Population Registry of Estonia
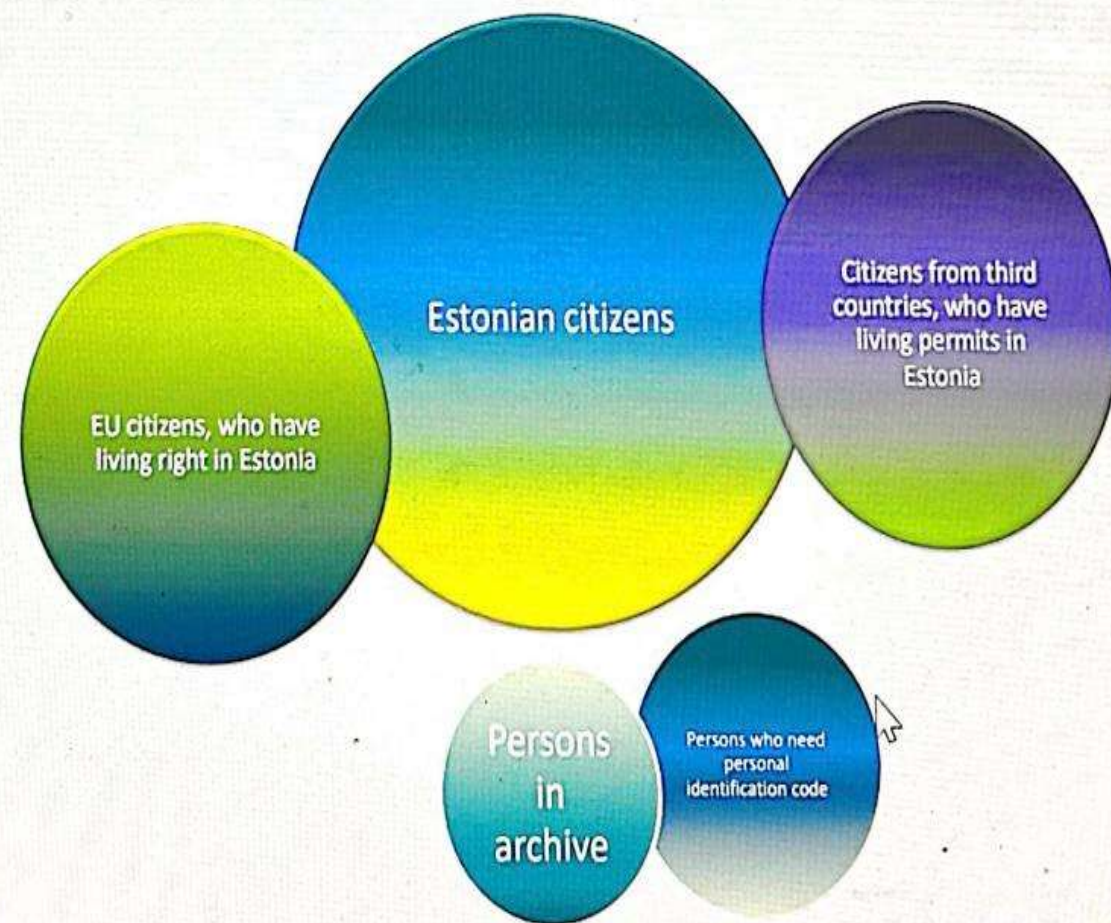
Presented By: Dikshya Bhattarai
BPSG 7th Semester
Roll No: 3

Introduction to Population Registry of Estonia

Who's data is in the population register?

- "What if every citizen, every movement, every life event existed simultaneously in two worlds?"
- **The Population Register** is a database of people living in Estonia.
- It includes data of Estonian citizens, EU citizens living in Estonia, and foreigners with residence permits.
- It has existed since **January 1, 2002**.
- Its operation is governed by the **Population Register Act**
- The Ministry of the Interior manages and updates the register.
- Data is registered through:
https://www.rahvastikuregister.ee/
- Each citizen = a node in Estonia's digital brain
- Population register data has legal effect

e-population register

common self-service portal for population register services

Sign in

My data

- My data in the population register >
- Amending data >
- Restricting access to data >

Residence

- Registration of residence >
- Residents and termination of residential addresses >

Family event

- Registration of birth >
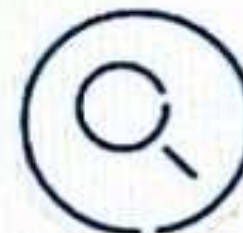- Registration of marriage >

Certificates and extracts

- Ordering a duplicate family event certificate >
- Ordering extract from population register >

Queries

- Name suitability >
- Name statistics query >
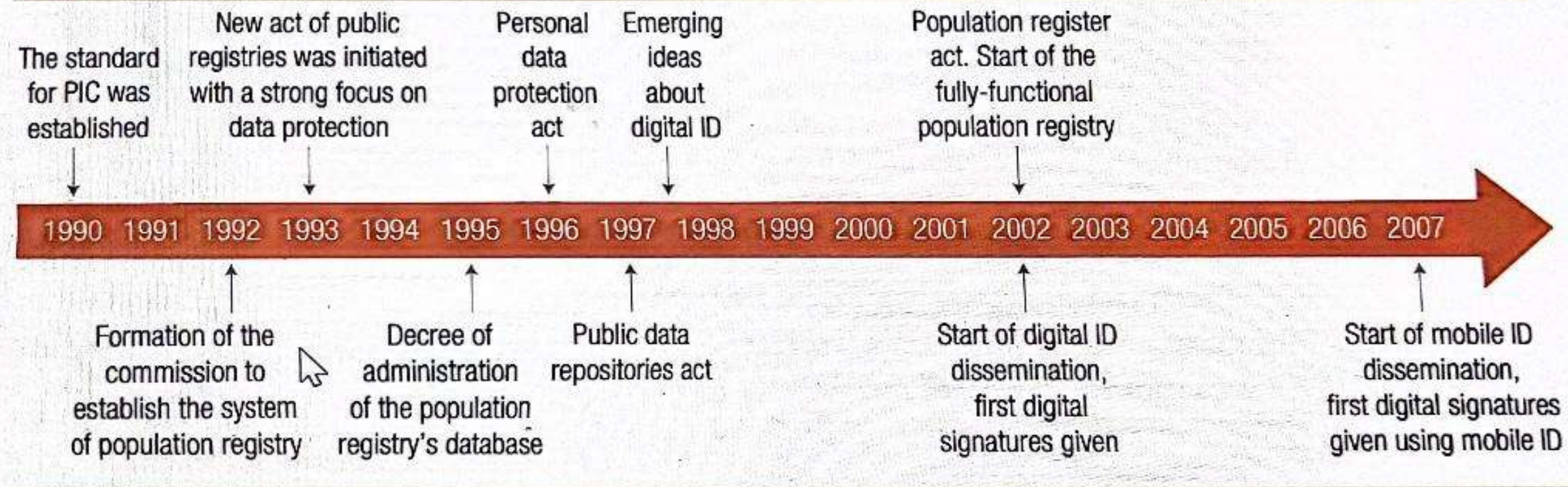- Requesting death information >

Requesting another person's data from the population register

The data is issued in justified cases and for a fee.

- Enter the application environment >

Figure 3.1 ■ Timeline of Key Initiatives of the Integration of CRVS/ID System

CRVS: Civil Registration and Vital Statistics

The standard for PIC was established

New act of public registries was initiated with a strong focus on data protection

Personal data protection act

Emerging ideas about digital ID

Population register act. Start of the fully-functional population registry

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007

Formation of the commission to establish the system of population registry

Decree of administration of the population registry's database

Public data repositories act

Start of digital ID dissemination, first digital signatures given

Start of mobile ID dissemination, first digital signatures given using mobile ID

Personal ID number

47704260315

Sex
1 - 1800-1899 man
2 - 1800-1899 woman
3 - 1900-1999 man
4 - 1900-1999 woman
5 - 2000-2099 man
6 - 2000-2099 woman

Time of birth
yy.mm.dd
(26. April 1977)

Serial number
Born in same day

Control number
calculated

REPUBLIC OF ESTONIA
MINISTRY OF THE INTERIOR

Data in population register

Personal data

- PIC
- foreign PIC
- name
- gender
- date and place of birth
- citizenship(s)
- marital status
- legal capacity
- right of custody
- date and place of death

Judgements

- divorce
- termination of reg. partnership contract
- adoption
- paternity
- legal capacity
- right of custody
- death

Legal basis to stay in state

- residence permit
- right of residence

Relations

parent – child
spouse – spouse
reg. partner – reg. partner
guardian – ward

Vital statistics documents (Estonian and foreign)

- birth document
- death document
- marriage document
- divorce document
- change of name document
- paternity document
- certificate of legal capacity to contract marriage
- document concerning the correction and amendment of a vital statistics entry or data

Election information

- right to vote
- electoral district's number
- the location of the polling place
- voter card's sending method and address
- description of the election restriction

Location data

- place of residence
- additional address
- place of stay
- contacts (e-mail, phone number)

Testimony-based data

- ethnic nationality
- mother tongue
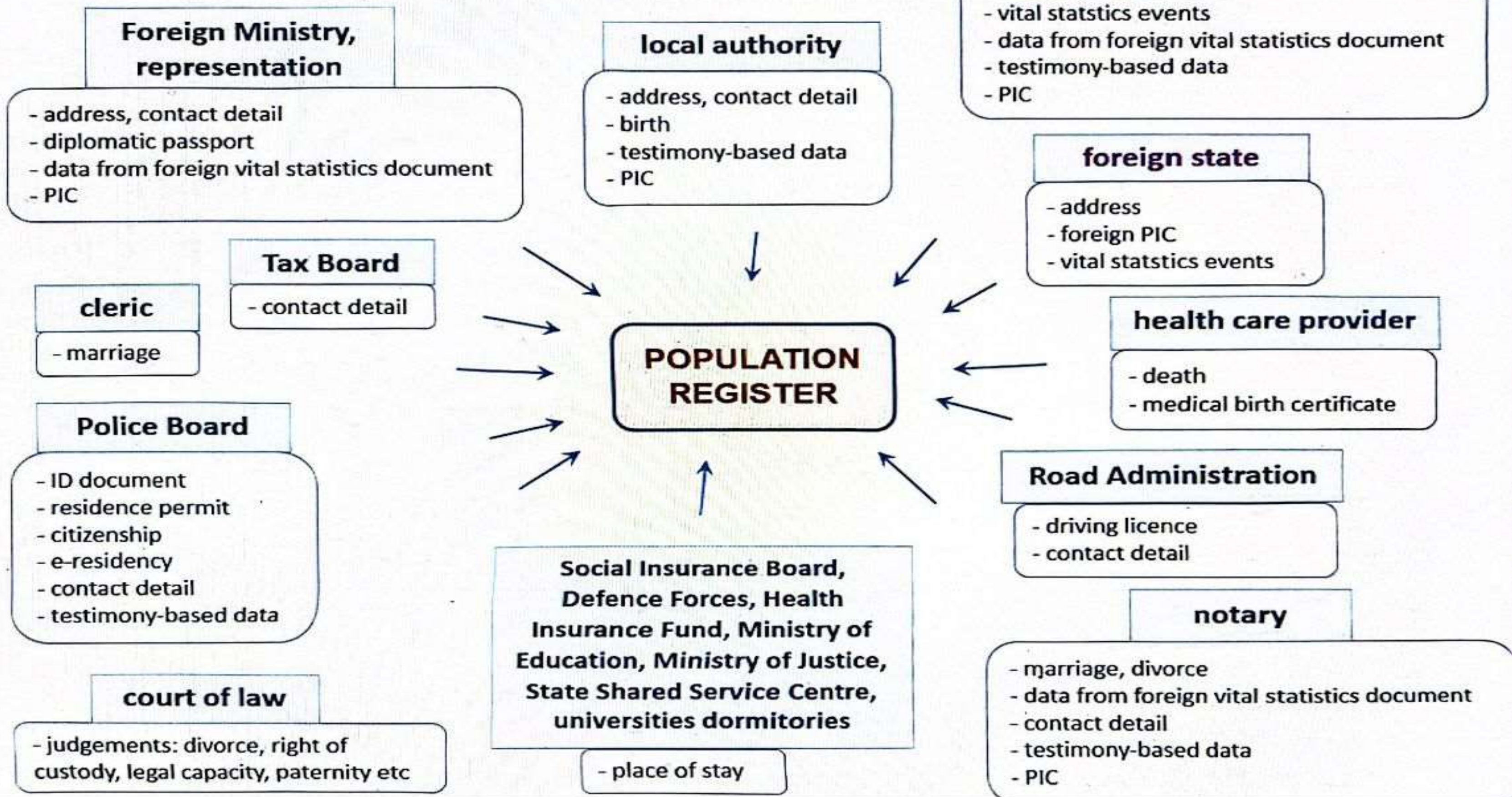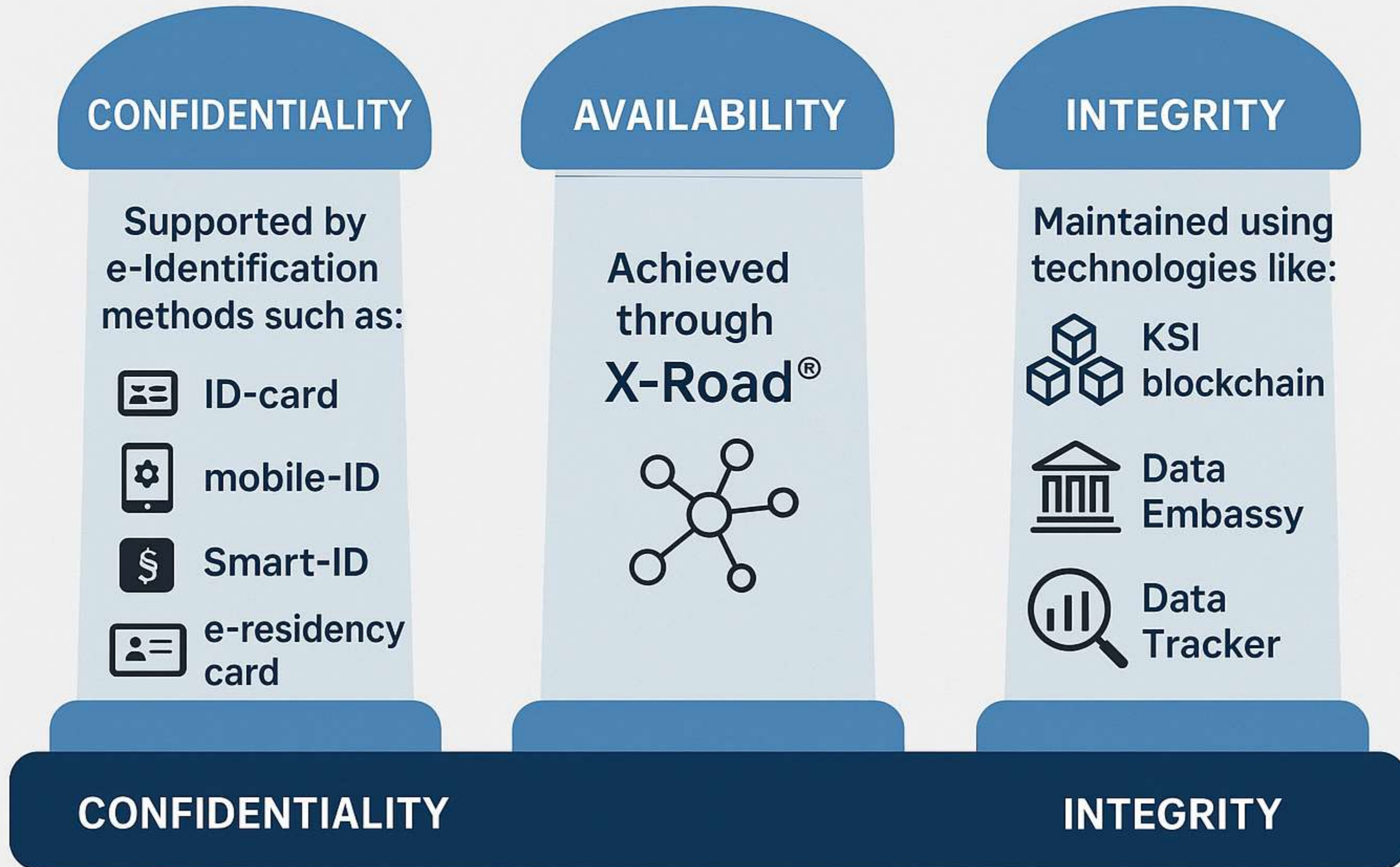- the highest level of education attained

Identity documents

- passport
- citizen's ID-card
- residence permit card
- diplomatic passport
- e-residency
- seafarer's discharge book
- certificate of record of service on ships
- alien's passport
- temporary travel document
- travel document for a refugee
- driving licence

PIC : Personal Identification Code

Population register information sources

county town local authority
- address, contact detail
- vital statstics events
- data from foreign vital statistics document
- testimony-based data
- PIC

Foreign Ministry, representation
- address, contact detail
- diplomatic passport
- data from foreign vital statistics document
- PIC

local authority
- address, contact detail
- birth
- testimony-based data
- PIC

foreign state
- address
- foreign PIC
- vital statstics events

Tax Board
- contact detail

cleric
- marriage

health care provider
- death
- medical birth certificate

POPULATION REGISTER

Police Board
- ID document
- residence permit
- citizenship
- e-residency
- contact detail
- testimony-based data

Road Administration
- driving licence
- contact detail

Social Insurance Board, Defence Forces, Health Insurance Fund, Ministry of Education, Ministry of Justice, State Shared Service Centre, universities dormitories
- place of stay

notary
- marriage, divorce
- data from foreign vital statistics document
- contact detail
- testimony-based data
- PIC

court of law
- judgements: divorce, right of custody, legal capacity, paternity etc

Three Pillars of the Estonian Population Register

CONFIDENTIALITY

Supported by e-Identification methods such as:

- ID-card
- mobile-ID
- Smart-ID
- e-residency card

AVAILABILITY

Achieved through

X-Road®

INTEGRITY

Maintained using technologies like:

- KSI blockchain
- Data Embassy
- Data Tracker

CONFIDENTIALITY

INTEGRITY

Why Estonia's Registry is Innovative?
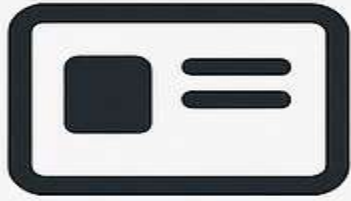
ID-Card
An electronic identity document used for secure authentication

Mobile-ID
A digital identity solution using a SIM card in a mobile phone

Smart-ID
A secure app-based digital authentication service

e-Residency Card
A digital identity card for e-residents f Estonia
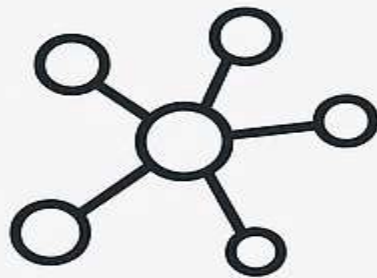
X-Road
A data exchange platform enabling secure interoperability
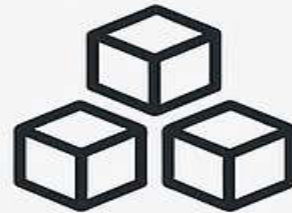
KSI Blockchain
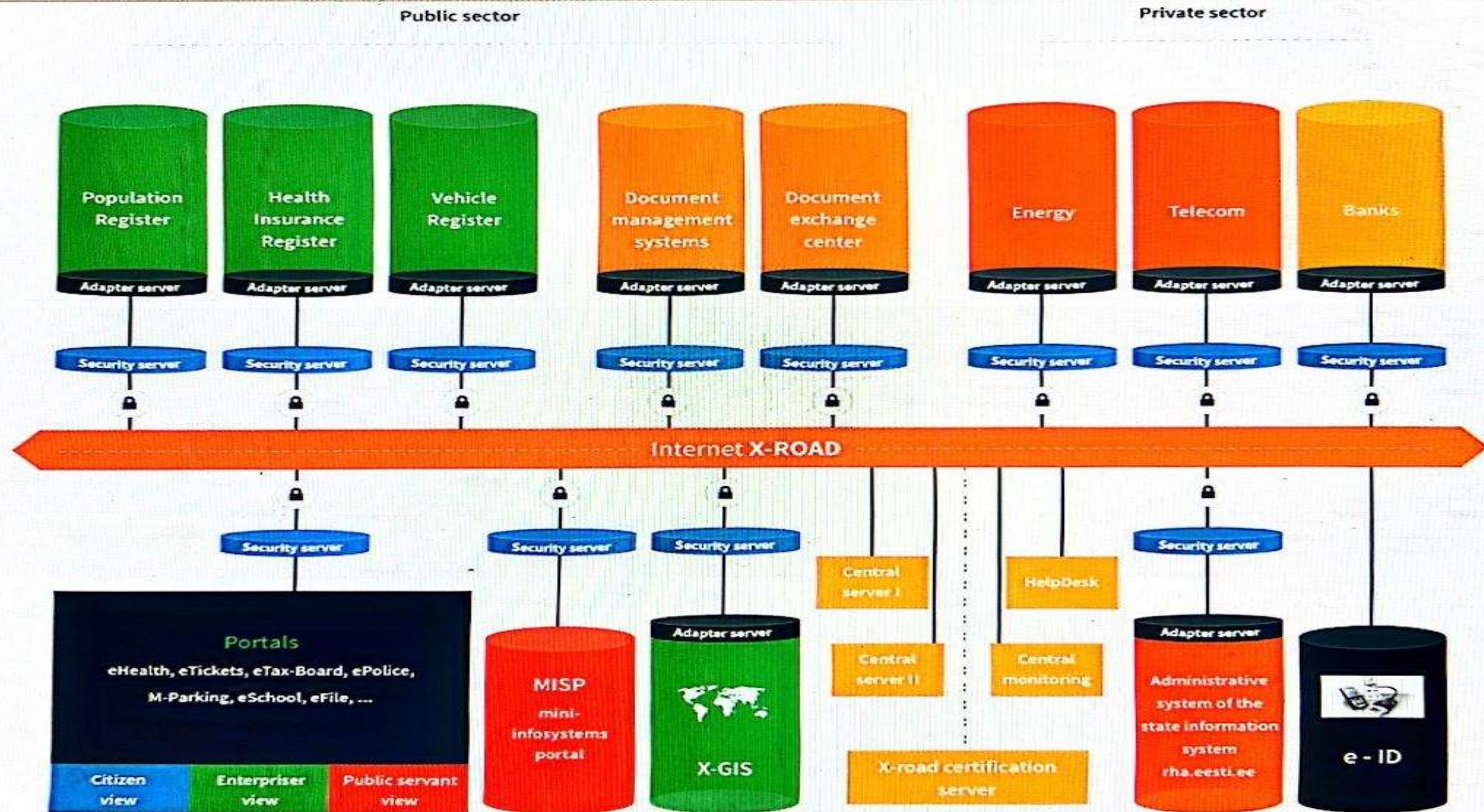A tamper-evident technology for ensuring data integrity

Data Embassy
An overseas backup of critical data under Estonian jurisdiction

Data Tracker
A system for monitoring and analyzing access to data

Figure 6.1 Population Register (along with many other Registries) Supplies Vital Information to All Public E-services via X-Road

Users: Data from the population register is accessed by various entities:
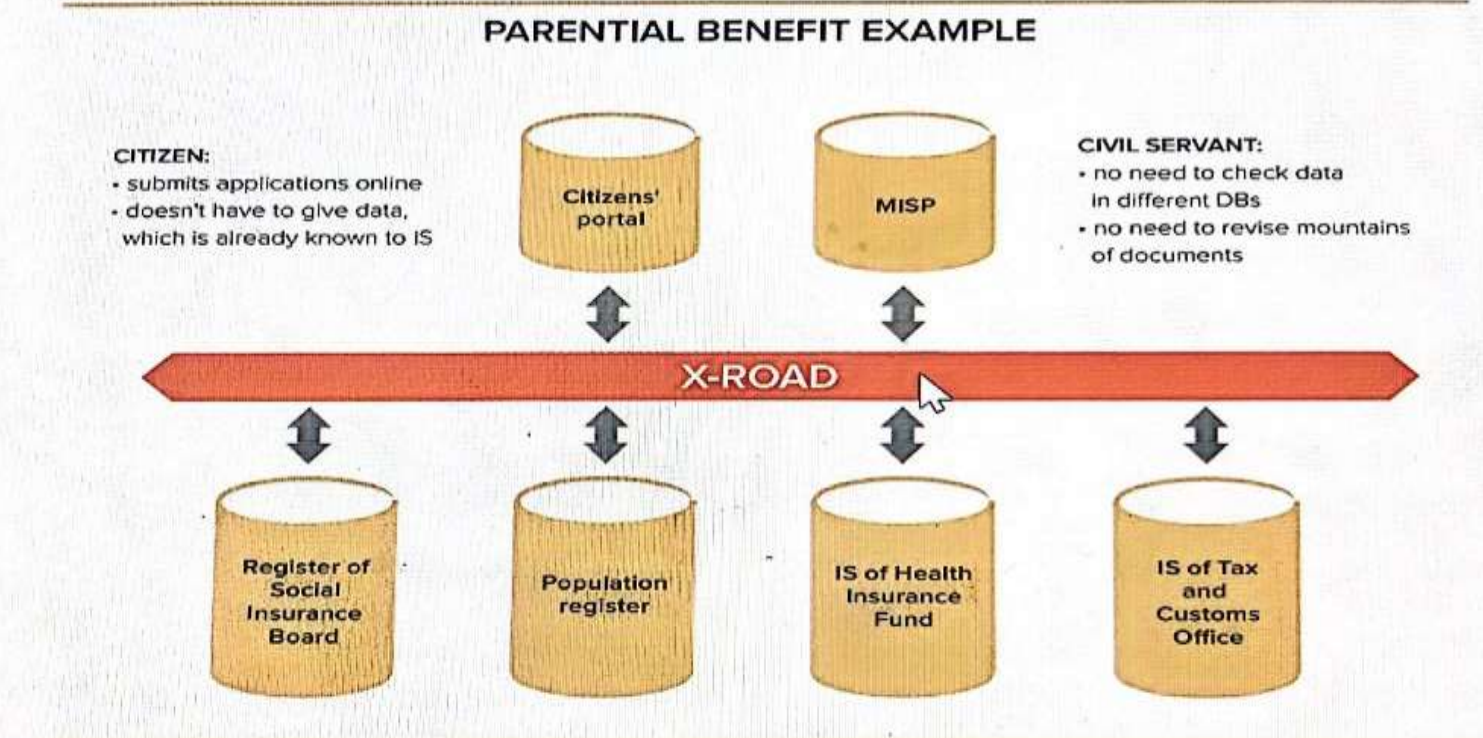- **Public sector**
- **Private sector**
- **People by themselves**

What Makes Population Registry Special ?

1. *Central Data Hub:*
- **Single source of truth** for citizen information
- **Real-time updates** across all government systems
- **Birth to death lifecycle** management
- Integration with healthcare, education, taxation, voting
- **Automatic service eligibility** based on life events

Figure 6.3 — Parental Benefit Application System

PARENTAL BENEFIT EXAMPLE

CITIZEN:
- submits applications online
- doesn't have to give data, which is already known to IS

CIVIL SERVANT:
- no need to check data in different DBs
- no need to revise mountains of documents

Citizens' portal — MISP

X-ROAD

Register of Social Insurance Board — Population register — IS of Health Insurance Fund — IS of Tax and Customs Office

2. Quantifiable Impact - Time Savings

Massive Efficiency Gains:
- 1407 working years every year saved through X-Road
- annual savings of about 2% of GDP
- **3 minutes average** to complete government transactions
- **Zero waiting time** for most services
- 85% of birth registrations and 56% of marriage applications now completed digitally

How it actually Helps Citizens ?
A look at World Bank's Case Study:

Category	Key Points
System Overview	- Integrated digital identity & service system - Backbone of public administration & e-services
Legal Identity	- ID starts at birth, linked to mother - Ensures inclusion of women and children
Population Register (PR)	- Includes citizens, residents, foreigners with permits - Mandatory, continuous, and updated nationally
High Compliance	- 99% birth registrations in first month - Mandatory death registration (domestic & abroad)
X-Road Interconnection	- PR linked with other databases via X-Road - Eliminates duplication; supports seamless data reuse
Healthcare Integration	- 100% digital health records - 99% prescriptions electronic - Automatic health insurance at birth
Public Service Delivery	- PR enables voting, license, benefit verifications - 75+ million service queries (2014)
Operational Efficiency	- Cost: ~€1 million/year (<$1/person) - Low-cost, high-impact digital infrastructure
Data Security & Privacy	- Strong legal protection of personal data - Users can track data access - Encryption, timestamps, multi-authentication
Unique Personal ID (PIC)	- Assigned at birth, used across all services - Core to registry integration
eID Card & e-Residency	- Mandatory eID card for 15+ age - Dual-use: physical ID + digital signature - e-Residency for global digital access
Success Factors	- Gradual evolution over 15 years - Solid legal foundations - Public-private partnerships for tech
Interoperability Approach	- No central database - Data accessed where it is stored - Efficient, secure, and scalable
Adaptability	- Emphasis on transparent, defined processes - Legal flexibility for tech evolution & cyber risks
Citizen-Centric Design	- Service-oriented, empowering citizens - Real-time data access & control for users

🌍 Global Application of Population Registers

Countries with Similar Integrated Systems (Like Estonia)

Country	Key Features	Similarities to Estonia	Differences from Estonia
Finland	Population Information System since 1969	Unique ID, e-services integration, digital governance	More centralized model, slower eID adoption
Sweden	Civil Registry (Folkbokföring)	Personal ID used for health, tax, education; integration across systems	Population register operated by tax authority
Denmark	Central Person Register (CPR)	Personal ID, linked to digital health, banking, taxation	Earlier paper-based evolution; less emphasis on blockchain
Iceland	National Registry with unique ID	Strong public e-services, real-time updates	Smaller scale, slower tech evolution than Estonia
Singapore	National Registration Identity Card (NRIC) system	Strong e-Gov services and unique identifier use	More centralized governance, less citizen data visibility

Countries with Partially Integrated or Fragmented Systems

Country	Key Features	Differences from Estonia
Germany	Separate databases for each service (e.g., health, tax)	No central population register; data decentralization for privacy
USA	No population register; systems use Social Security Numbers (SSN)	Fragmented ID systems; privacy concerns prevent centralization
India	Aadhaar biometric ID system	Centralized biometric system, but not legally a population register; privacy concerns have been raised
UK	No formal population register; uses NHS numbers, National Insurance, etc.	Strong individual databases but no unifying registry
France	INSEE manages population statistics, not an active register	Census-based data; less real-time service linkage

✅ Why Estonia Stands Out Globally?

1. **Holistic integration** (identity, services, and technology)
2. **High citizen trust** due to data transparency
3. **Lightweight infrastructure** with maximum efficiency
4. **Scalable model** suitable for both small and mid-sized nations

Challenges

1. **Digitization of vital records**
2. **Data quality**
3. **Constant change**
4. **Ensuring Data Protection and Privacy:**(e.g., 2007 cyberattack)
5. **Adaptability to New Technologies and Risks:**

Population Registry Systems: Estonia vs. Nepal - Comparative Analysis

Aspect	Estonia	Nepal
System Type	Fully digital, centralized population registry	Traditional paper-based, transitioning to digital CRVS
Legal Framework	Population Register Act, X-Road integration	Birth, Deaths, and Other Personal Events Act (1976)
Technology Level	100% digital with real-time updates, API integration	Partial digitization, manual processes dominant
Coverage	Near 100% universal coverage	Aiming for 99% birth registration by 2024
Access Method	24/7 online portal, mobile apps, ID-card authentication	Physical presence at municipal offices required
Data Integration	Fully integrated with all government systems	Limited integration, fragmented data systems
Service Delivery	Instant online certificates, self-service portal	Paper-based certificates, manual processing
Administration	Centralized (Ministry of Interior)	Decentralized (municipal level)
Investment	Self-sustaining, established digital infrastructure	$150M World Bank project, donor-dependent
Main Challenges	System security, technology updates	Geographic barriers, limited infrastructure, capacity gaps
Key Strengths	Advanced digital governance, citizen-centric services	International support, federal restructuring efforts
Future Focus	AI integration, EU interoperability	Universal coverage, complete digitization

Recommendation for Nepal

1. Immediate Priorities (0–12 Months)
Legal & Regulatory Update: Harmonize laws, enable e-signatures, protect privacy.
Universal Birth Registration: Mobile units, incentives, outreach in remote areas.
Standardization: Uniform processes across all 753 municipalities; staff training.
2. Medium-Term Goals (1–3 Years)
Digital Infrastructure: Internet in all offices, cloud systems, secured databases.
Capacity Building: Officer training, certifications, university partnerships.
System Integration: Link CRVS with health, education, social protection systems.
3. Long-Term Vision (3–7 Years)
Digital Services: Online portals, mobile apps, real-time updates.
Smart Service Delivery: e-Certificates, proactive services, analytics.
International Alignment: Cross-border standards, SDG data, regional networks.
4. Technology & Innovation
Adopt Smart Tech: Open-source, blockchain, biometrics, AI.
Cybersecurity: Encryption, backups, breach response plans.
Inclusion: Multilingual, offline-ready, disability-friendly systems.

5. Financing & Sustainability
Funding: Gov. budgets, donors, PPPs, paid value-added services.
Cost-Efficiency: Phased rollout, shared infra, low-cost tech adoption.
6. Governance & Coordination
Policy Alignment: Inter-ministerial committees, clear roles, monitoring.
Local Capacity: Regional hubs, peer learning, performance incentives.
7. Special Focus Areas
Marginalized Populations: Simplified procedures, mobile services.
Disaster Preparedness: Mobile units, cloud backups.
Migration Management: Overseas and internal registration protocols.
8. Timeline Summary
Year 1: Laws updated, 99% birth registration, basic infra.
Years 2–3: System integration, partial e-services.
Years 4–5: Advanced e-services, mobile apps, analytics.
Years 6–7: Full integration, AI services, global linkages.

THANK YOU

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https://www.youtube.com/watch?v=VLnQYggqYBE&t=10s