Training

e-Governance Academy

Research

Consultancy

Mari Pedak

1990 - Deputy Governor, Harju County Government

1993 - Head of Municipal Property Board, Tallinn City
Government; Member of City Council

1996 - Head of Department of Local Government and Regional
Development, Deputy Secretary General for
Eurointegration, Ministry of Interior

2000 - Director General, Citizenship and Migration Board

2008 - Director, IT and Development Centre, MoI

2012 –Senior Consultant, e-Governance Academy

National ID-card and mID
Electronic Identification and Digital Signing

Mari Pedak
E-Governance Academy
Estonia
September 15, 2015

Some eID Facts about Estonia

- eID is a part of national identity document
- Population ca. 1.3 M
- Valid eID tokens ca 1.2 M
  – eID since 2002
  – mID since 2007
- Online authentications: 350 M
- Digital signatures given: 220 M
  – today approximately 5,6 M per month
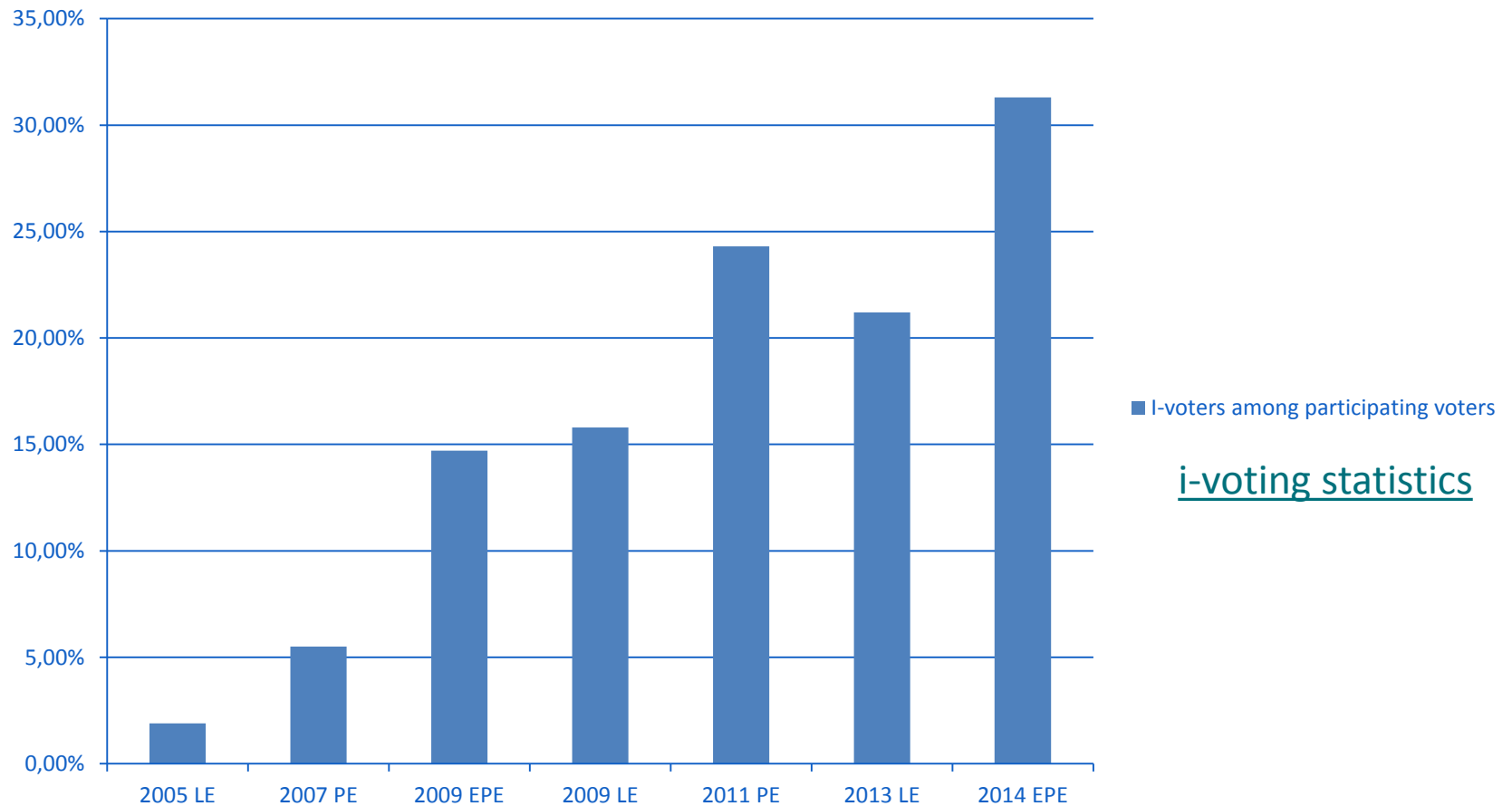- E-residence since Dec, 2014

On 24.05.2015 08:01
Digital signatures **218 693 581**
Active cards: **1 245 383**
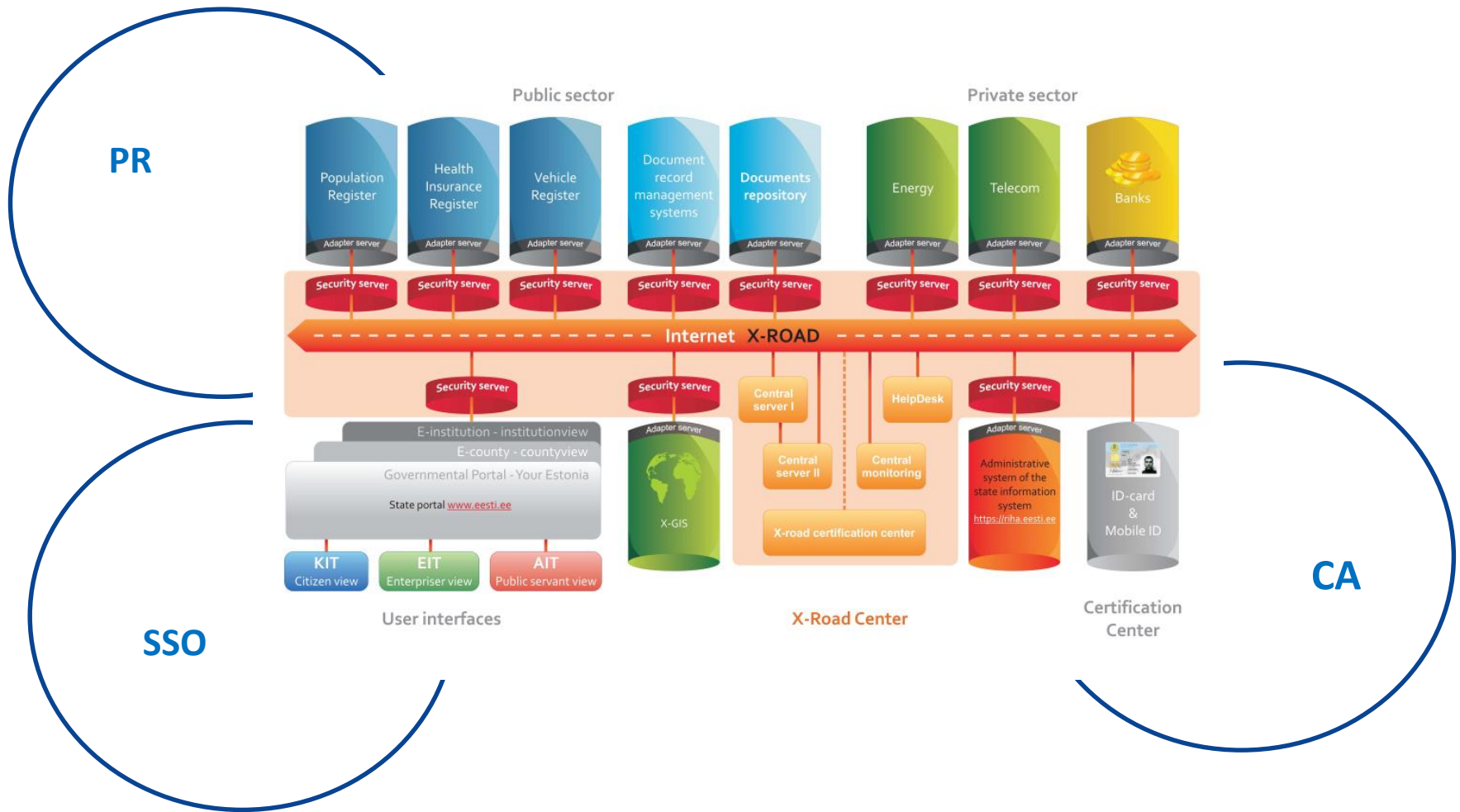Electronic authentications: **349 902 919**

i-Voting Development

I-voters among participating voters

i-voting statistics

E-residence

- Digital Identity Card
  as of October 01, 2010
- E-Residence Card
  as of December 01, 2014
- With first 6 month:

EESTI VABARIIK   DIGITAALNE ISIKUTUNNISTUS
REPUBLIC OF ESTONIA   DIGITAL IDENTITY CARD

MÄNNIK
MARI-LIIS

KEHTIV KUNI / DATE OF EXPIRY   01.01.2011
DOKUMENDI NUMBER / DOCUMENT NUMBER   N1234567
ISIKUKOOD / PERSONAL CODE   47309220555

AINULT ELEKTROONILISEKS KASUTAMISEKS
ELECTRONIC USE ONLY

- 1,700 applications from 74 different countries
- 1,500 cards issued
- 18,000 potential e-residents signed up to newsletter
- From May 13, 2015 everybody can apply online and get the e-residence card in Estonian representations in 34 countries around the world
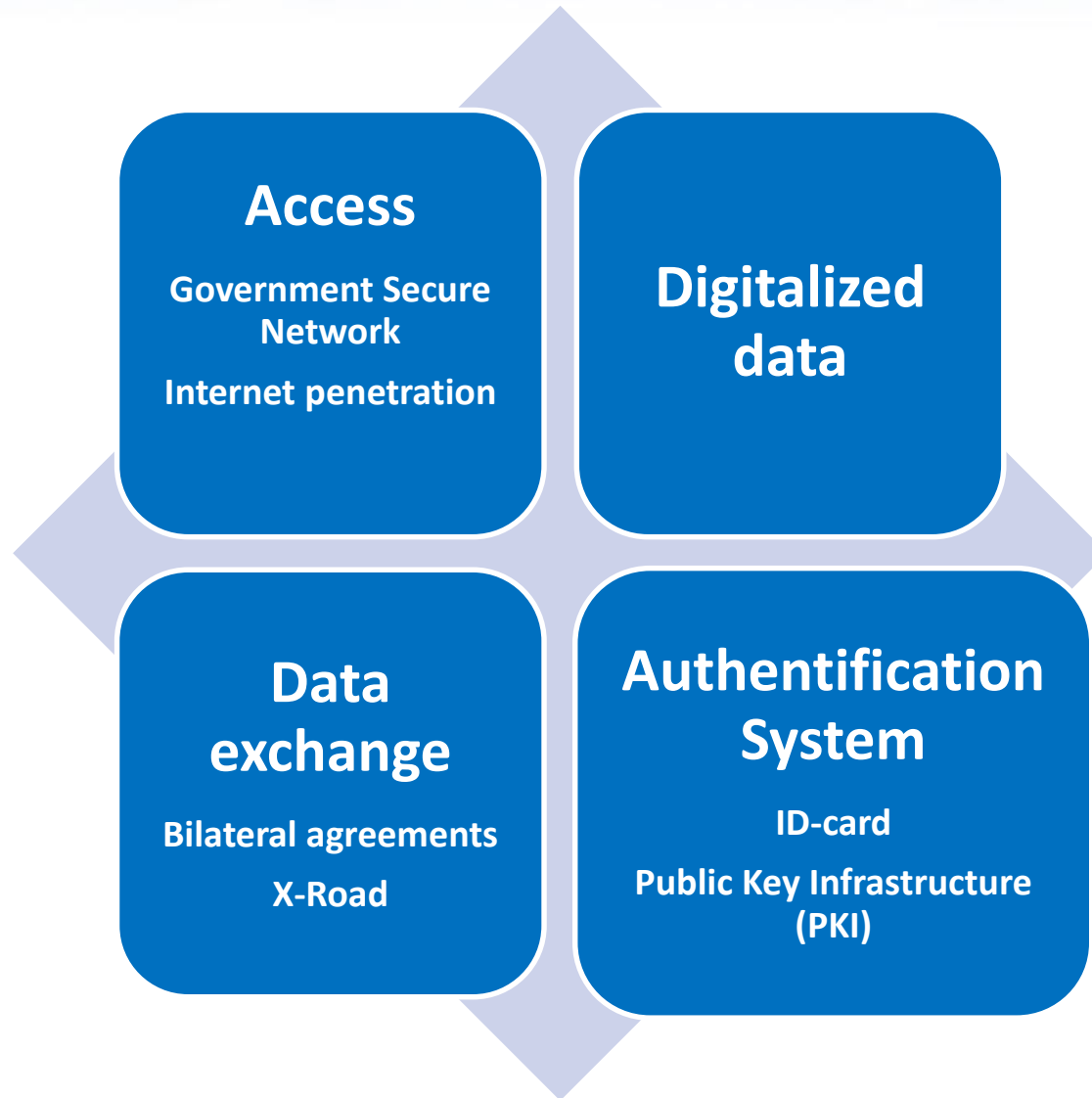
Identification as a Cornerstone of Interoperability

PR

SSO

CA

ISA

Public sector

Population Register
Health Insurance Register
Vehicle Register
Document record management systems
Documents repository

Private sector

Energy
Telecom
Banks

Adapter server

Security server

Internet **X-ROAD**

E-institution - institutionview
E-county - countyview
Governmental Portal - Your Estonia
State portal www.eesti.ee

KIT Citizen view
EIT Enterpriser view
AIT Public servant view

User interfaces

X-GIS

Central server I
Central server II
HelpDesk
Central monitoring
X-road certification center

X-Road Center

Administrative system of the state information system
https://riha.eesti.ee

ID-card & Mobile ID

Certification Center

Authentification to e-Government

➢One-stop-shop – **the key to the digital world**

➢3 user categories:

  ➢for a citizen

  ➢for an entrepreneur

  ➢for an official

➢**Personal „Office"**
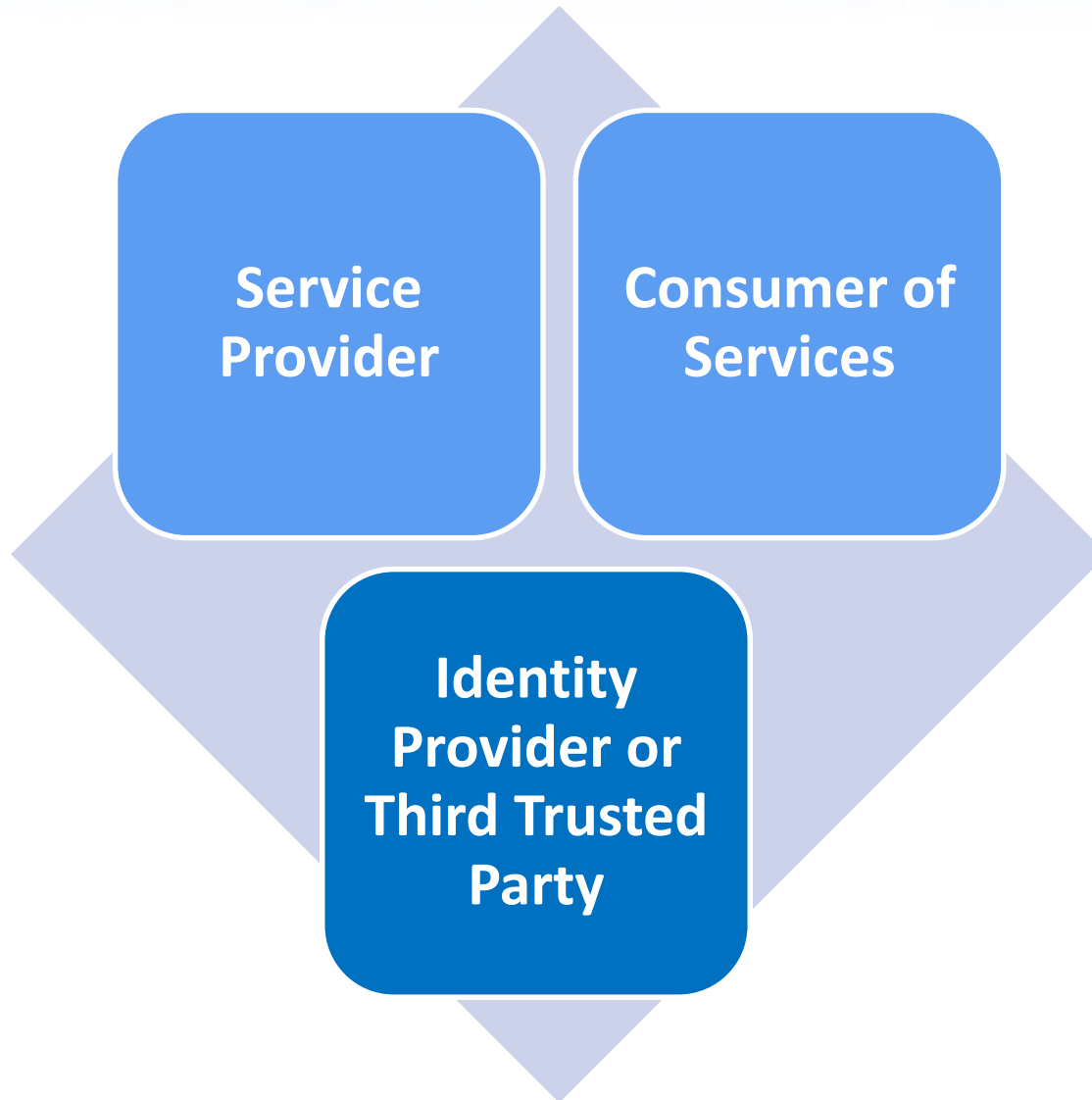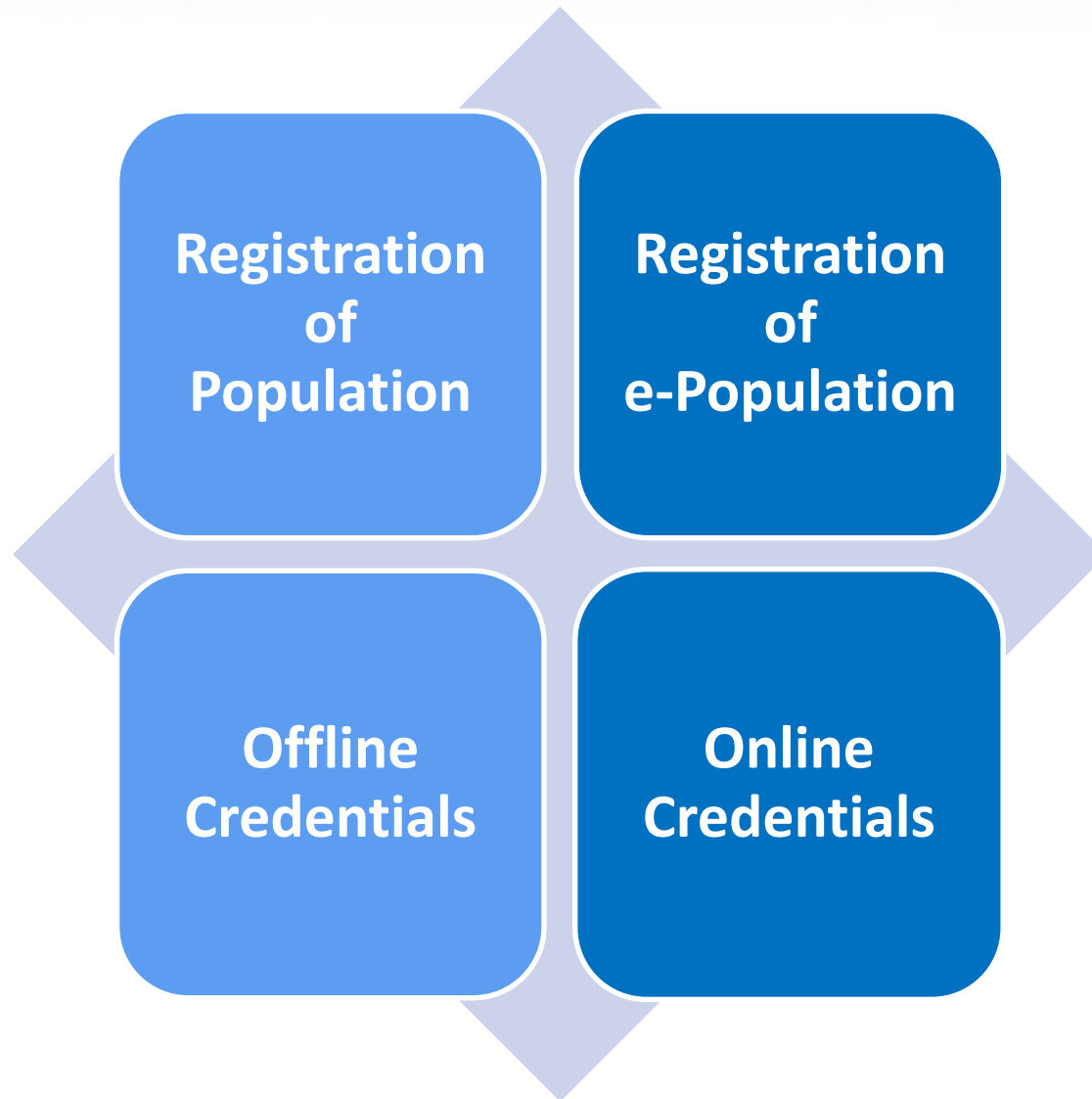
4 Pillars of e-Government Infrastructure

Access

Government Secure Network

Internet penetration

Digitalized data

Data exchange

Bilateral agreements

X-Road

Authentification System

ID-card

Public Key Infrastructure (PKI)

e-Governance Academy

Trust Building

Service Provider

Consumer of Services

Identity Provider or Third Trusted Party

Identity Management Offline and Online

Registration of Population

Registration of e-Population

Offline Credentials

Online Credentials

e-Governance Academy

eID Development

1992	Personal Identification Code (PIC), Population register
1996	Internet bank authentication (1st eID)
2002	ID card, certificates, PKI (2nd eID)
2007	mobile ID (3rd eID)
2010	DigiID (1st "pure" digital identity document)
2011	mobile ID (2nd "pure" digital identity document)
2014	E-residence card

How did we get there?

It is not only important, that the back-office is supported.
It is important that people are supported

Tiger Leap Foundation
to support ICT in schools

Come Along, computer usage
courses for 100 000 citizens

1997   **2002**   **2009**
2010
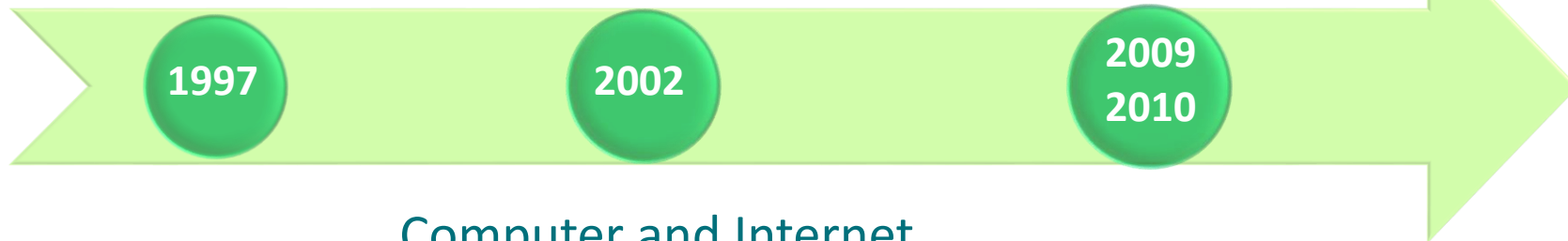
Computer and Internet
usage courses for 100 000 citizens –
look@world project

Estonian National Identitity Framework

- The identity system is established around the persistent life-long ID called **Personal Identification Code** (**PIC**), which links all identities together, declaring them as belonging to the same person

  - formation of PIC is based on the Estonian Standard EVS 585:2007 „Personal Code. Structure" and the Population Register Act

  - all certificates of widely accepted electronic identities (ID card, digiID and Mobile ID) contain PIC

- The identity management policy is closely related to identity documents policy
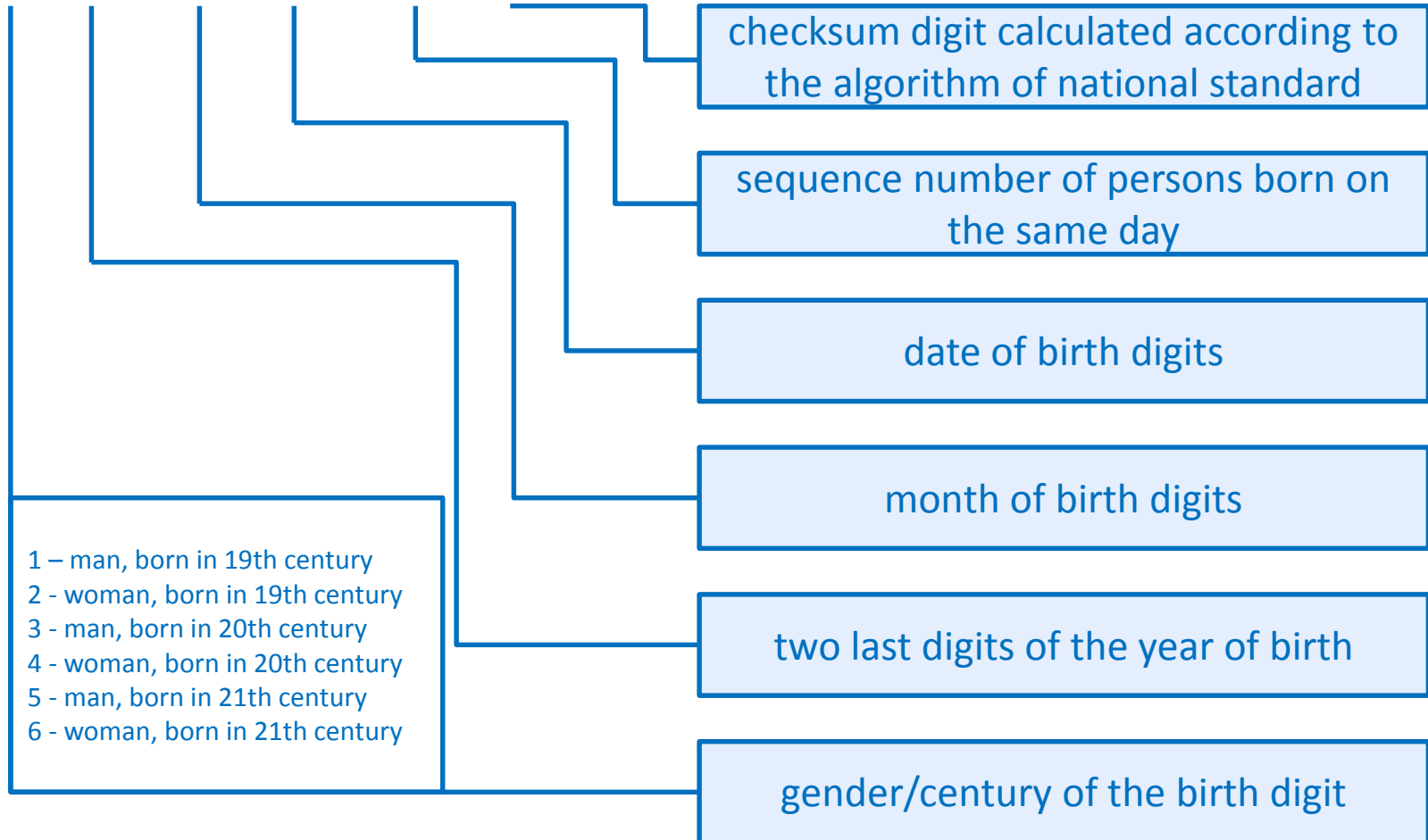
Role of Unique Identifier of Persons
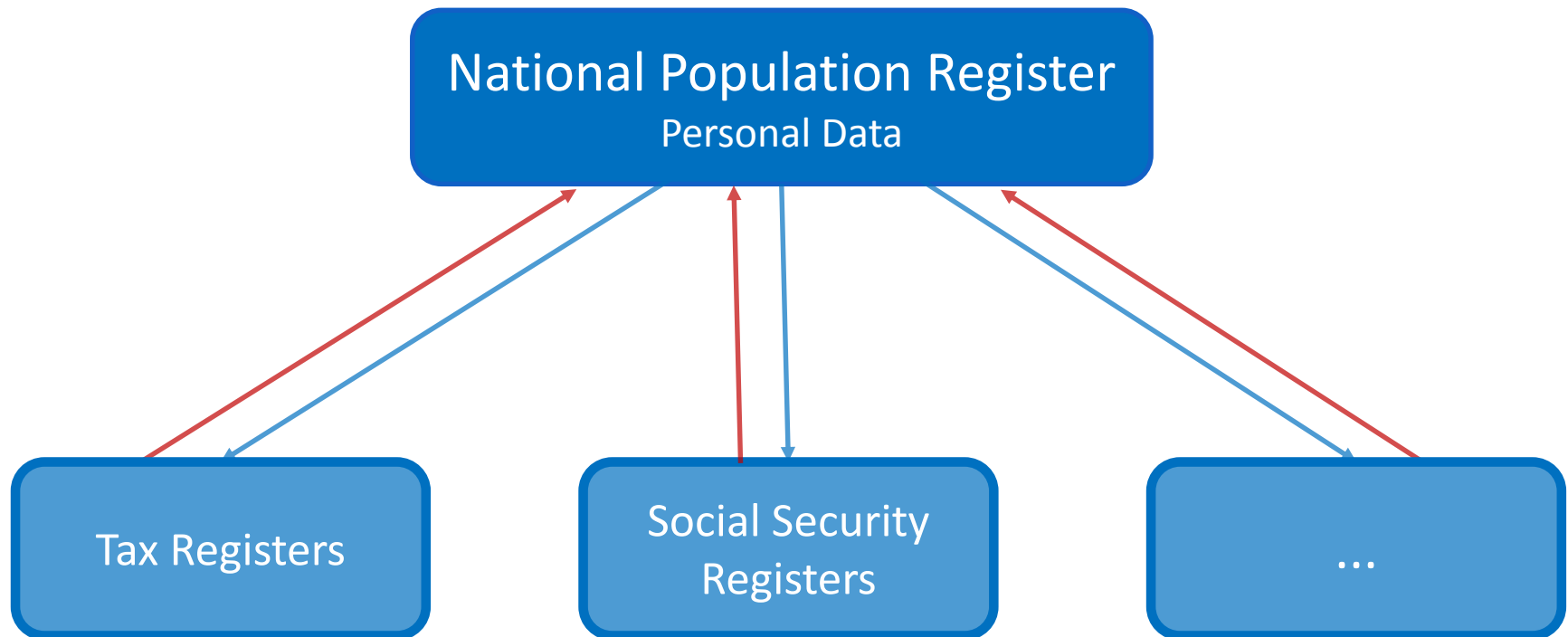
Personal Identification Code

Certificate of Person

Personal Identity Documents

Digital Identity Documents
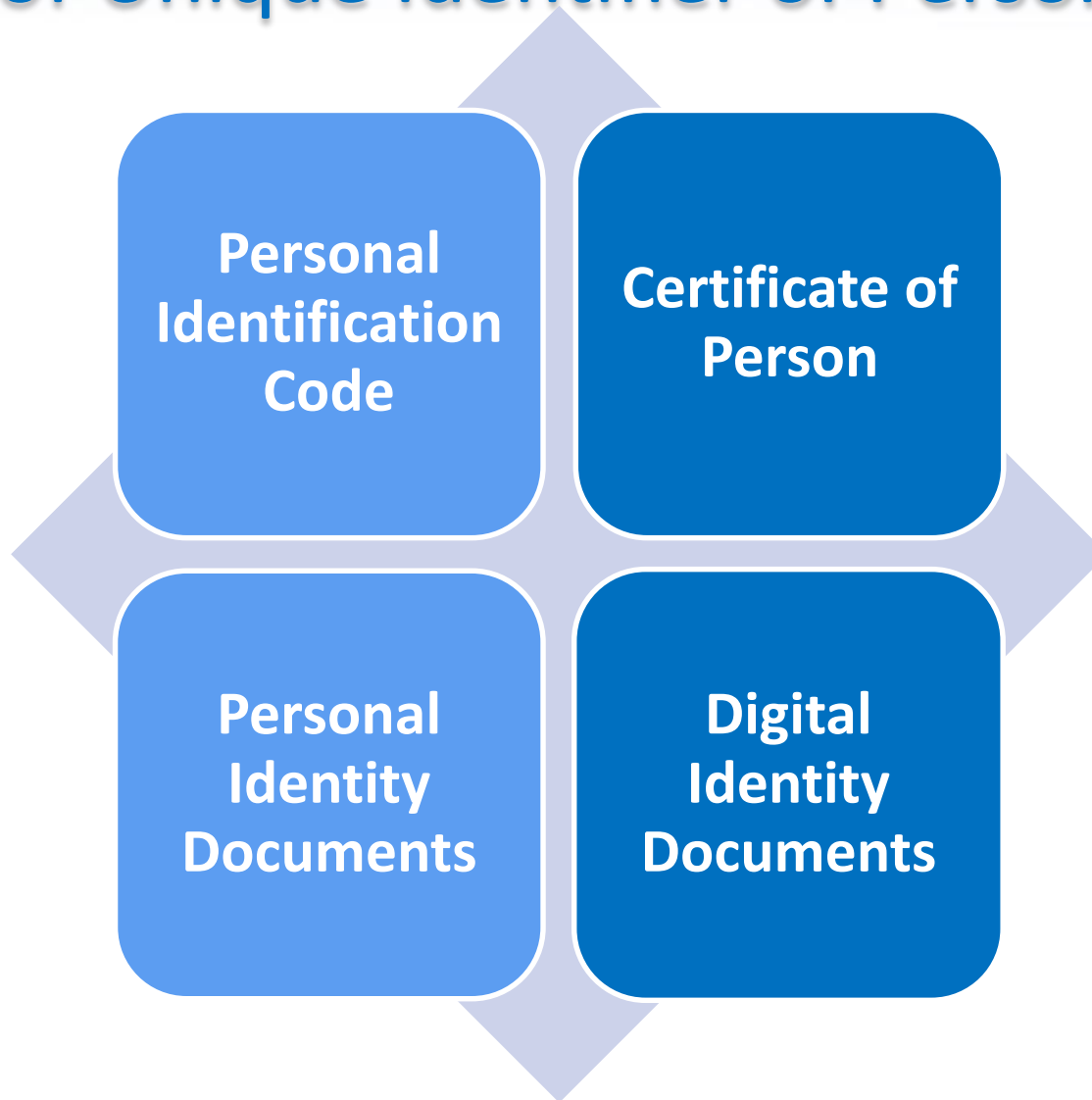
Personal Identification Code

The 11-digit PIC consists of:

X XX XX XX XXX X

checksum digit calculated according to the algorithm of national standard

sequence number of persons born on the same day

date of birth digits

month of birth digits

two last digits of the year of birth

1 – man, born in 19th century
2 - woman, born in 19th century
3 - man, born in 20th century
4 - woman, born in 20th century
5 - man, born in 21th century
6 - woman, born in 21th century

gender/century of the birth digit

Unique number and eID – trends (4)

- The main discussion concering unique number continues to be about use of personal data (basically: date of birth.

- Main discussion concerning eID takes place over the visibility of the unique number (in a certificate for example).

  – To avoid this, mainly a hash function is used to generate a new number linked to unique number but not exposing date of birth.
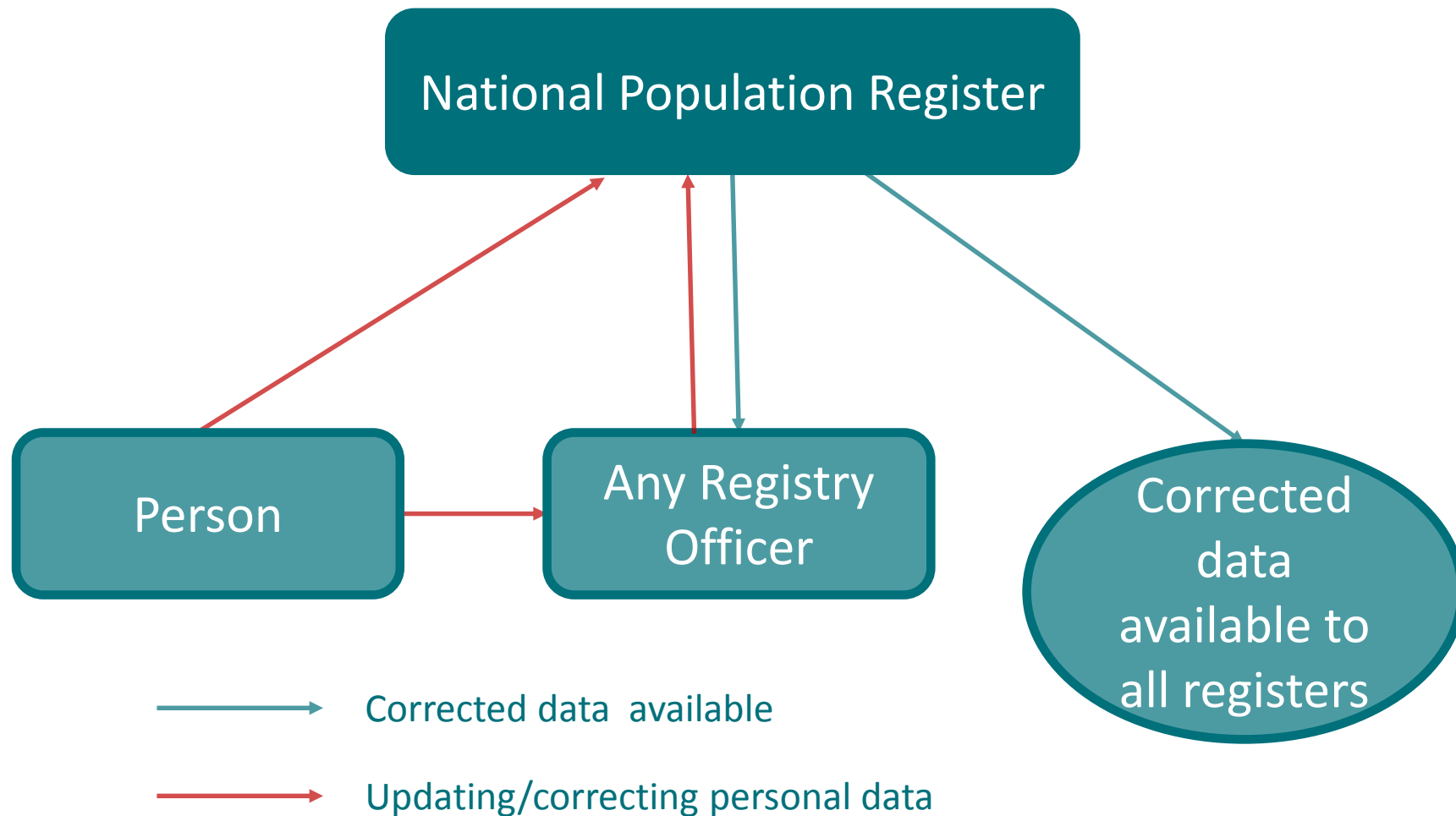
Role of Population Register and Hierarchy of Registers

National Population Register
Personal Data

Tax Registers

Social Security Registers

…

Use of personal data

Provision of personal data

Population Register of Estonia

- provides a main set of personal data to all government authorities and to public and private sector
  - generates personal identification codes
  - is data presentation layer for all users
- registers place of residence
  - issues certificates about place of residence
- provides working environment for proceeding of civil status acts:
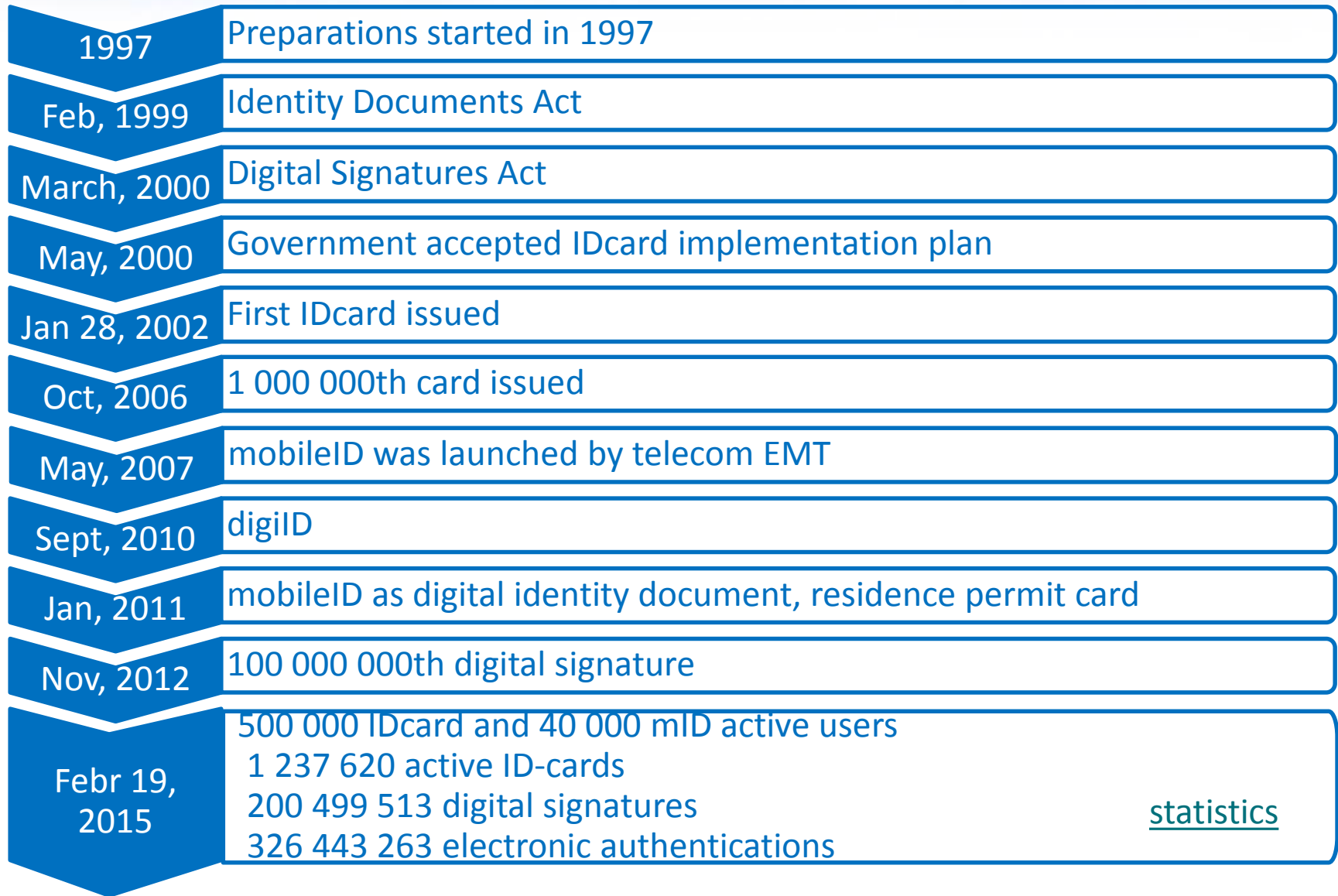 - registers birth etc.

Identity Documents

Identity Document

Physical Document

Digital Document

passport
ID card
residence permit card

ID card
digiID/e-resident' card
residence permit card
mobile ID
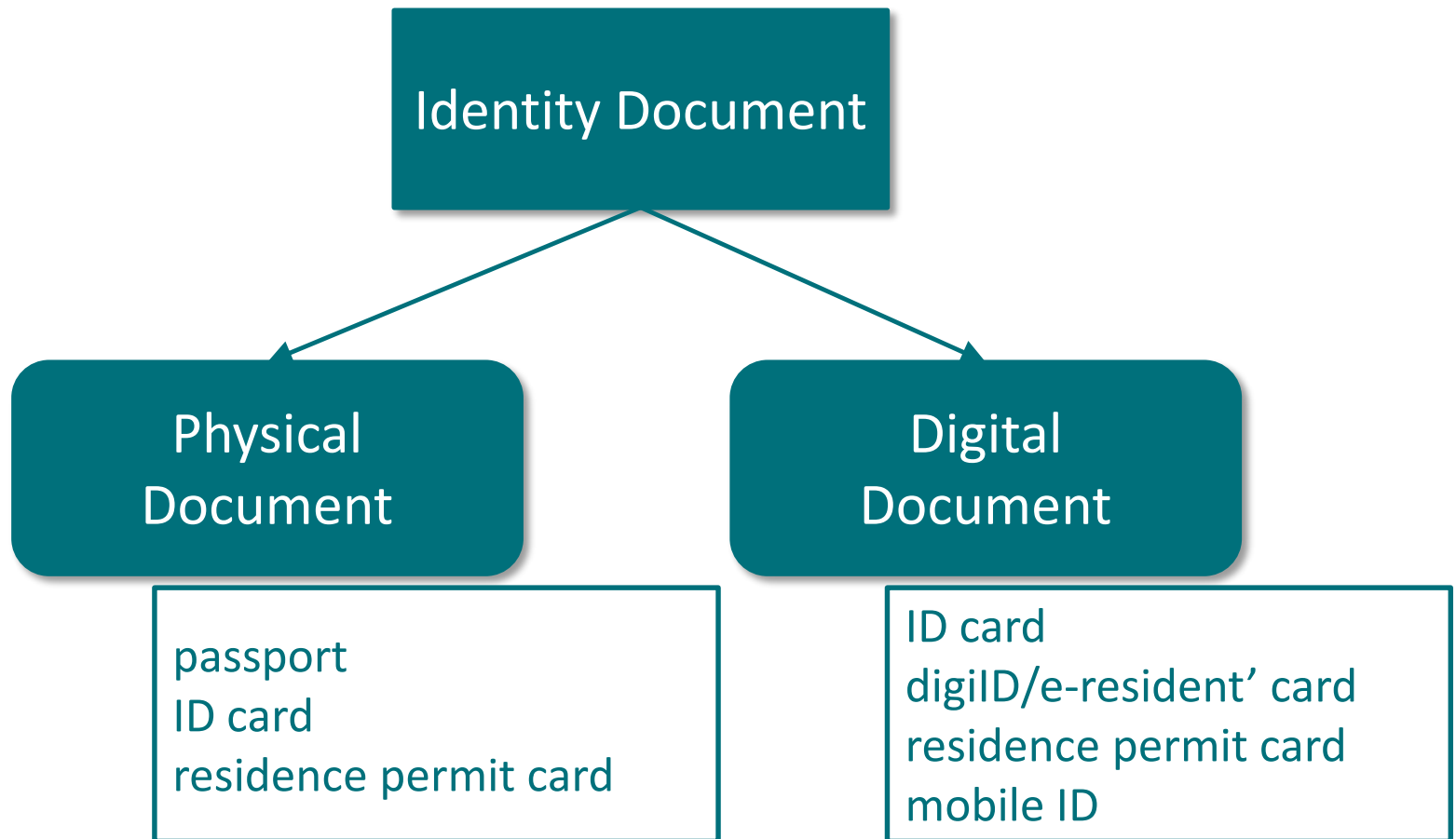
Digital Document

Identity Documents Act §3:

A document which is prescribed for digital identification of a person (hereinafter a digital document) is a document prescribed for identification of a person and verification of identity in an electronic environment.

Entry into force 30.07.2009

Development of Digital Documents

1997	Preparations started in 1997
Feb, 1999	Identity Documents Act
March, 2000	Digital Signatures Act
May, 2000	Government accepted IDcard implementation plan
Jan 28, 2002	First IDcard issued
Oct, 2006	1 000 000th card issued
May, 2007	mobileID was launched by telecom EMT
Sept, 2010	digiID
Jan, 2011	mobileID as digital identity document, residence permit card
Nov, 2012	100 000 000th digital signature
Febr 19, 2015	500 000 IDcard and 40 000 mID active users 1 237 620 active ID-cards 200 499 513 digital signatures statistics 326 443 263 electronic authentications

e-Governance Academy

Estonian Identity Card

State issued max 5 years valid
compulsory ID document from 15 years age

IDcard as a Medium of Digital Identity

visual identification of a person

IDcard as a "key": opens up different data banks

digital identification of a person

personal unified e-mail address

digital signature

IDcard as a travel document
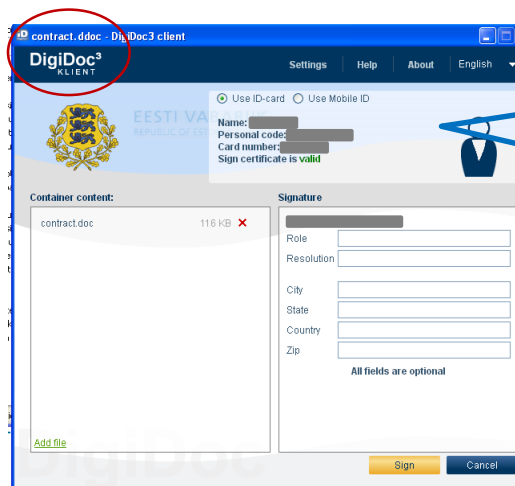
secure messaging: encrypting and decrypting

PIC is Part of a Certificate

PIC	Certificate
Verification infrastructure in physical world	Authentification infrastructure in digital world
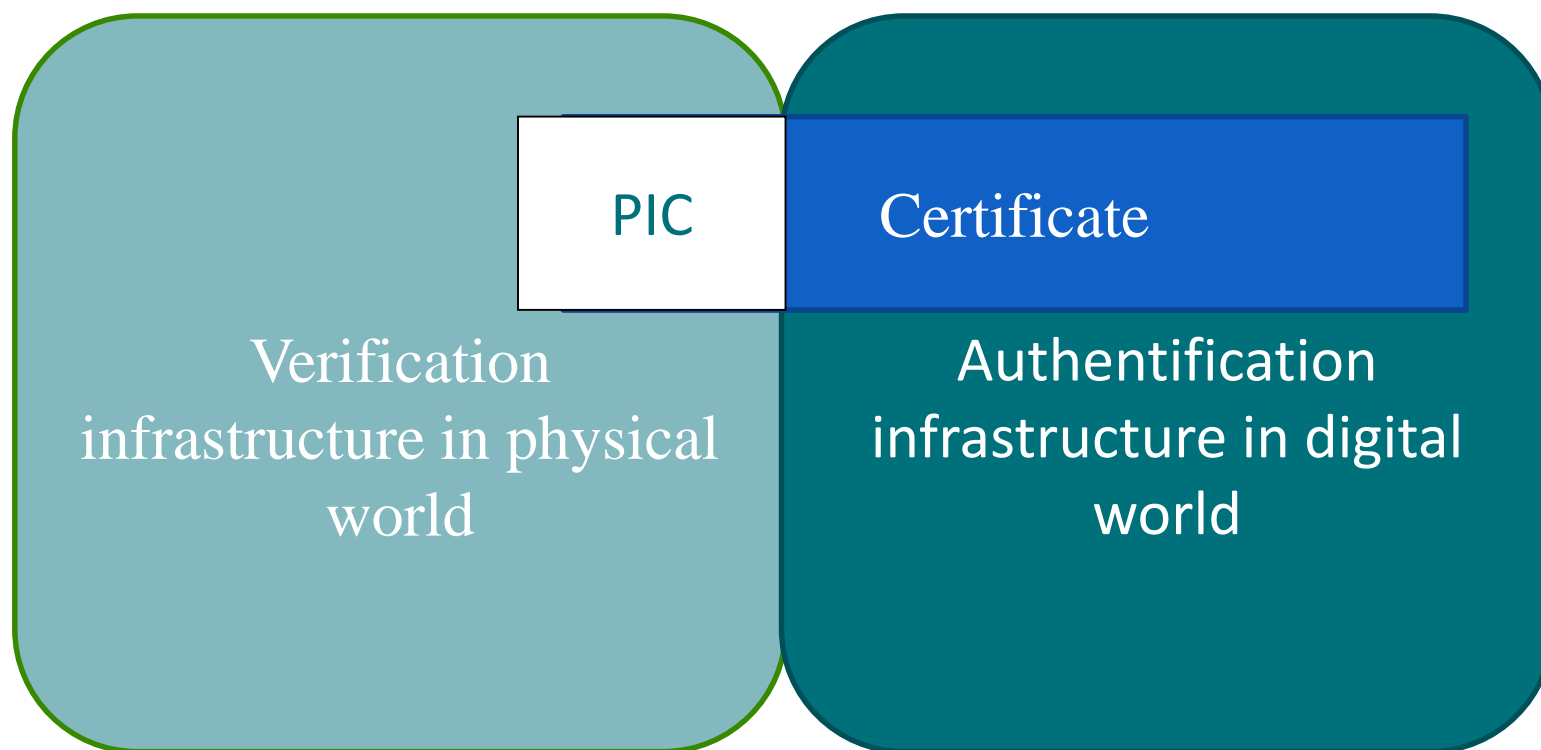
Standalone PIC serves as a crededential for verification in physical world.
Being part of a certificate, PIC enables unambiguous identification of a person in digital world authentification.

Uniform platform - DigiDoc

- Full-scale architecture for digital documents, signatures and encrypting
- Includes **real-time validity confirmation of a certificate** (OCSP)
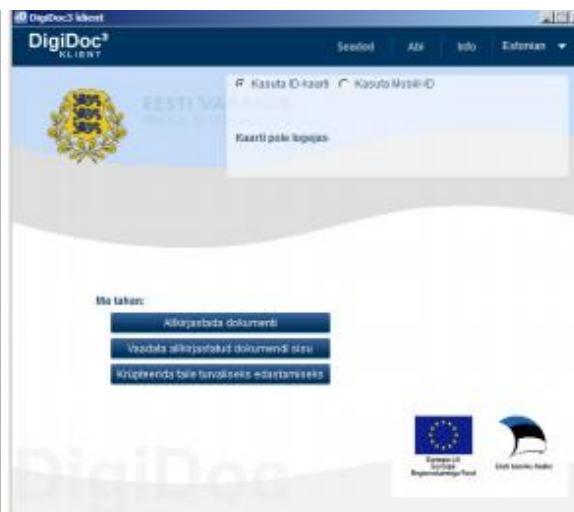
Digital Identity Card as of Oct 01, 2010

digiID - 1st "pure" digital identity Document
personalisation takes place in service offices
visual data is printed by thermoprinter

Mobile ID

- Usable as a digital document for authenticaton and digital signing
- Requires replacement of SIM card with PKI-capable SIM card
- No specific software required

ID card vs Mobile ID

Interneti-pank

Interneti-pank

emt

o PC (with ID card reader)
o ID card reader
o ID card (PIN 1,2)

o PC connected to public Internet
o Mobile phone PKI-capable SIM card
o mobile ID (PIN 1,2)

e-Governance Academy

EstEID with NFC
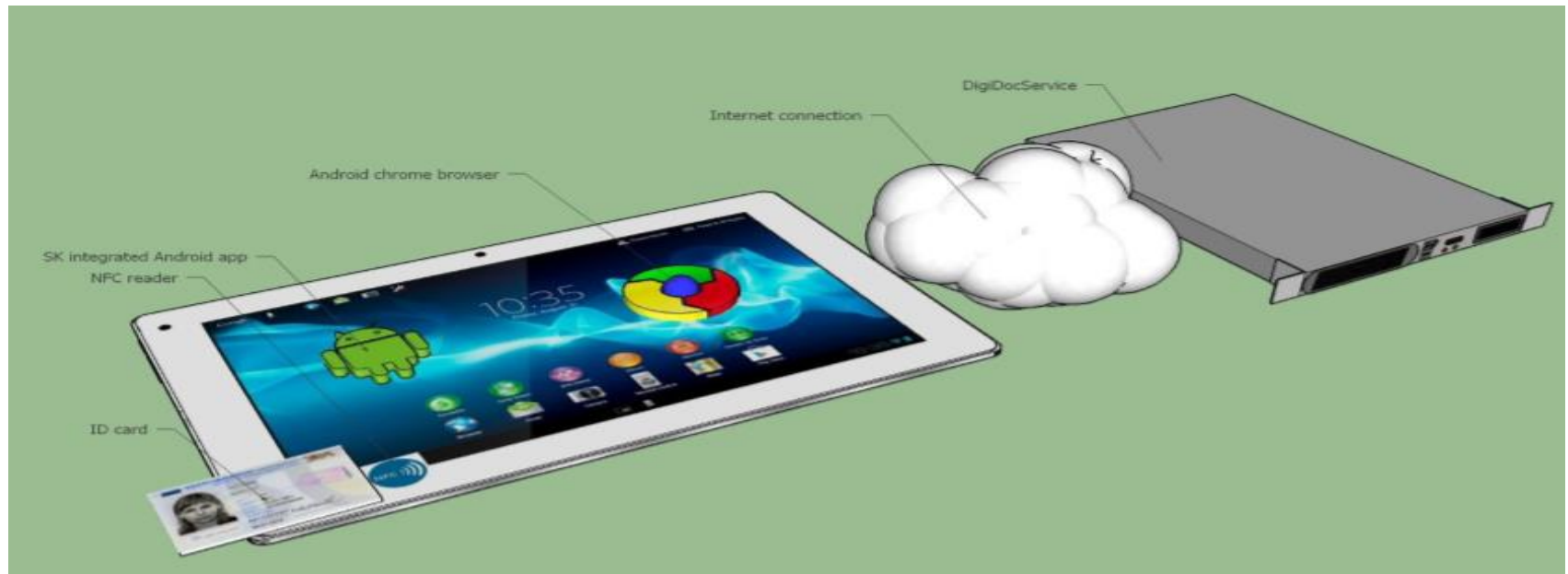
Biometrics

- Currently not on a chip

- Problem: from a distance not known who is using somebody's credentials?

- Since 2017:
  - Facial image (PC, mobile)
  - Fingeprints – Match-on-Card

Digital Signature - Concept

- Legally binding
- Equivalent to what we are doing on paper
- Public sector is obliged to accept digitally signed documents
- Any relation: G2G, G2B, G2C, B2C

www.sk.ee. Digital signature cost-profit calculator

Calculator ⍰

Enter the data

Customer service time spent per customer signing the contract by hand	**30**	min
Average number of pages in the document	**6**	p.
Average number of copies	**2**	pcs
Documents signed by hand in one month	**300**	pcs
Documents sent by mail in percentage	**30**	%

[Calculate]

Signing digitally You can save

Per month	1108.68 EUR
	Per year
13304.16 EUR	In 2 years
26608.32 EUR	In 3 years
39912.48 EUR	In 4 years
53216.64 EUR	In 5 years
66520.8 EUR	

Monthly savings

Costs on workforce	Printing costs	Mailing costs
● 819 €	● 270 €	● 49.68 €
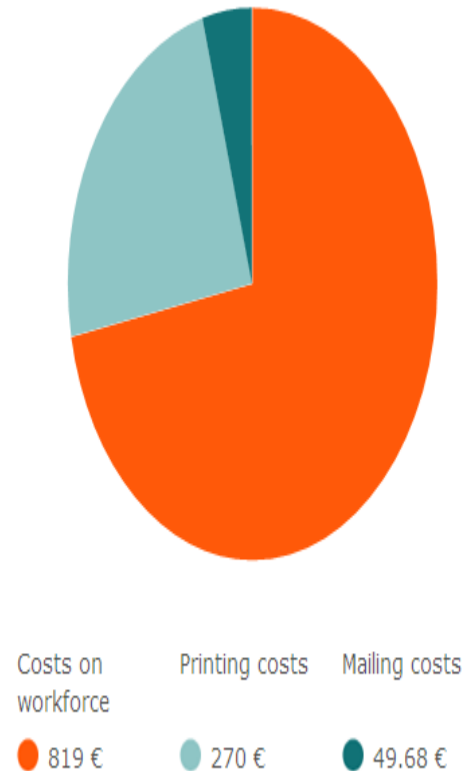
Using digital signing You can save

€1109	€13305	€26609	€39913	€53217	€66521
1 month	1 year	2 years	3 years	4 years	5 years

e-Governance Academy
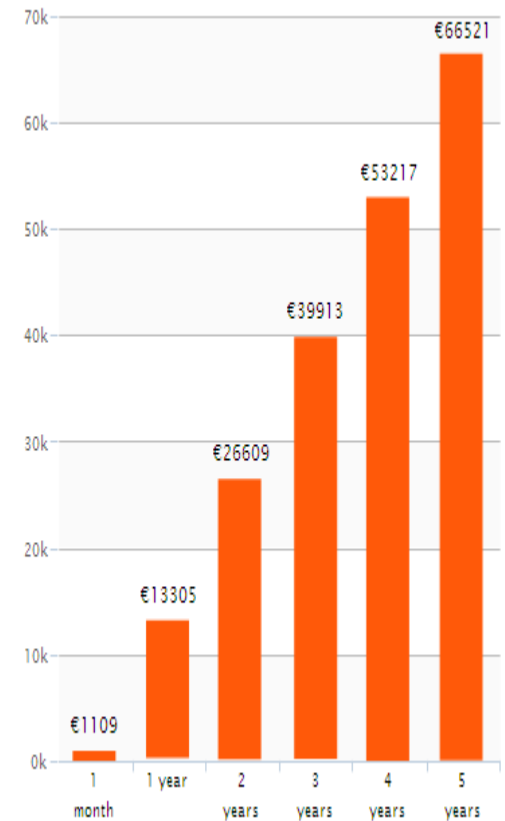
Statistics and Cost-profit Calculators

2010: 19,2 million digital signatures

33,7 million digital autenthifications

2011: 25,9 million digital signatures

42,1 million digital autenthifications

2012: 31,9 million digital signatures

49,9 million digital autenthifications

In 2012 100 million digital signatures:
People and companies have saved
more than **82 000 000** €

SK

Online vs Offline

Service	Time spent on E-service	Time spent on offline service	Time saving (min)
Establishing a company	30	510	480
VAT declaration	7	68	61
Social tax declaration	10	78	68
E-voting	6	44	38
Parliamentary legislation system	7	26	19
Unemployment Fund self-service	13	37	24

Any benefits from eID and digital signature?

5 working days saved by every citizen who is using eID

It is 2% of working time

It is 2% of GDP

(2% of GDP goes for defense)

Lessons Learned

Best practices

- Simple solution
- Compulsory ID card
- Low state fee
- Public-private partnership
- Interoperable ICT architecture
- Usable in any relation: G2G, G2B, G2C, B2C, B2B, C2C

		2002
ID-card	Under 15 years of age	4,5 €
	From 15 years of age	9,6 €
	Retired person	1,6 €
	Accelerated procedure	x
Passport	Under 15 years of age	9,6 €
	From 15 years of age	22,37 €
	Retired person	4,79 €
	Accelerated procedure	31,96 €
ID+P	Under 15 years of age	
	From 15 years of age	28,76 €
	Retired person	6,39 €

Public-Private Partnership in Trust Building

Ministry of Economic Affairs and Communications

Ministry of Interior

usage

Information System Authority

Police and Border Guard Board

issuance

Certification Centre Ltd.

TRÜB AG Baltics

Swedbank

SEB Bank

Elion

EMT
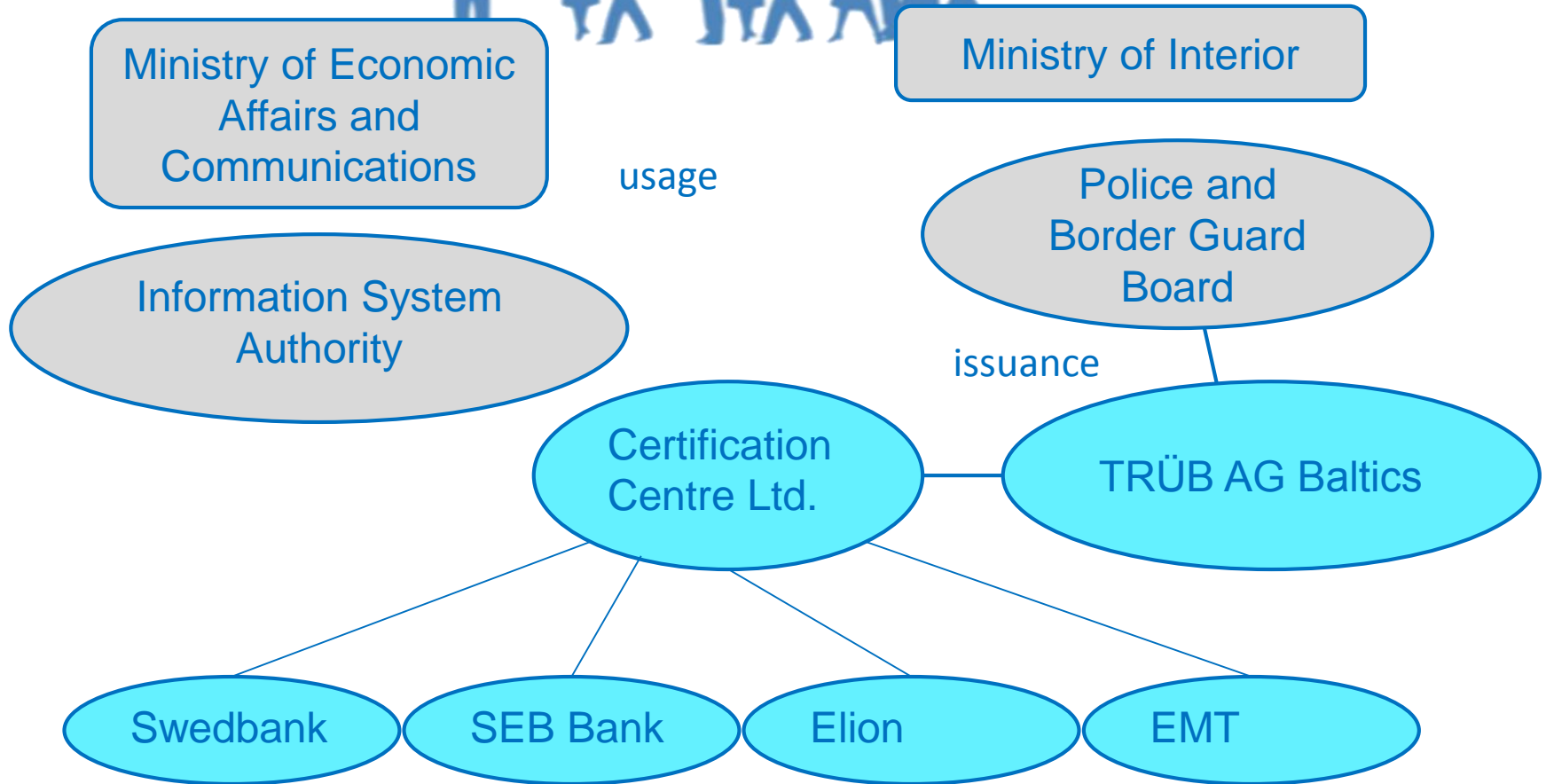
Business Process Reengineering (BPR)

The practice of re-thinking and re-designing the way work is done to provide better service, reduce costs and be competitive with other organisations/countries

eID Produces Transparency

National Digital Identity Management Principles

- state monopoly and responsibility to identify a person, confirm the identity and issue certificates on identity documents
- centralized identity management
- principle of "one person = one identity"
- one-to-one relationship of certificates with the user of the digital document
- public verification of certificates via the personal identification code

eIDAS

- Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures.

- Regulation (EU) no 910/2014 of the European Parliament and of the Council of 23 July 2014 on **electronic identification and trust services for electronic transactions in the internal market** and repealing directive 1999/93/EC

eIDAS

Scope of eIDAS Regulation

- mutual recognition of e-identification means
- electronic trust services:
  - electronic signatures
  - electronic seals
  - time stamping
  - electronic registered delivery service
  - website authentication
- electronic documents

eIDAS - eID

⊙ **Mutual recognition (Art 6)**

MS must recognise eID means issued under 'notified' eID schemes from other Member States for cross-border access to its public services requiring e-identification based on the reciprocity principle (art.6)
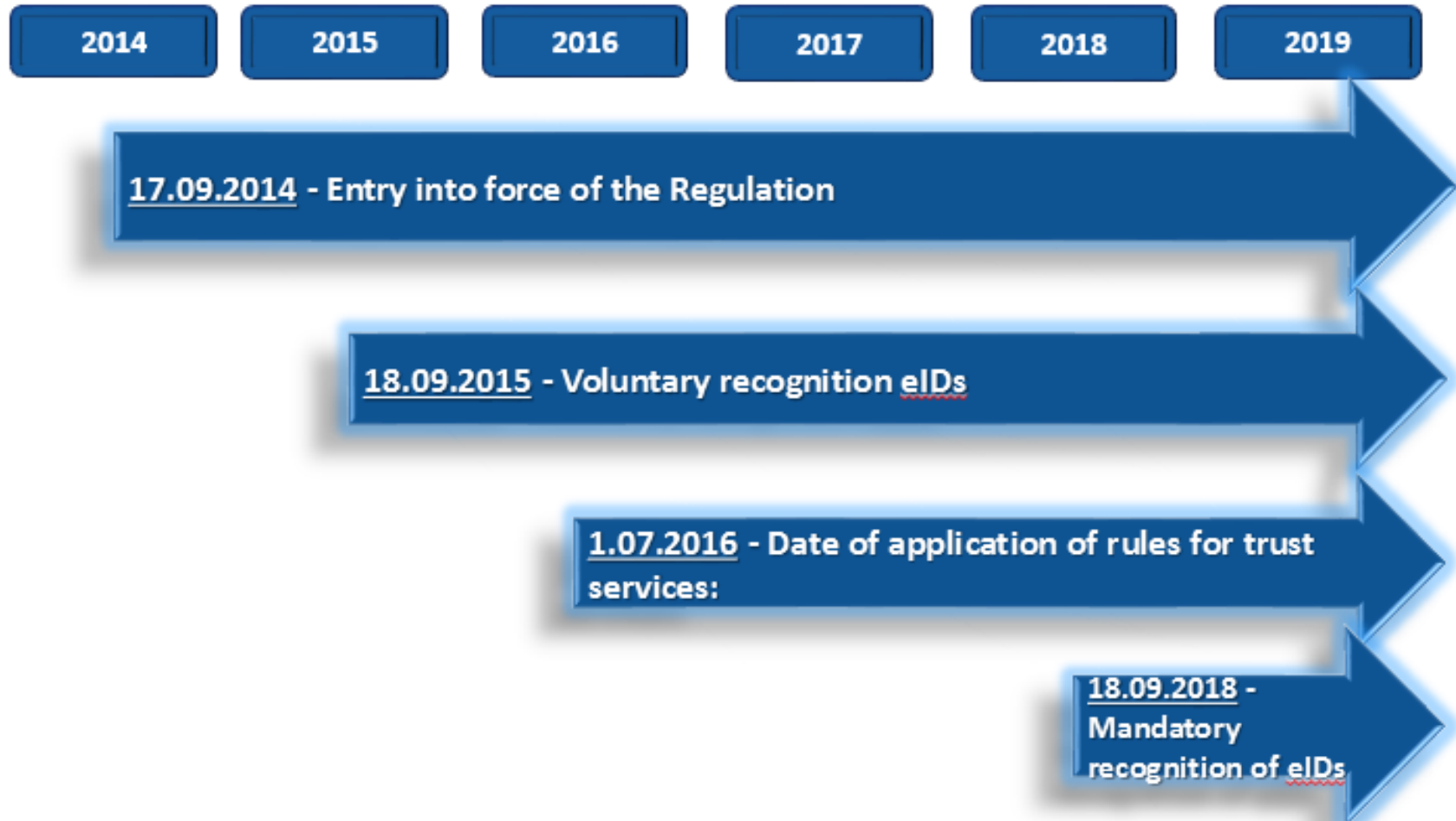
⊙ **Notification (Art 9)**

MS may 'notify' to European Commission the 'national' electronic identification scheme(s) used at home for, at least, access to public services (art.9)

Implementing acts may be adopted by the Commission on circumstances, formats, and procedures of the notification (art.9.4)

eID Assurance levels (Art 8)

- Notified eID schemes shall specify the assurance level of the eID means (art.8.1)
  - Assurance level low recognition is voluntary (art.6.2)
  - Assurance level substantial recognition is mandatory (art.6.1(b))
  - Assurance level high recognition is mandatory (art.6.1(b))
- Implementing acts to be adopted by the Commission to set out minimum technical specifications, standards, and procedures for assurance levels low, substantial and high by 12 months after the entry into force of the Regulation (art.8.3)

e-Governance Academy

Timeline for Implementation

| 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |

17.09.2014 - Entry into force of the Regulation

18.09.2015 - Voluntary recognition eIDs

1.07.2016 - Date of application of rules for trust services:

18.09.2018 - Mandatory recognition of eIDs

e-Governance Academy

Legal Acts

- Identity Documents Act

- Digital Signature Act

- Population Register Act

- The Minister's of Regional Affairs 07.01.2005 Act no 4 "The formation and grant of personal identification codes"

- *Personal Data Protection Act*

- *Public Information Act*

https://www.riigiteataja.ee/tutvustus.html?m=3

References

- **e-Estonia**: www.e-estonia.com
- • ID-card overview: www.e-estonia.com/component/electronic-id-card/
- • E-residency: https://e-estonia.com/e-residents/about/
- **Certification Centre**: www.sk.ee
- • Digital signature concept: www.id.ee/public/The_Estonian_ID_Card_and_Digital_Signature_Concept.pdf
- • ID Card Support Centre: id.ee/?lang=en&id=30466
- • Digital signature cost-profit calculator: eturundus.eu/digital-signature/
- **Information System Authority**: www.ria.ee
- • Gateway to e-Estonia: https://www.eesti.ee/eng
- **Police and Border Guard Board**: www.politsei.ee/en
- • ID-card application process: www.politsei.ee/en/teenused/isikut-toendavad-dokumendid/

Thank You!

Mari Pedak

www.ega.ee | info@ega.ee | +372 5156 761

E-Governance Academy | Tõnismägi 2, 10112
Tallinn, Estonia

e-Governance Academy