

Data Sharing and Interoperability:

*Lessons learned from Practice and
Real-World Implementation*

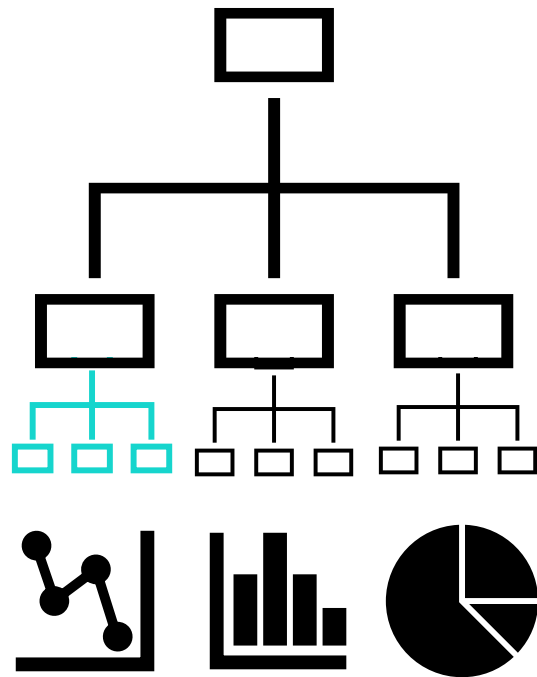


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Lesson 1

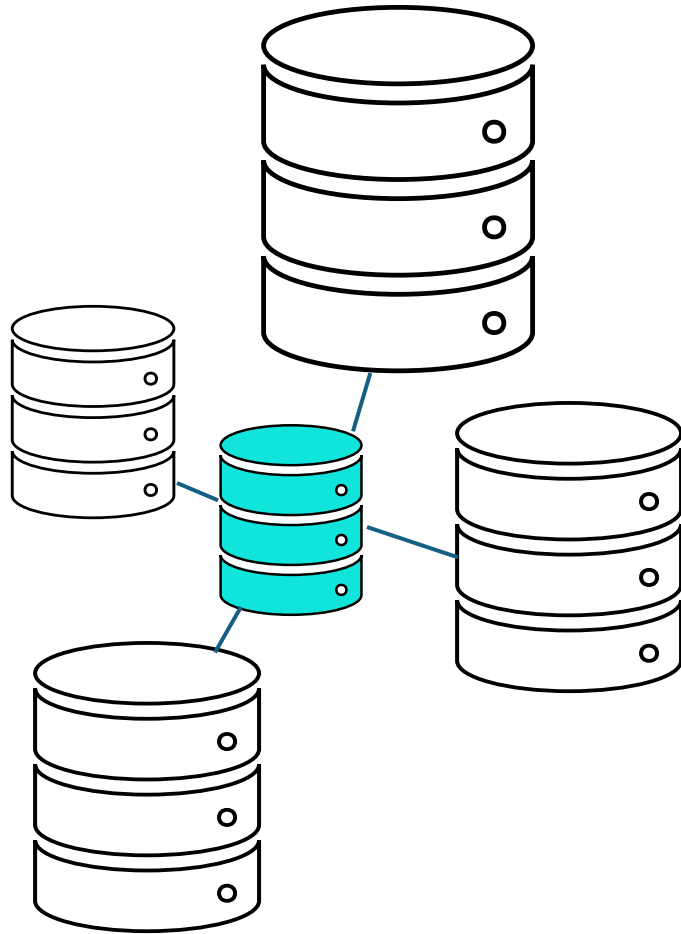
Data Governance Framework



- + **Data-driven governance** strategy to:
 - guide policy-making,
 - optimize the administrative processes,
 - and to modernize public service delivery.
- + **Comprehensive Legal framework** to
 - recognize the use of electronic document and proofs,
 - assign roles and responsibilities,
 - define trusted data sources and references,
 - ensure transparency and accountability,
 - And to support data sharing across different sectors.
- + **Hierarchical Architecture** and a layered approach for Data Sharing to ensure quality, scalability and efficiency.

Lesson 2

Core Registries of the State



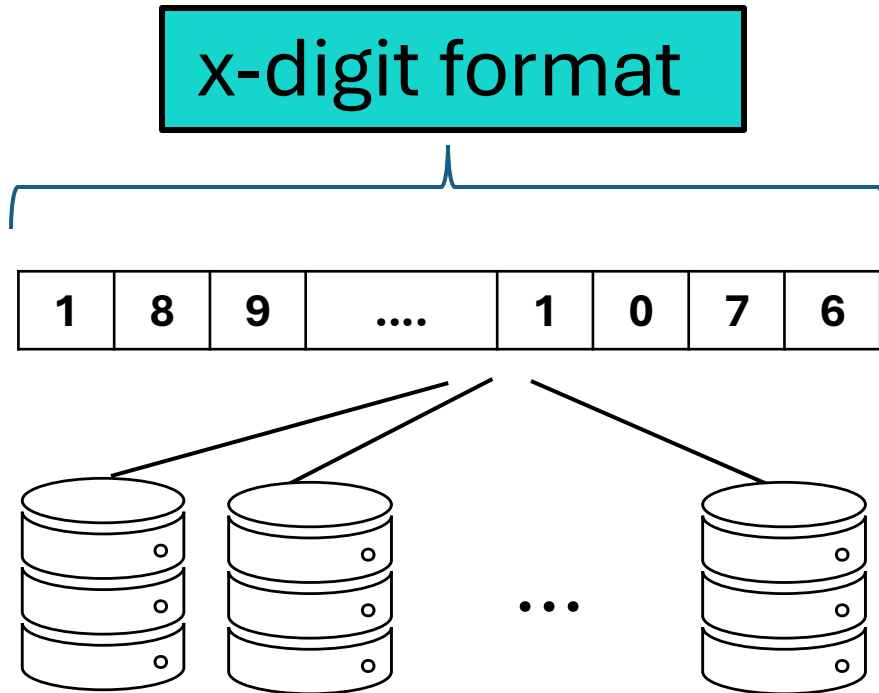
- + Paper-based registries to be digitized
- + Missing registries to be completed
- + Fragmented registries to be aggregated
- + Registries with poor data quality to be sanitized
- + Outdated registries to be updated

Examples:

- Civil/Population registry
- Business registry
- Tax registry
- Employment registry
- Address registry
- Land and Property Registry
- Vehicle registry
- Social security registry
- Education registries
- Health registry
- ...

Lesson 3

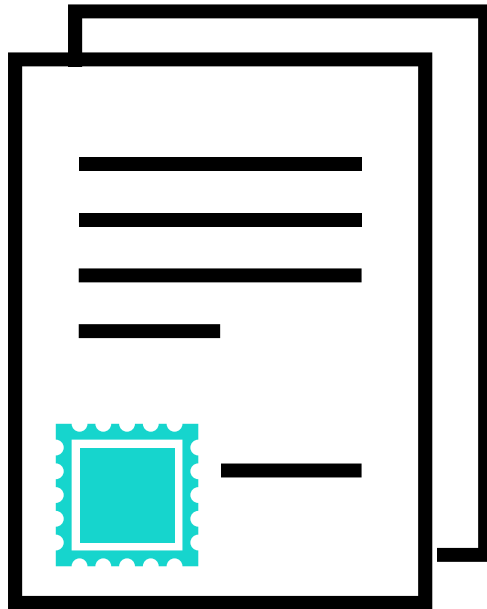
Unique National ID Number



- + Unique identifier for **citizens** and **legal residents** to avoid the problem of misidentification, duplication and mismatching
- + Given **at birth** (not at the legal age) for the citizens and given when granted a temporary or permanent residence permit for non-citizens
- + **Sharable** (not hidden), **stated** on official documents like IDs and civil status certificates and available in barcoded or **machine-readable format**
- + Used for both **digital** and **in person** procedures with **public** and **private** sectors (G2C and B2C)
- + Unique identification does not only concern individuals but also companies, vehicles, land properties, ...

Lesson 4

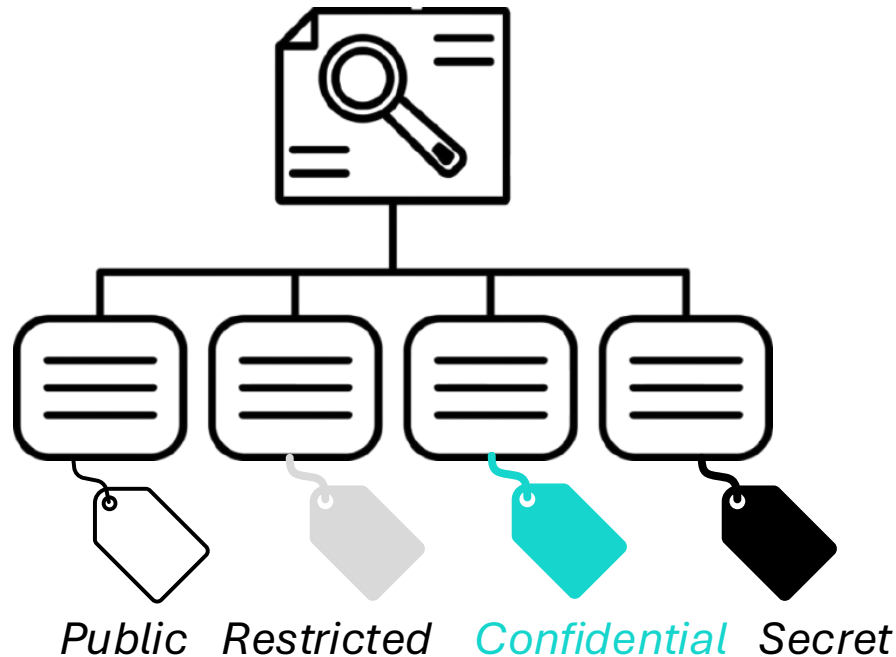
Data Standardisation



- + Adoption of **data standards** and **interoperability frameworks** to improve data quality and to enable seamless data exchange between public and private stakeholders.
- + Adopt **internationally recognized standards** for data, metadata, and digital proofs .
- + Define **national standards** for specific use cases to harmonize data models, schemas, code lists, vocabularies, and semantic meaning.
- + Leverage **universally standardized services** and well-defined interfaces including prebuilt, reusable components offered by trusted platforms and third-party providers.
- + Implement recognized **security and privacy standards** to safeguard data.

Lesson 5

Data Classification



- + National classification framework mainly based on **sensitivity of data**: Public, restricted, confidential, secret
- + Metadata should include **classification tags**
- + Classification defines the **access controls** to data: who can access what data, under what conditions
- + Classification defines the **appropriate safeguards** to be performed on data before sharing it: encryption, anonymization, consent collection, retention, ...

Lesson 6

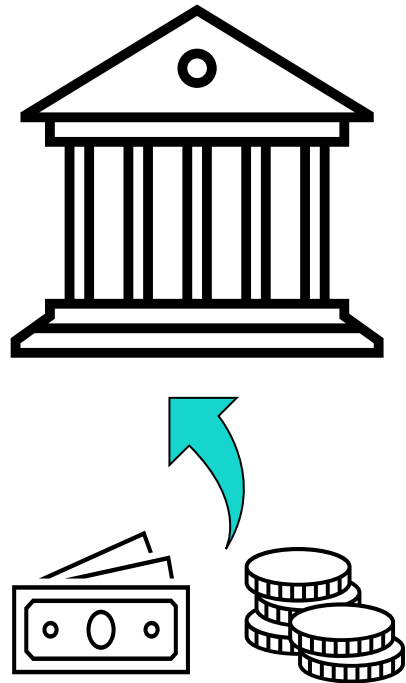
Data Sharing with Digital Proofs



- + Proofs of **authenticity, integrity, time** and **non-repudiation** based on cryptographic mechanisms and PKI systems
- + **Digital signature** and **time stamping**
- + **Instant verification** of the digital proofs
- + **Long-term** electronic proofs to be archived with data
- + **Zero-knowledge proofs** help sharing without revealing the sensitive data (privacy by design)

Lesson 7

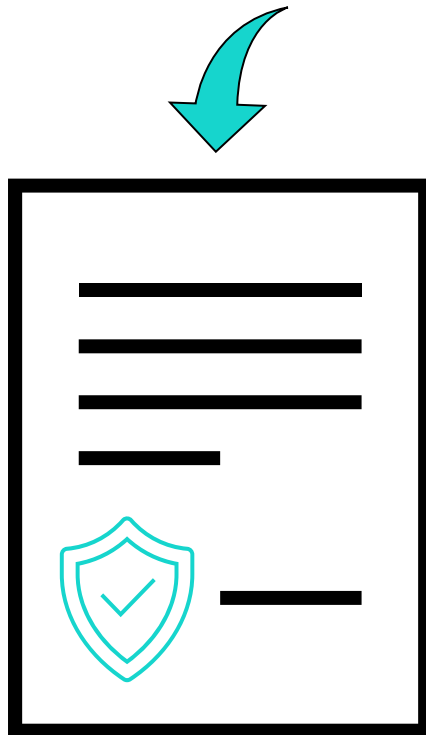
Adapting the Business Model



- + Data is tied to **revenue-generating administrative processes** to cover cost (service fees, taxes, ...)
- + Interoperability causes loss of revenue for public entities whose **operating budgets depend on service fees**.
- + Maintaining high-quality registries costs money; sharing that data **for free** feels like a burden.
- + **Shared service/business model** between public entities
- + Publish shareable data and APIs in an **online catalog** or data access portals and enable access through a **subscription-based delivery model**, rather than an on-demand request/response access.

Lesson 8

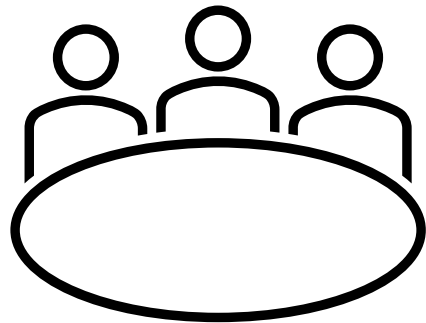
Safe Sharing of Data



- + Use of modular and service-oriented architectures that can **scale well** across sectors to avoid slowdowns in case of overload.
- + Implement **redundancy** and **failover mechanisms** to prevent the interoperability layer from becoming a single point of failure in case of incidents.
- + Set **privacy and security by design** to safeguard user data and build trust by default.
- + Set **ethical guidelines** to ensure responsible data usage and minimize the risk of potential abuse/misuse.

Lesson 9

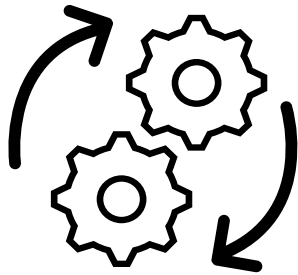
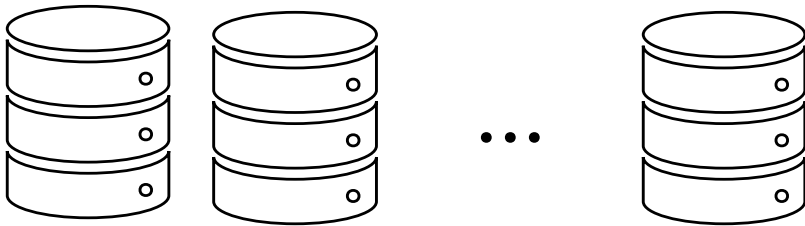
Communication and Change Management



- + Data-owning entities are the most resistant to the change (Fear loss of control, influence, or revenue and worried about data misuse, need clear mandate to share)
- + **Engage stakeholders early** and maintain their involvement throughout the whole implementation process.
- + Good communication strategy to spread the **data sharing culture** since institutional alignment is harder to achieve.
- + Invest in **capacity building** to elevate the level of maturity and to drive effective change management.
- + **Deploy real use cases** and quick wins to minimize resistance, accelerate adoption, and lead by example

Lesson 10

Smart Government as Ultimate Goal



Automation

- + Data aggregated and analyzed in **real time**
- + Services offered automatically based on **life events** (birth, death, marriage, accident, health status, new home address, new job, retirement, ...)
- + Proactive and predictive citizen-centered **automated services**: cross linking data of different registries
- + More **responsive government** using chatbots, AI agents and generative AI
- + **Customized administrative procedures** based on the location, job status, history, previous situation and context