Intelligent Traffic Management; Intelligent waste management etc.	- Online Business Registration - Online Citizenship Certificate Application - Digital Driving License and Vehicle Registration - Online Passport Application - Digital Land Records and Online Land Registration - Social Security Fund
New Zealand/Stats NZ	This project was an evolution from the first New Zealand Data Strategy and Roadmap and a narrowing of focus to the Government Data system. The strategy was published in 2021.	Develop and implement a comprehensive Data Strategy for the New Zealand government data system.	New Zealand has implemented The Government Data Strategy and Roadmap which provides a shared direction and plan for the government data system of Aotearoa New Zealand.
Singapore/Department of Statistics	The Government Data Architecture (GDA) was implemented in Oct 2019 to facilitate secure data sharing and usage across the public sector.	A solid data architecture and data strategy were seen as key elements in driving the digital transformation of the Singapore Government, with the aim of a public service that is 'digital to the core'	The GDA allows for efficient sharing of clean and authoritative datasets by establishing Single Sources of Truths and Trusted Centers.

Turkiye/TurkStat	The Public Sector Data Space is a platform to support data-driven innovation in the public sector, and is an innovative project being implemented within the scope of the strategic priority of the National Artificial Intelligence Strategy, "Improving Access to Quality Data and Technical Infrastructure". Data space is a federated structure that enables trusted data sharing in a way that preserves the data sovereignty of participants based on a standard governance framework. Data spaces can be purpose- or sector-specific, or cross-sectoral.	It aims to create the technical infrastructure and administrative and legal basis that will enable the data held by public institutions to be processed by authorized users in a controlled and trusted environment for AI and big data applications as if they were a single data pool.	Improved the ease of data sharing, as well as remote access for researchers to micro-data. It is a virtual environment where work can be done on microdata by connecting to applications and desktop software allowed by administrators through the browser.
UAE/United Arab Emirates Federal Competitiveness & Statistics Center	The UAE launched the Data Maturity Index (DMI) 2020 as part of the E-Government/Smart Government Enabler. FCSC has been assigned as the facilitating Authority to manage and evaluate this indicator within the different Federal Entities of UAE. The DMI is divided into 3 main dimensions (governance, accessibility & flow, and quality) that represent the main pillars of data management in the Federal Entities.	The DMI aims to enhance the ability of the Federal Government Entities to provide current and high-quality data to Decision Makers to enable them to evaluate and monitor the performance of Federal Entities in fulfilling the requirements of the National Agenda.	Enables the government to obtain a ranking of each government agency in the UAE as to their level of maturity with respect to data management and governance. Agencies which have low scores are required to adjust course to ensure that they meet required standards.
United Kingdom Government	The core pillars of this strategy are: **Data foundations**: The true value of data can only be fully realised when it is fit for purpose, recorded in standardized formats on modern, future-proof systems and held in a condition that means it is findable, accessible, interoperable and reusable. By improving the quality of the data, we can use it more effectively, and drive better insights and outcomes from its use. **Data skills**: To make the best use of data, we must have a wealth of data skills to draw on. That means delivering the right skills through our education system, but also ensuring	This National Data Strategy seeks to maintain the high watermark of data use set during the pandemic, and to free up businesses and organizations to keep using data to innovate, experiment and drive a new era of growth. It seeks to harness the power of data to boost productivity, create new businesses and jobs, improve public services and position the UK as the forerunner of the next wave of innovation.	Five priority areas of action: **Unlocking the value of data across the economy.** Data is an incredibly valuable resource for businesses and other organizations. **Securing a pro-growth and trusted data regime.** We want the data revolution to benefit businesses large and small. **Transforming government's use of data to drive efficiency and improve public services.** The government will undertake an ambitious and radical transformation of its own

	that people can continue to develop the data skills they need throughout their lives. **Data availability**: For data to have the most effective impact, it needs to be appropriately accessible, mobile and re-usable. That means encouraging better coordination, access to and sharing of data of appropriate quality between organisations in the public, private and third sectors, and ensuring appropriate protections for the flow of data internationally. **Responsible data**: As we drive increased use of data, we must ensure that it is used responsibly, in a way that is lawful, secure, fair, ethical, sustainable and accountable, while also supporting innovation and research.		approach, driving major improvements in the way information is efficiently managed, used and shared across government. **Ensuring the security and resilience of the infrastructure on which data relies.** The use of data is now a central part of modern life, so we need to make sure that the infrastructure underpinning it is safe and secure. **Championing the international flow of data.** The flow of information across borders fuels global business operations, supply chains and trade, powering growth across the world.
United Nations Office on Drugs and Crime	The United Nations' "Data Strategy for Action by Everyone, Everywhere" is the UN's agenda for the data-driven transformation. The UN family's footprint, expertise and connectedness create unique opportunities to advance global "data action" with insight, impact and integrity. To help unlock more potential, 50 UN entities jointly designed this Strategy as a comprehensive playbook based on global best practice. As a COVID-19 response priority, the Secretary-General and Executive Committee approved the Strategy in April 2020.	With a view to promoting and protecting data, the aim is to define a multistakeholder approach to international data governance, which responsibly unlocks the full value of data for all, while ensuring accountability and agility	Individuals and groups empowered with the ability to consider, give and withdraw their consent to the use of their data and the ability to choose how that data is used, including through legally mandated protections for data privacy and intellectual property Data collection, access, sharing, transfer, storage and processing practices are safe, secure and proportionate for necessary, explicit and legitimate purposes, in compliance with international law A skilled workforces capable of collecting, processing, analyzing, storing and transferring data safely in ways that protect privacy Data and metadata standards designed to prevent and address

			bias, discrimination or human rights violations and abuses throughout the data life cycle, including through regular data auditing Increased financing for data and statistics. We will aim for a 50 percent increase in financing for sustainable development data