Interoperability workshop

Why Interoperability Is Critical for a Digital Government

March 26, 2026

01

Interoperability in the context of digital government

Integrated platforms supporting efficient, citizen-focused services

What is interoperability in the context of Digital Government?

Interoperability
According to the Inter-American Development Bank (IDB)

"The ability of ICT systems to **interconnect data and processes in order to share information and knowledge** within a framework of protection, ethics, and security, in an agile, efficient, and transparent manner, with the ultimate goal of **making fact-based decisions**."

Interoperability
According to the European Interoperability Framework (EU)

"The ability of organizations **interact with each other in order to achieve mutually beneficial objectives, which involves the exchange of information and knowledge between these organizations**, through the business processes they support, by exchanging data between their ICT systems."

Interoperability is a **key factor in the progress of a government**, especially in the context of rapid and overwhelming digital transformation, particularly with regard to the provision of services to citizens.

It is a **comprehensive and multidimensional quality** that encompasses legal and semantic aspects as well as organizational and technical ones, which is why it needs a framework in which to develop.

When applied correctly, it is essential because it **helps address the growing complexity** of information and data use, enables smarter, more agile, and more inclusive service delivery, and provides citizens with more effective, secure, and value-added services.

Sources:
The ABCs of Social Services Interoperability: A Guide for Governments (IDB 2019)

Definition according to the European Interoperability Framework (EIF)

02

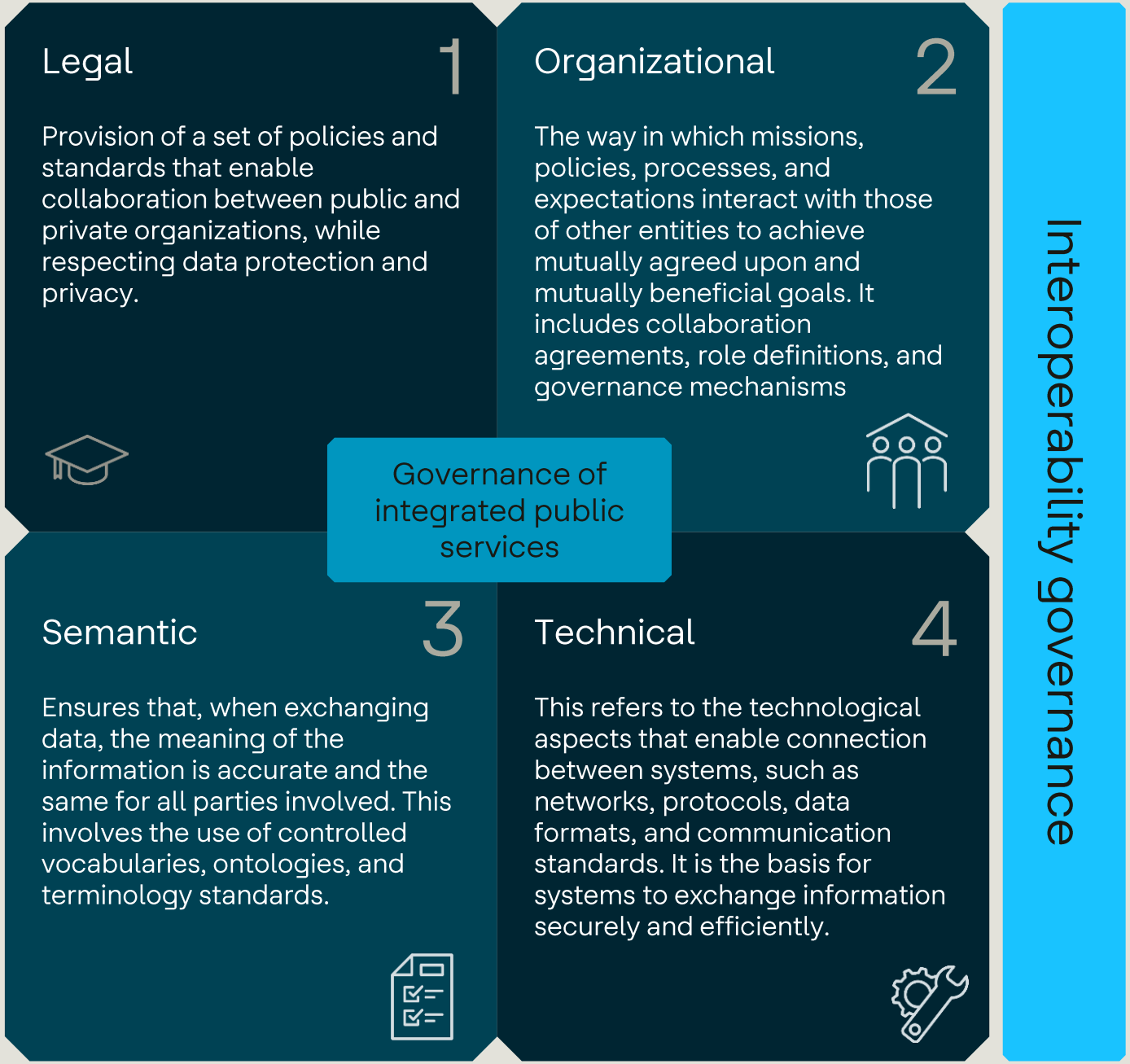
Key interoperability concepts

Key concepts of interoperability to understand its comprehensive and multidimensional capacity, such as levels, models, types of interactions, and maturity of interoperable systems

Interoperability levels

These categories describe how systems, organizations, or governments can collaborate, exchange, and share information effectively.

The 4 levels identified are: **legal**, **organizational**, **semantic**, and **technical**, along with a cross-cutting component at all levels: '**integrated public service governance**'; and a management layer: '**interoperability governance**'.



Source:
European Interoperability Framework – Implementation Strategy (EU 2017)

Interoperability levels

Governance of integrated public services

Set of structures, processes, and mechanisms that enable the effective coordination and management of different public bodies to provide unified, efficient services focused on the needs of citizens.

This governance model ensures the timely identification of needs and the coordinated activation of appropriate services, guaranteeing consistent, high-quality delivery. To this end, it requires the management of a common catalog of information sources and internal services, as well as resources that can be reused across agencies, all under cross-cutting principles of privacy, security, and regulatory compliance.

Interoperability governance

Refers to decisions on interoperability frameworks, organizational structures, roles and responsibilities, policies, agreements, and other aspects to ensure and monitor interoperability at all levels

Source:
European Interoperability Framework – Implementation Strategy (EU 2017)

Interoperability models

Data and information exchange models, from the most basic to the most complex: **bilateral**, **central**, and **federated**

Bilateral or decentralized

Decentralized model where each organization bilaterally manages interoperability with the rest.

Disadvantages: information can be duplicated, errors in data consistency are generated, and multiple agreements are required, one for each organization with which you want to interoperate.

Central

Centralize information under a single management system and from there supply it to other organizations, which will contribute or consult according to their needs.

Disadvantages: requires a redundant or backup solution because if the service fails, it would affect all participants; does not allow updates at the source, which can lead to inconsistencies..

Federated model with source-based data

Each organization generates its own data and interacts with a governing body that channels exchanges between agencies and applies controls to avoid redundancy of common data..

Disadvantages: each producing organization must have the necessary resources to effectively provide services based on the service level agreements established by the governing body.

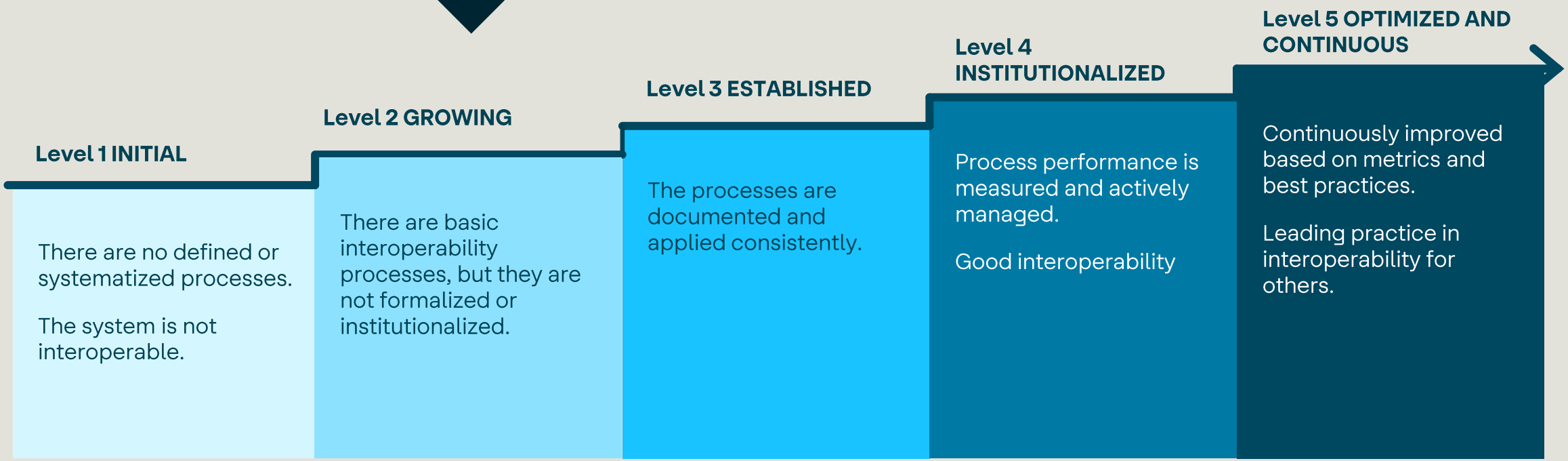
Source:
ABC of Social Services Interoperability: Conceptual and Methodological Framework (IDB 2022)

Maturity levels of interoperable systems

A maturity model is an assessment tool that aims to measure the capacity of interoperable systems. The following levels are commonly identified within a maturity model.

Example of a tool for assessing the maturity of an interoperable system: **IMAPS (EU)**

It is an online survey that allows public service providers to assess the level of interoperability maturity of their digital public service. It is aligned with the European Interoperability Framework (EIF).



Sources:
ABC of Social Services Interoperability: Conceptual and Methodological Framework (IDB 2022)
IMAPS - Interoperability Maturity Assessment of a Public Service

Types of interaction

The services offered by a public organization can be structured according to the type of interaction or relationship it establishes with its environment. We can therefore distinguish three main types of interactions:

- **A2A (Administration to Administration),** interactions between public organizations
- **A2B (Administration to Business),** interactions between public organizations and businesses
- **A2C (Administration to Citizen),** interactions between public organizations and citizens.

Source:
European Interoperability Framework – Implementation Strategy (EU 2017)

03

Why interoperability is critical in digital government

Reasons supporting the critical importance of interoperability in the digital transformation of governments

Reasons supporting the importance of interoperability

Interoperability is important because it:

- **Simplifies** the relationship between citizens and businesses with public bodies.
- **Encourages cooperation** between public bodies to meet the needs of citizens and businesses.
- **Incorporates basic standards** (data, technology, communication) in interactions between public bodies.
- **Integrates public institutions** regardless of their level of technological development.
- **Promotes administrative simplification** and processes within and between public bodies.
- **Reduces costs and effort** for public organizations, citizens, and businesses.

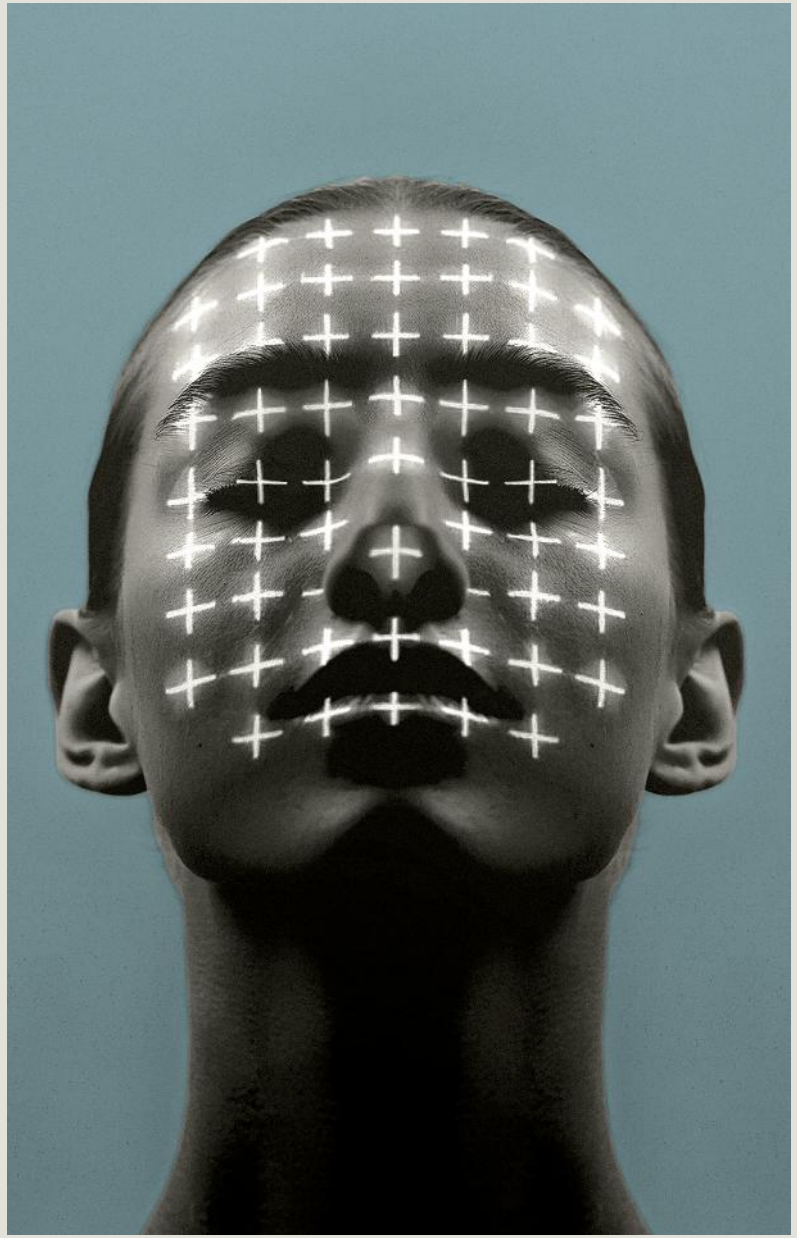
Source:
A. Naser (ed.), "Digital Governance and Government Interoperability: A Guide to Implementation," Project Documents (LC/TS.2021/80), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2021.

B. A. Rodríguez, "The Digital Transformation of Public Administration in Latin America: A Comparative Analysis of the Public Sector in the United States, the European Union, and Latin America," Project Documents (LC/TS.2021/80), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2021.

Standards are necessary for communication and interoperability

A regulatory framework for interoperability ensures that different information systems, from different sectors or from the same sector but different entities, can exchange information and have compatible modes of operation, among themselves, with the private sector and citizens, and with neighboring countries.

For this reason, interoperability is not limited to the technological area, but also encompasses the legal, organizational, and semantic areas.



Eliminate silos and reduce costs by improving efficiency

The isolated silo approach generates redundancy and inefficiency. Interoperability avoids duplication and minimizes errors in data collection and storage and reuses redundant resources for use in other areas where they can generate greater value.

	Project	Silo removal	Cost reduction	Improved operational efficiency
Estonia	X-Road Single data exchange platform	450 public and private sector organizations 52,000 organizations as indirect users of X-Road services Over 3,000 electronic services available	Savings of more than 1,345 years of work time per year by eliminating redundant paperwork, enabling access to up-to-date information, and focusing work on valuable tasks	96.1% of digital public services for citizens and 97.5% for businesses
Spain	HSUE (Andalusia) Single Electronic Social History	Through the CoheSSiona system, HSUE allows data from multiple sources (education, healthcare, employment, housing, etc.) to be integrated into a single digital file per user.	Optimization of human and technological resources Digitization of previously manual processes Less duplication of procedures	Quick access to information by professionals. Improved decision-making. Reduced service and management times. Improved comprehensive citizen services.

Improves experience and perception, and reduces administrative burdens and bureaucracy

Improves citizens' experience of public services and their perception of them. If the principles of “only once” and reuse are applied, citizens will only have to submit their data once, which in turn reduces administrative burdens and waiting times when dealing with the Administration. If this is complemented with a simplification of the administrative process, it reduces bureaucracy and improves the perception of the individual involved.

	Project	'Only once' principle	Benefits for citizens
Spain	Data Intermediation Platform (PID)	Avoids citizens submitting duplicate certificates such as registration, identity, or disability certificates.	Reduction of administrative burdens, improved response times, and simplification of procedures
Peru	Government Interoperability Platform (PIDE)	RENIEC can validate identities in real time for online procedures. SUNARP10 can share registry information with municipalities or notaries. MINSA can verify affiliations or medical records without requiring additional printouts or certificates.	Real-time validation, reduction of in-person procedures, improvement of citizen services

Promotes data-driven decision making

Promotes data-driven decision-making, as it allows data to flow between agencies, facilitating a more comprehensive view and improving the quality of political and administrative decisions. This more comprehensive view of services allows for the collection of data and information that goes beyond the internal management of administrations and generates a more holistic view of interactions.

	Project	Description	Impact on decision making
Spain	Data Intermediation Platform (PID)	It allows Spanish public administrations to automatically consult more than 130 certificates offered by more than 45 data providers. This includes information from civil registries, land registries, social security, among others.	When a citizen applies for social assistance, the administration can automatically verify: • Their income level (through the Tax Agency). • Their employment status through the State Public Employment Service. • Their registration (through the municipal registry).

Increases transparency and improves accountability

Interoperability is an essential principle for digital governance and the protection of fundamental rights. It allows for the generation of aggregated information and the management of data cross-referencing, the validation of transactions, the application of rules and policies to data, and, from there, the generation of reports, the detection of anomalous situations or policy breaches, making it difficult to manipulate data or conceal illegal transactions. When public systems are integrated, citizens can more easily access public information, and this information can be verified, making it more reliable.

	Project	Services	Benefits
European Union	Kohesio, a comprehensive knowledge database offering easy and transparent access to up-to-date information on projects and beneficiaries co-financed by the EU's cohesion policy during the 2014-2020 programming period	It aggregates and standardizes data from all operations. It displays information on the European Regional Development Fund (ERDF), the Cohesion Fund (CF), and the European Social Fund (ESF).	Currently, the database contains more than 1.5 million projects and approximately 500,000 beneficiaries.

Improved response to crises and emergencies

We are living in turbulent times marked by health pandemics and environmental crises. Interoperability improves coordination between health, safety, and civil protection services that may be affected, as well as streamlining the response to such emergencies, resulting in greater protection for all citizens.

	Project	Services	Benefits
European Union	Interoperable summary health record (MyHealth@EU)	It allows essential clinical information to be shared between European Union countries, such as: • Allergies and intolerances • Current medication • Previous illnesses • Surgical procedures • Vaccinations • Basic patient demographic data • Relevant clinical observations	Safe medical care abroad with quick access to critical information that improves clinical decisions Continuity of care during temporary transfers to other countries Reduction of medical risks, especially in emergencies, by knowing the patient's medical history

Improvement in the quality of service provided

Allows citizens to access information at any time and through multiple channels, which improves the quality of service they receive.

	Project	Benefits	Improvements
United Kingdom	Gov.uk. Platform that brings together all government services and information on a single website	Single point of access to all services offered by the government Designed based on citizens' requirements	Work was based on proof-of-concept tests on alpha version websites, resulting in: • Everything starts with a search • Simple and intuitive navigation • Simple and direct language • Step-by-step process guides

Stimulates innovation

By promoting the creation of new applications and services that can leverage shared information to develop innovative solutions that benefit citizens and the government.

AI can be used to adapt data to a more tangible format or structure, facilitating the harmonization, mapping, transformation, and standardization of data from heterogeneous sources and formats, thereby improving its interoperability.

Alternatively, by using AI to analyze user data and preferences, adapting service delivery accordingly.

Facilitates cross-border cooperation

Enables digital public services to operate without borders, facilitating cross-border exchanges between administrations, citizens, and businesses (e.g., throughout the European Union).

	Project	Services	Benefits
European Union	e-CODEX decentralized and interoperable system to provide secure electronic communication between judicial authorities, legal professionals, and citizens in cross-border legal proceedings	Used for 7 legal processes Used by all 27 EU Member States, as well as stakeholders in the justice system Case study: A court in Spain can send a request for judicial cooperation electronically to another court in Germany, with traceability, legal certainty, and no need for paper	Simplify and digitize legal processes such as the European payment order and small claims procedures. Ensure encrypted transmission of confidential legal data between judicial authorities. Facilitate communication between courts, prosecutors, and law enforcement agencies. Enable collaboration between lawyers, judges, and notaries in cross-border cases.
European Union	Interoperable electronic prescription (MyHealth@EU)	Allow EU citizens to obtain their medication in pharmacies in other EU countries thanks to the online transfer of their electronic prescription from their country of residence, where they are registered, to the country where they are traveling.	For citizens: • Access to medicines abroad • Continuity of care • Greater security • Convenience and time savings

04

Key benefits and implementation challenges

Advantages and the most common obstacles to implementing an interoperability model

Benefits to implementing interoperability

Interoperability is the foundation for automation because it enables systems, processes, and organizations to communicate, share data, and work together without constant human intervention

- Drive innovation and digital transformation
- Achieve greater transparency
- Improve decision-making
- Improve perception in administrative management
- Comprehensive understanding of public and private services
- Reduce costs for entities and citizens
- Improve agility and service quality
- Improve inter-institutional collaboration

Benefits details

Drive innovation and digital transformation

Interoperability is a key factor for progress, as it generates more comprehensive added data from all administrations for the creation of reports, trends, and relevant information for decision-making..

Interoperability creates an environment conducive to the development of new digital services, as it allows existing data and functionalities to be reused between institutions.

Comprehensive understanding of public and private services

Interoperability allows different systems and entities (both public and private) to share information in a secure and structured manner..

This allows for a comprehensive view of citizens, their needs, and their interactions with the administration..

Achieve greater transparency

When systems are connected and data flows in a traceable manner, access to information is provided for both citizens and supervisory institutions.

Source:
A. Naser (ed.), "Digital Governance and Government Interoperability: A Guide to Implementation," Project Documents (LC/TS.2021/80), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2021.

Benefits details

Reduce costs for entities and citizens	Interoperability eliminates duplication, reduces paper use, minimizes travel, and optimizes technological resources.
Improve decision-making	Access to integrated, up-to-date data and the ability to apply advanced analytics or AI to it.
Improve agility and service quality	By enabling systems to work together, processes are automated and accelerated. By removing barriers between systems and entities, a more seamless, consistent, and user-centered experience is provided, which improves the citizen experience.
Improves inter-institutional collaboration	Interoperability fosters cooperation between different levels of government (local, regional, national) and between the public and private sectors, which encourages public innovation.
Improve perception in administrative management	Citizens do not have to repeat procedures or submit documents that are already in the possession of the administration, access to synchronized information is facilitated, and a more proactive and personalized relationship with citizens is promoted.

Source:
A. Naser (ed.), "Digital Governance and Government Interoperability: A Guide to Implementation," Project Documents (LC/TS.2021/80), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2021.

Obstacles to implementing interoperability

Organizational

- Budget constraints
- Unwillingness to cooperate and collaborate
- Lack of institutional and technical leadership
- Lack of a governance model to coordinate the entire process
- Lack of personnel with sufficient skills, dedication, and authority
- Resistance to change
- Lack of incentives and motivation

Legal

Lack of a clear and structured regulatory framework to regulate and orchestrate an interoperability model with official technical specifications and standardized rules and protocols

Semantic

- Semantic diversity of data
- Lack of open and universal standards
- Linguistic barriers in multilingual environments

Technological

- Incompatibilities between systems or platforms
- Complexity in integrating new emerging technologies with legacy systems
- Insufficient or obsolete technological infrastructure
- Lack of flexible or scalable architectures
- Inadequate security in data transfer and protection

05

Strategy, legal framework and IT governance

Strategy and roadmap for implementing interoperability

Strategy

Define a realistic starting point and a final goal to be achieved. Establish the corresponding roadmap. Follow the recommendations of other international organizations.

Plan and select

- ✓ **Establishment of governing bodies**
- ✓ Identify and select the **data sources and IT services to be incorporated**
- ✓ **Provide a legal basis through legislation or agreement**
- ✓ Define the **organizational model:** centralization and integration, federation, and standardization

Provide a regulatory framework and standards

- ✓ Establish a legal and organizational framework for services.

Monitor and maintain

- ✓ Monitor and update the legal and organizational framework

Legal changes and decision-making

Organizational changes and agreements

- ✓ ***Consider a combination of different types of interoperability agreements and legislation to formalize organizational relationships***
- ✓ Establish standards
- ✓ Focus on user-centered services

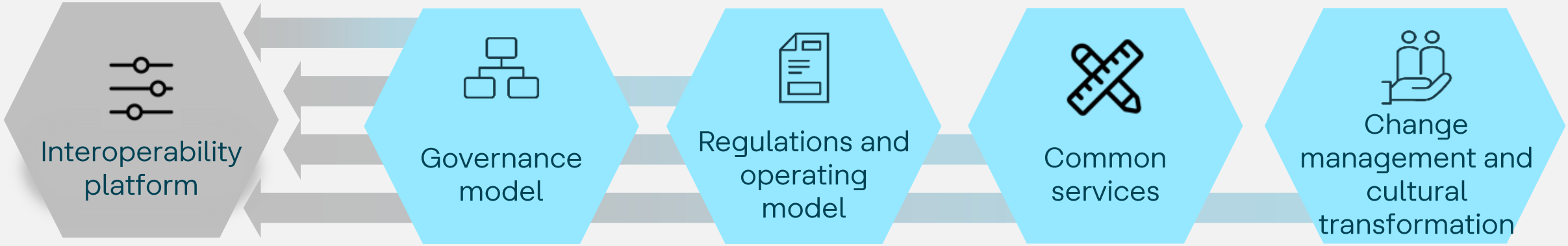
- ✓ Maintain standards and balance flexibility and consistency when selecting them

Semantic and technical standards

* *Source: adapted from Kubicek, Cimander, & Scholl*

Strategy

The implementation of the interoperability platform is a complex project that must be approached by combining technical and business vision



Design and implement a **technical solution** that meets requirements and allows for evolution towards more ambitious scenarios

Define an **agile and clear governance model** that, in turn, allows for the incorporation of contributions and perspectives from the different administrations involved

Create a **regulatory framework** that **promotes involvement** of different administrations, including an **operational model** that **allows efficient management while maximizing value**

Develop a series of **common services** aimed at improving internal efficiency and the end-user experience.

Ensure successful implementation by **overcoming internal and external resistance** to change, using the project as a **lever for cultural transformation**

... in a coordinated manner and under the impulse of cross-cutting project management

Strategy

The probability of success increases if it is reinforced through change management and cultural transformation

Change management

Carrying out the **transformation in an orderly, controlled, and systematic manner**, overcoming resistance to change through **communication, training, and motivation**

- Engaging and supporting users in the comprehensive use of data to improve citizen services, efficiency, etc.

Cultural transformation

Oriented to the management toward adopting **new behaviors and mindsets** through key work processes

- Finding synergies that allow to **convince and persuade public employees of the benefits** that an interoperable data culture can bring them
- Promoting the creation of **new collaborative environments between administrations**
- Considering **data as a strategic asset** for management

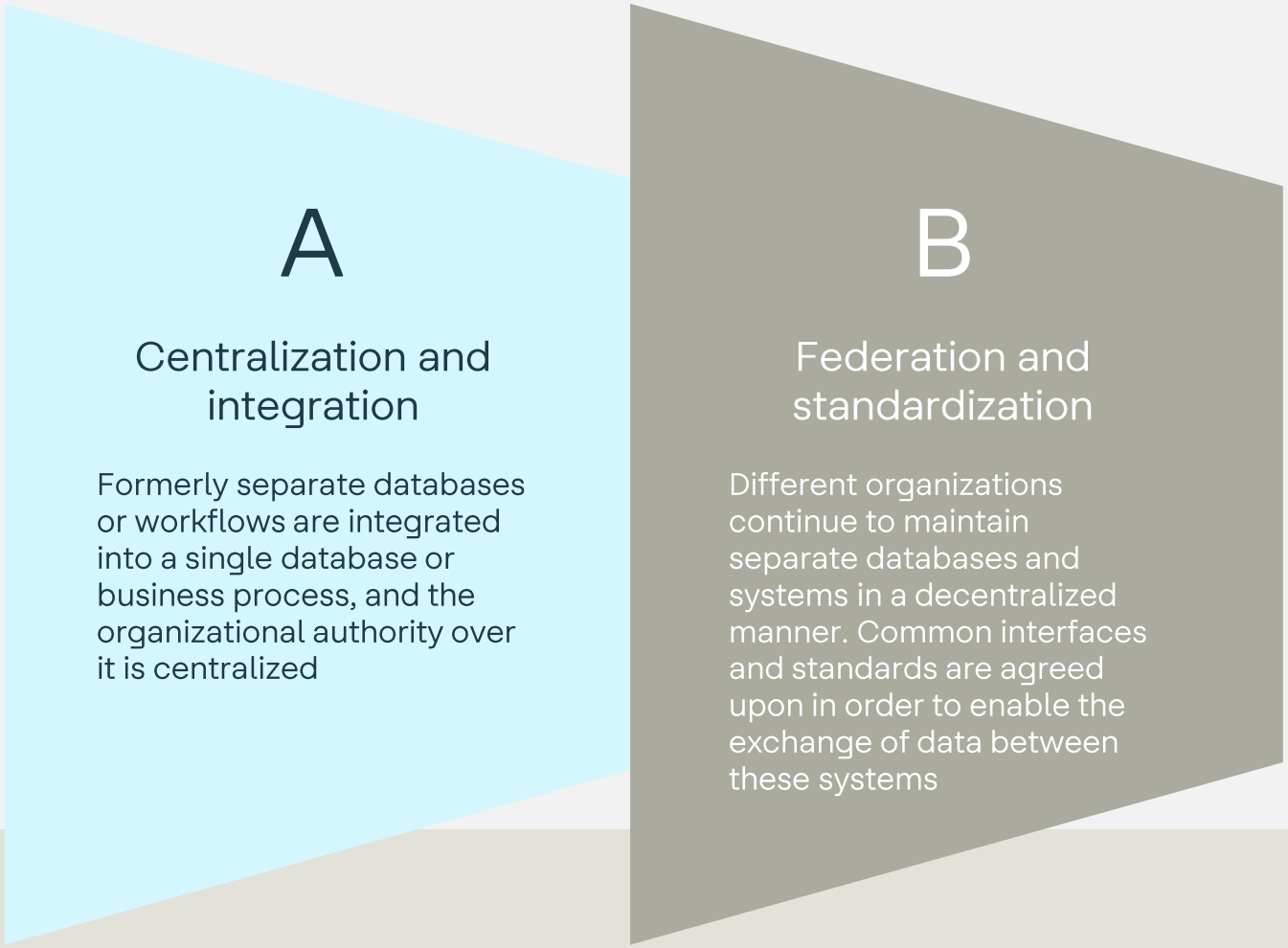
Legal framework

The legal framework is composed of laws and regulations aligned with international guidelines and principles, complemented by technical standards that define the criteria and technical specifications relevant to the elements covered by the framework

INTEROPERABILITY AS A NATIONAL PRIORITY	FOUNDATIONAL PRINCIPLES DEFINED	PROMOTION OF REUSE AND TECHNOLOGY TRANSFER	CORE PILLAR OF DIGITAL GOVERNMENT	GOVERNANCE MECHANISMS ESTABLISHED	FRAMEWORKS REQUIRED
Legislation identifies interoperability as national priority and requires that certain regulations be aligned across the whole public sector	Establishes main principles that ensure different government systems can work together effectively	Encourages public administrations to reuse existing solutions and share technology solutions	Highlights interoperability as a core element of digital government, enabling smoother cooperation and better electronic services	Establishes a dedicated committee to oversee digital government matters, including making sure systems and applications remain compatible	Requires the creation of national frameworks on interoperability and security to provide common standards and safeguards

IT Governance

Organizational interoperability as being about “integrating or aligning cross-organizational business processes and formalizing relationships” between the organizations involved in developing and delivering a public service (EIF-European Commission, 2017)



IT Governance

Governance as a key enabler of successful integrated public service projects

Governance is about providing a framework for decision-making

The need for **instruments to formalize the organizational relationships** required to deliver integrated public services; differentiated between multilateral and bilateral interoperability agreements as different approaches to formalizing these relationships

Services: How to choose

Analyze key impact indicators to select the services to be integrated into the platform:

Citizen-level impact indicators

Decrease in response time from public institutions

Waiting time for citizens at public institutions to obtain a response to their request

Reduce fees (or costs) for administrative procedures for citizens

Cost estimation, before and after interoperability

Perception of process improvement

Independence of time and place for the user

Quality of problem solving.

Simplicity of the actions that users must perform to complete the process (obtain the service)

Protection of privacy and confidentiality

Total time saved by citizens

Hours saved by citizens in completing administrative procedures, calculated as the sum of all time saved (waiting times, travel to other services, reduction in errors, etc.)

Institutional-level impact indicators

Reduction in time for key service delivery processes

% reduction in time spent storing documents

% reduction in time spent entering data

% reduction in response time to citizens

Perception of the degree of improvement in processes

Increased productivity

Number of procedures processed per month

Average number of procedures processed per public employee

Total employee time savings

Reduction in working hours for civil servants involved in activities related to processes that are being improved from a technological standpoint

Cost savings for the institution

Reduction in support costs associated with the process, represented by savings in printed paper and storage.

Services: How to prioritize

Set priorities among services

- The **contribution of the service** to the interoperability landscape, which will be measured based on the importance and necessity of the service, to contribute to the interoperability landscape
- The **scope** of the service, measured by its horizontal impact, once completed and implemented, across all affected sectors (public organizations, private organizations, citizens, etc.)
- The **geographical scope** of the action, measured by the number of participating public administrations
- The **urgency of the action**, measured by its potential impact, taking into account the lack of other sources of funding
- **Reuse** will be measured by the degree of reuse of its results
- **Reuse** through the use of existing common frameworks and elements of interoperability solutions

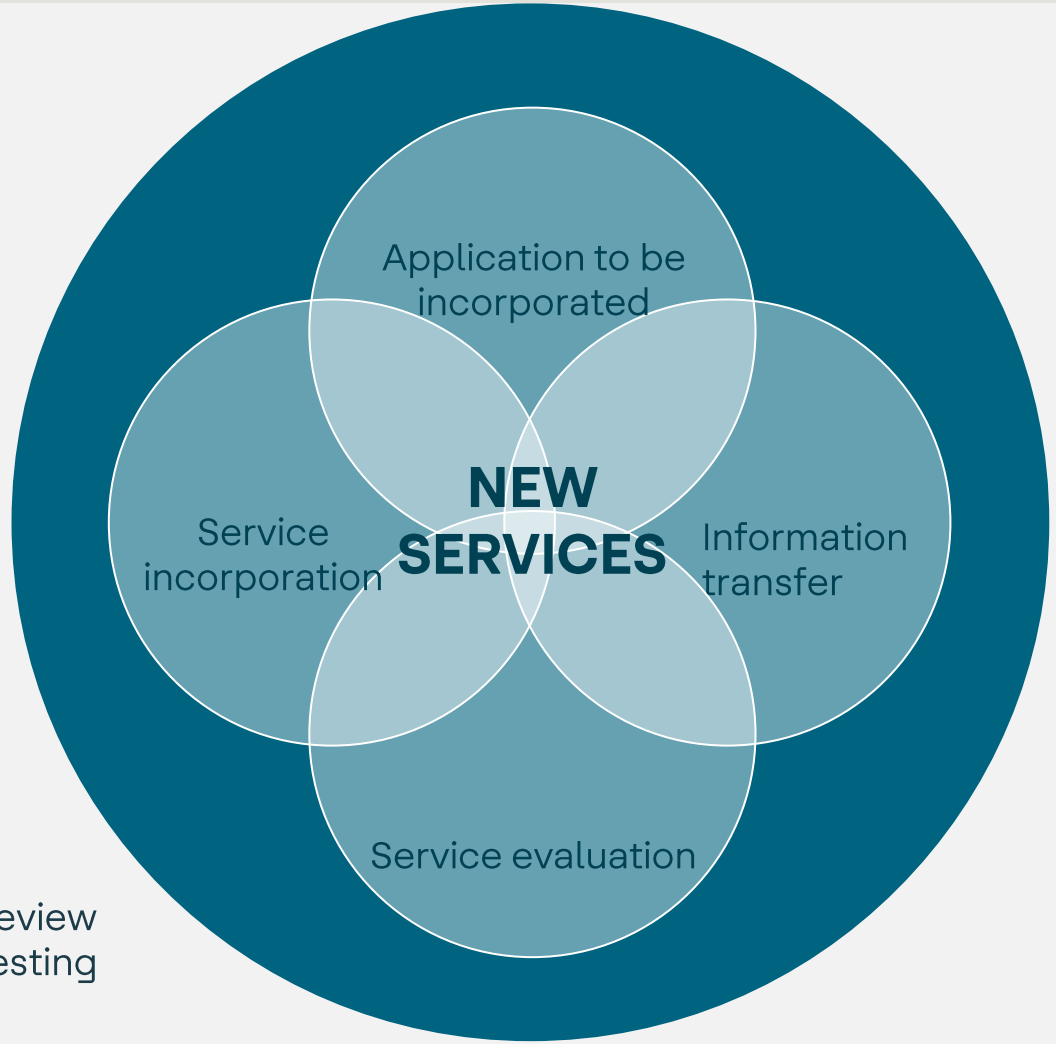
Services: How to include new services and consumers

General State Administration	Creation of data exchange protocols Maintenance of a general catalog of services Definition and implementation of technical standards
Regional & Local Administration	Creation of an interoperability node for data exchange Comply with the conditions for accessing services (security, authorization, auditing, etc.). Define agreements and contracts for joining the platform Maintain an informative website with all documentation related to the node

- Simplify the management of administrative processes
- Reducing the volume of paper handled by the administration
- Increase collaboration with other administrations in the management of procedures

Services: How to include new services and consumers

Define service level agreements
Final onboarding reports



Requirements review
Application testing

Prepare a checklist to be completed by the organization (expected level of benefits: potential savings, elimination of duplication, improvements in services provided to citizens, ..., alignment with ICT strategy)

06

Success factors and lessons learned

Strategic alignment across agencies made transformation possible

Success case

Goal

Implementation of an interoperability platform that allows data sharing and exchange of information in a safe and agile way between the different administrations and public institutions of the country (Morocco).

#ADD
Agence de Développement du Digital

1. **Interoperability Platform** as technological base
2. **Single Social Registry (RSU) to provide social benefits to Moroccan households**
3. **MASSAR registration of all aspects of the school life of students in Morocco**
4. **Social assistance programs in Morocco**
5. **Moroccan Industrial and Commercial Property Office**

Main impacts

Promoting the digital transformation of the public sector, simplifying processes and improving the provision of services

Reduction of processing cycles and documentation requirements, along with minimizing human errors and associated costs

360º vision of citizens and companies to better adapt services to their needs and to boost the growth of the economy

Benefits

- Unify and standardize data management and information exchange among the different agents involved.
- Have capacities that enable the adoption of new management models, both at a public and private level, in order to serve as a lever for the economic development of the country.
- Enable the definition of combined services provided by the different public and private organizations adapted to new business models that enable the growth of the country's economy and the revitalization of affected sectors in times of crisis.
- Promote the use of technology and business digitization.
- Ensure the continuity of the service and the security of the information.

Lessons learned

1. Interoperability as a strategic pillar

Lesson learned: Treating interoperability solely as a technical enabler limits its impact and sustainability. When embedded in the digital strategy, it becomes the structural foundation for digital services and information exchange.

2. Governance and coordination

Lesson learned: The absence of a clear governance model weakens coordination and stakeholder commitment. Strong governance consistently improves the effectiveness of data exchange.

3. Integrated approach

Lesson learned: Addressing interoperability only from a technological perspective leads to inefficiencies and rework. Successful projects balance technical, organizational, semantic, and legal dimensions.

4. Data quality and maturity

Lesson learned: Inconsistent and underdeveloped data sources introduce considerable risk. Early focus on common data models, quality rules, and availability criteria is critical.

5. Evolutionary vision

Lesson learned: Interoperability is not achieved through isolated actions. It must be approached as an evolutionary process supported by a realistic medium- and long-term roadmap.

6. Change management

Lesson learned: Without proper communication, training, and support, platform adoption is limited. Change management is essential to ensure real and sustained use.

7. Citizen-centered approach

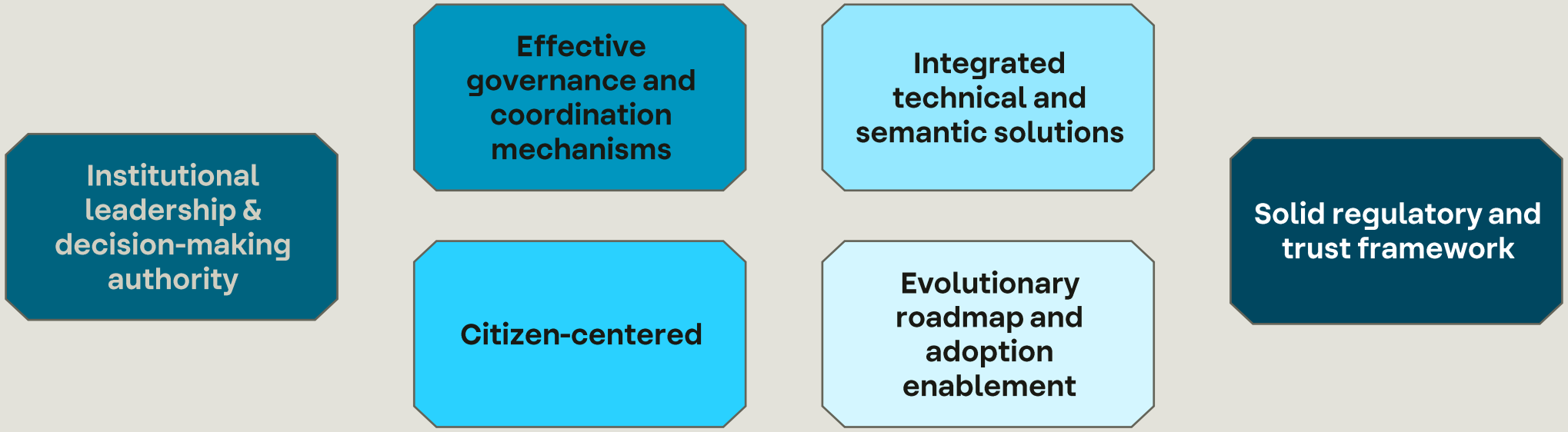
Lesson learned: Experience shows that interoperability initiatives that do not incorporate the citizen perspective from the start tend to result in complex solutions with low perceived value. When interoperable services are designed around simplification, data reuse, and improved citizen experience, both impact and adoption increase significantly.

Conclusions: Key focus areas going forward

Interoperability is a foundational pillar for digital government.

It requires coordinated, multi-dimensional solutions and sustained execution over time.

Based on the lessons learned, six key focus areas are recommended:



Thank you