Fraunhofer FOKUS

Institute for Open Communication Systems

The German eID Card – Lessons learned after 5 years

About the Fraunhofer Gesellschaft

The Fraunhofer Gesellschaft is Europe's largest organization for applied research.

- Fraunhofer develops products and processes through to technical or commercial maturity

- The Fraunhofer Gesellschaft maintains
  - 66 self-contained Fraunhofer Institutes throughout Germany
  - with a staff of 22,000 scientists and engineers
  - 1.9 billion Euro annual budget

About Fraunhofer FOKUS

Fraunhofer FOKUS develops ICT solutions for the smart cities of the future.

- The institute addresses important challenges in the society and the smart cities of the future.
- Today around 500 employees from more than 30 countries are working on promising technologies in the research and development sector.

The Test and Demonstration Center of the German eID

- Technical support for interested service providers

- Availability of different application scenarios in cooperation with different service providers, industry and government

- Scientific evaluation and analysis

- Potentials and future application domains

Introduction on digital identities

Concept of identity management

Every person is many

Everyone should **have** a digital identity and be **free to decide** to whom he leaves **which** personal data of his digital identity.
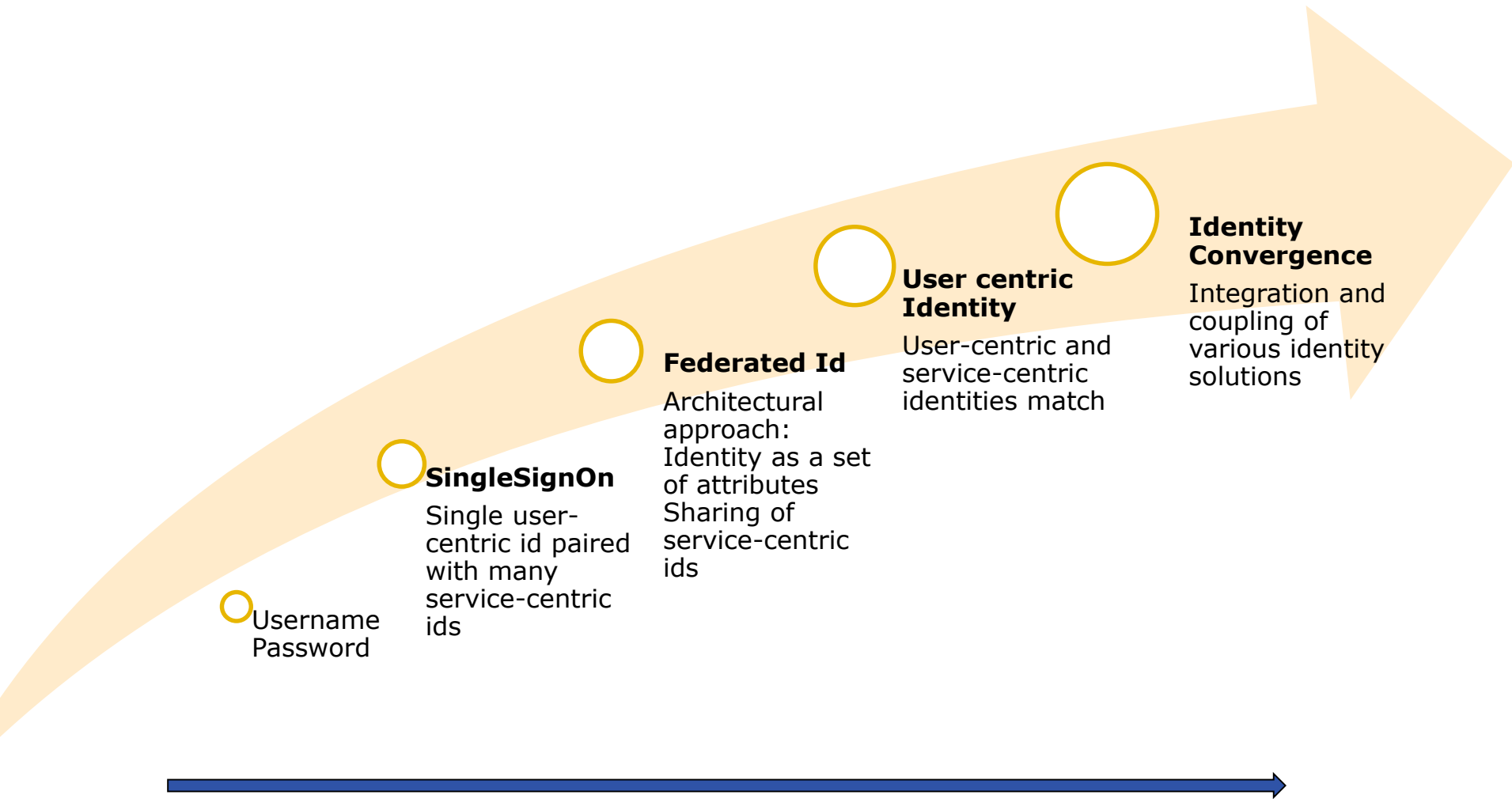
Business

Consumers

Government

The electronic identity should be **easy** to use and within a **trustworthy system**

Friends

Evolution of Identity Management

SingleSignOn

Single user-centric id paired with many service-centric ids

Username Password

Federated Id

Architectural approach: Identity as a set of attributes Sharing of service-centric ids

User centric Identity

User-centric and service-centric identities match

Identity Convergence

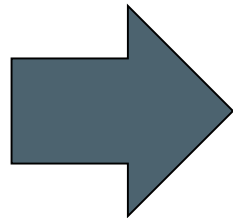Integration and coupling of various identity solutions
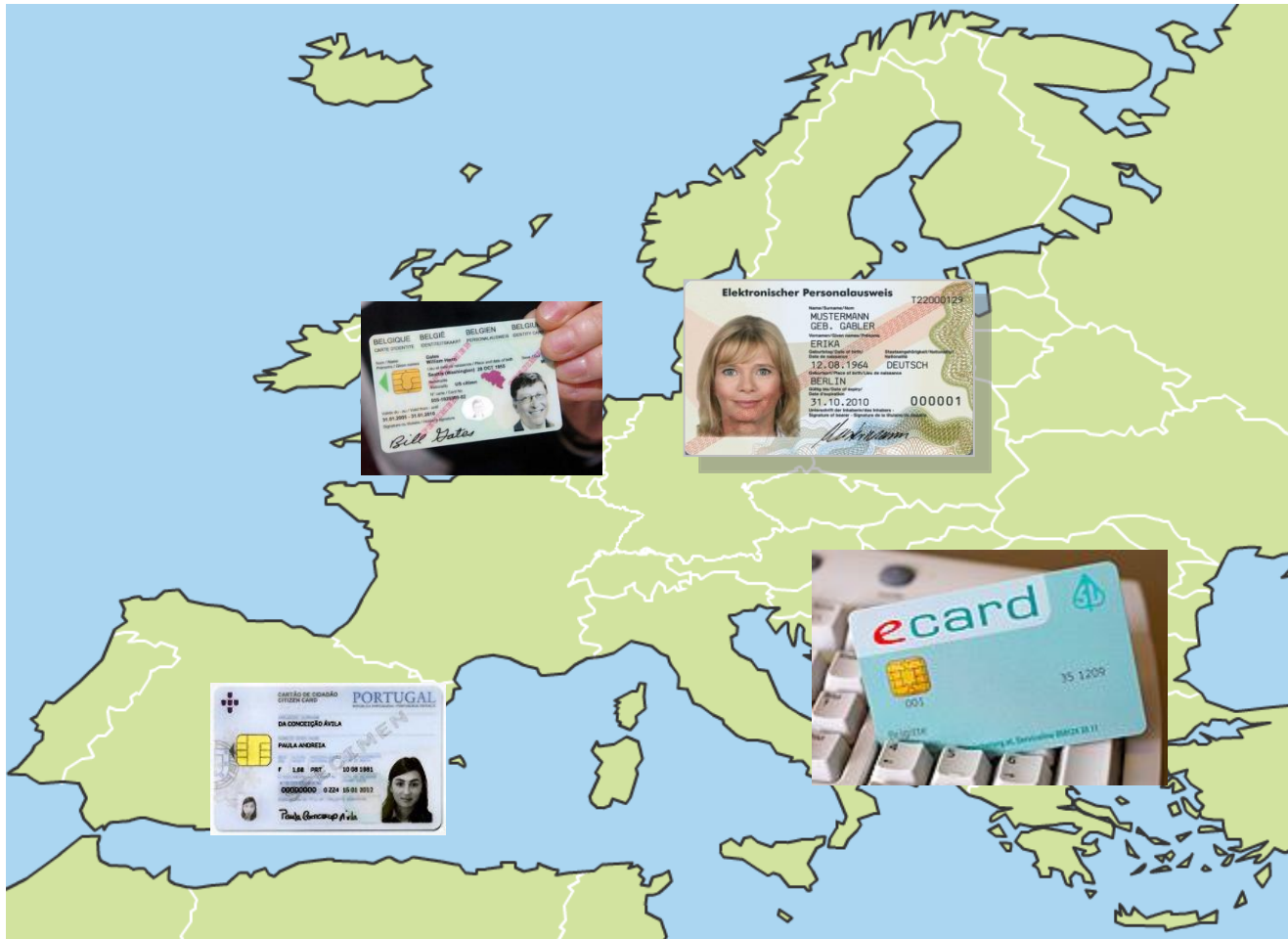
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Current view of national IDs

Trustworthy document

- National IDs as trustworthy instance to identity in the real world
- Authenticity and evidence for one´s identity
- National IDs open up opportunities for added services
- But only used in few or limited occasions

What can national eIDs contribute?

Why national documents?

Example Finland

- Start issuing: **1st Generation 1998, 2nd Generation 2002**
- Issued Volume: **2,5 Million**
- Population: **5 Million**
- Biometric Data: **face data**
- E-Services: **eGov-Service, eSignature-Service, eBanking-Service**
- eSignature: **yes;** voluntary
- Travel Function: **no**
- Card interface: **contact-based**
- Fee: 29€, 10 years lifetime, no application standards
- Specialities: First in Europe

Example: Belgium

- Start issuing: **2003**
- Issued Volume: **9 Million**
- Population: **11 Million**
- Biometric Data: **no**
- E-Services: **eGov-Service, eHealth-Service, e-Business**
- eSignature: **yes**; voluntary
- Travel Function: **no**
- Card interface: **contact-based**
- NVM-Size: **32k EEPROM** (Native OS)
- Fee 10€; 10 years lifetime
- Speciality: Kids Card

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Example: Estonia

- Start issuing: **2003**
- Issued Volume (end of 2011): **1,3 Million**
- Population: **1,3 Million**
- Biometric Data: **no**
- E-Services: **eGov-Service, eBusiness**
- eSignature: **yes**; **mandatory**
- Travel Function: **no**
- Card interface: **contact-based**
- NVM-Size: **32k EEPROM** (Native OS)
- Fee 150 EEK; 10 years lifetime;
- Speciality: Estonia is the only state in Europe with eSignature mandatory

Example: Austria

Austria

- Start issuing: **2004**
- Issued Volume: **6 Million**
- Population: **8 Million**
- Biometric Data: **no**
- E-Services: **eGov-Service, eHealth, eBusiness**
- eSignature: **yes**, voluntary
- Travel Function: **no**
- Card interface: **contact-based**
- Comments: all citizen from 16 and older have this card; Fee 10€; 10 years lifetime; no face photo;
- Specialities: Certificate-based, not sticked to card

The German solution

The German eID Card

The new German ID card

Doctoral degree, family name, given names

Chip

Serial number

Photograph

Nationality

Card access number

Last day of validity

Date and place of birth

Address

Pen name

Issuing authority

Machine-readable area (includes no further personal data)

The new German ID card

Doctoral degree, family name, given names

Chip

Photograph

Pen name

Last day of validity

Logo

Issuing authority

Machine-readable area (includes no further personal data)
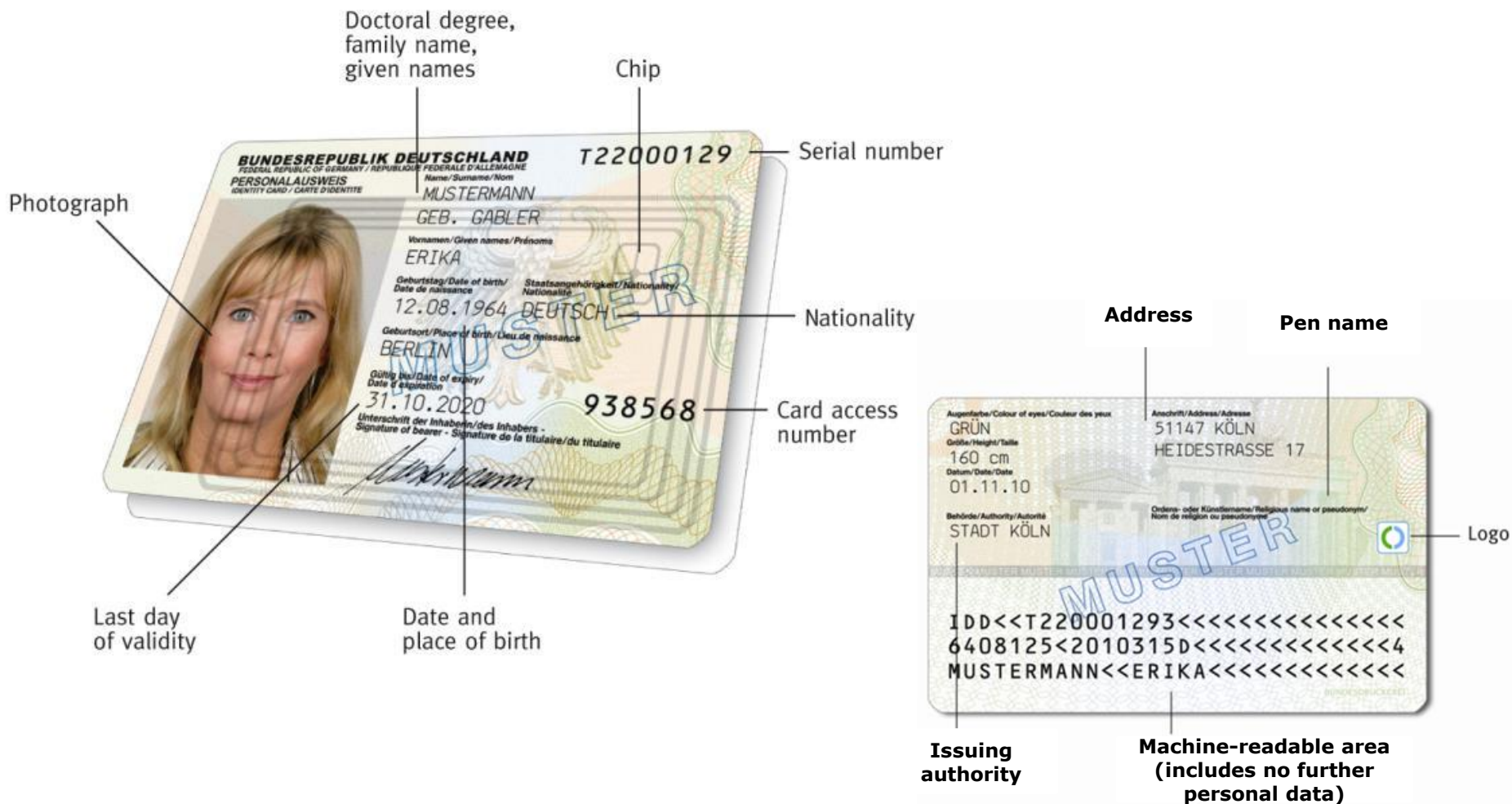
Physical security features

The most important security features of the new ID card include:

► complex security printing with multi-colored line structures (1 + 14)

► microlettering (2 + 15)

► tactile features (13)

► fine surface embossing (19)

► changeable laser image (21)

► integrated security thread (23)

► tried-and-tested Identigram®:

▪ kinematic structures (7)

▪ holder's portrait in holographic form (5)

▪ German eagle in 3D (6)

▪ holder's name, serial number of the card

The New German ID Card

Electronic functions

Launched November 2010.
Obligatory for German citizens.

It combines the traditional ID card with 3 new electronic functions

Online eID function (optional)

- ☑ Vorname   ☐ Doktorgrad
- ☑ Nachname   ☑ Anschrift
- ☐ Geburtsdatum ☐ etc...
- ☐ Geburtsort

Sovereign ID function

qualified electronic signature (QES)

Kompetenzzentrum
Öffentliche IT

The functions of the German eID
eID versus QES

eID – electronic identification

- „This is me"

- Display of the identity of the service provider

- Display of the requested attributes/ personal data

- Acceptance with a 6-digit PIN

- Example: login, registration, age verification, pseudonymic usage

→ mutual identification

QES – qualified electronic signature

- „I have signed this"

- Display of the document or email which needs to be signed

- Signing the document with a signature-PIN

- Checking the signature through recipient

- Examples: Signing contracts, certificates and such.

→ Legally binding electronic signature

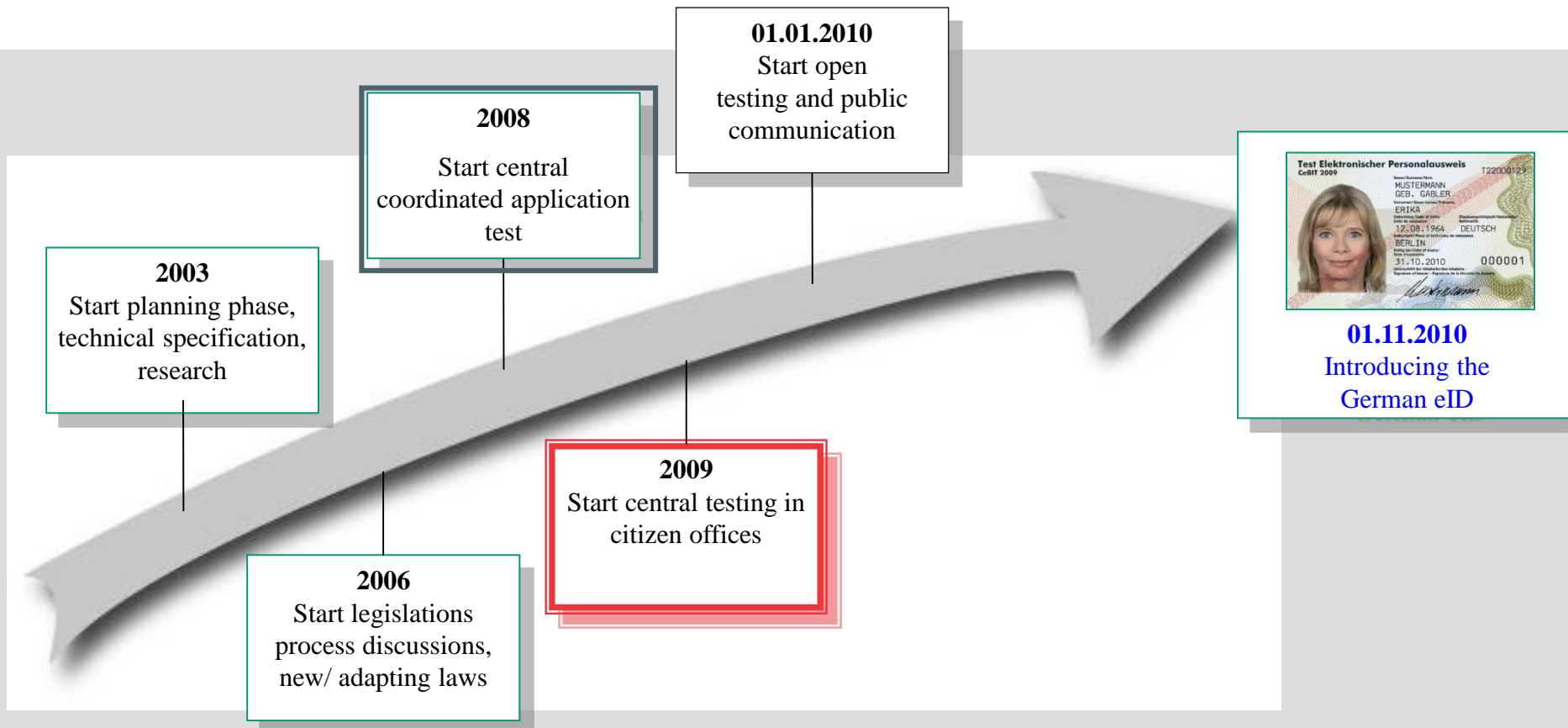# Data on the chip

Online eID function

2-Factor-Authentication
Reading data requires
6 digit PIN
by the citizen

******

About the project

Milestones for introducing the German eID-function

2003
Start planning phase, technical specification, research

2006
Start legislations process discussions, new/ adapting laws

2008
Start central coordinated application test

2009
Start central testing in citizen offices

01.01.2010
Start open testing and public communication

01.11.2010
Introducing the German eID

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Project organization new German ID card (2008 - 2011)

Project Management Level

Contracts and procurement

Application test

IT security kit

Project Level

Federal Office for Information Security

Specifications for security and functional requirements, PKI

Federal Ministry of Interior

**Project Management
Legal issues**

Federal Office of Administration

**Revocation service
Organisational issues**

Bundesdruckerei

**Production
Trust Center
Citizens Offices**

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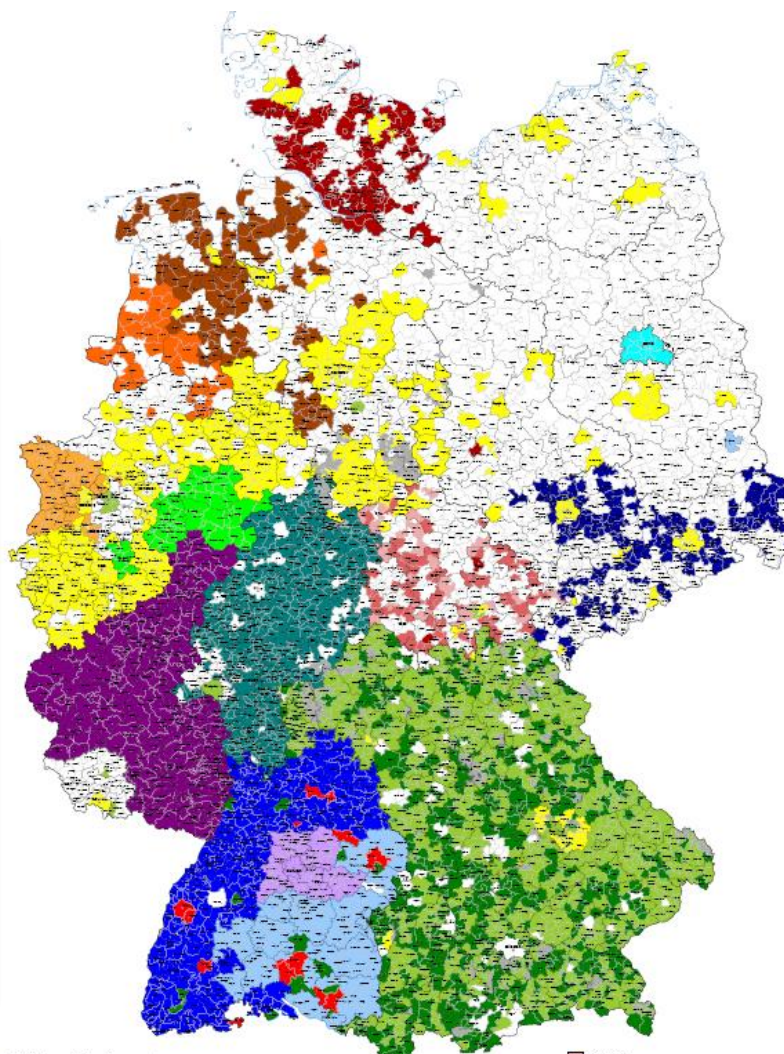
Test- and Demonstrations Center

Federal Criminal Police Office

Security of the card body

Key Facts

- 32 Mio. cards are already issued

- Average processing time ≈ 6 working days

- build-up of federal-PKI, trust ancer at federal agency including revocation management

- 60 Mio. Germans will have this document by 2020

- ≈ 6.850 authorities were equipped with hard- and software

- almost 20.000 employees were trained

- Almost 300 application online to be used with the German eID

Infrastructure of the Online function
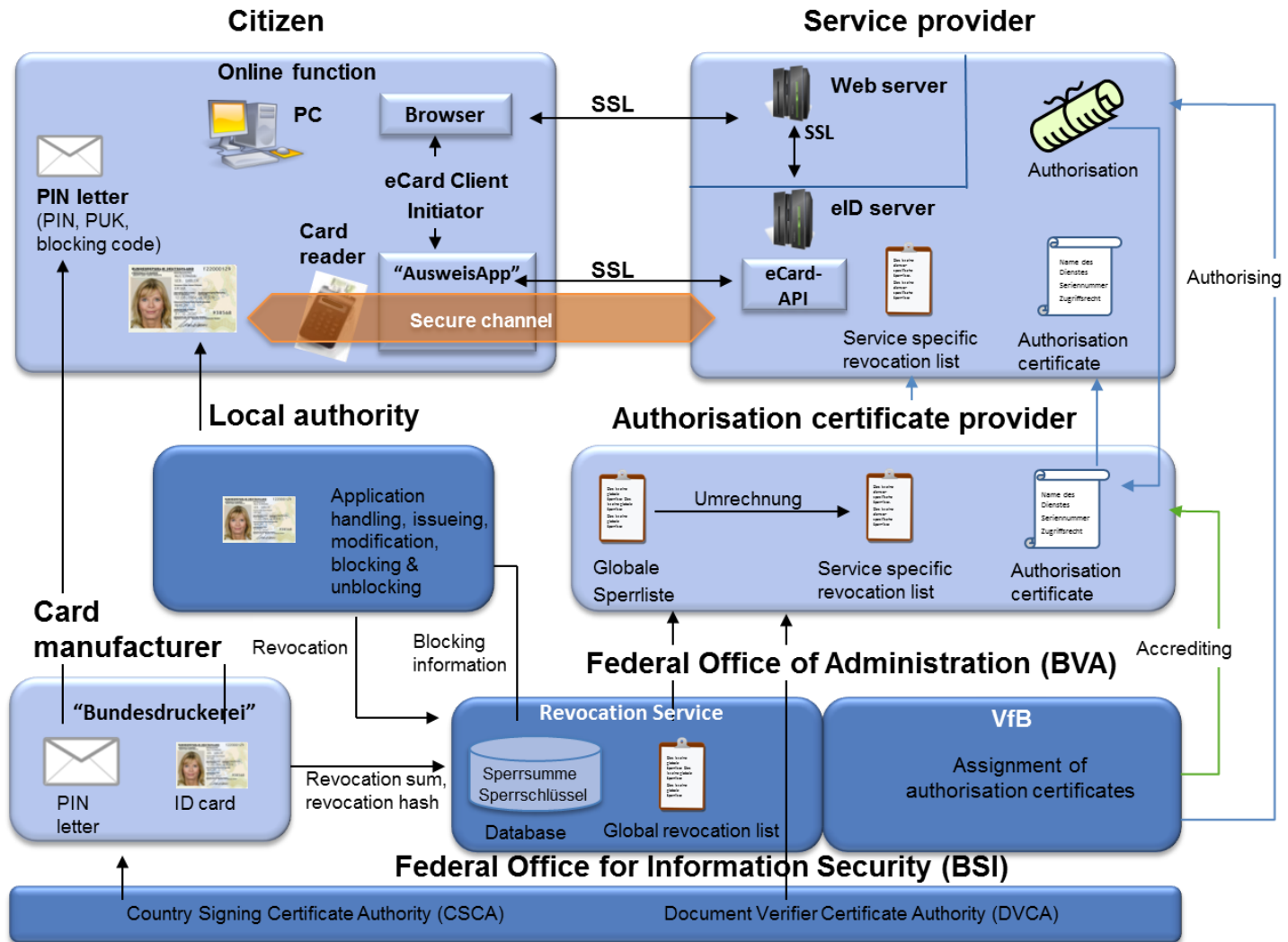
30 test participants initially, finally over 200 service providers tested the German eID card functionality

Lessons Learned
Challenges

- Lower your expectations of the impact of an eID

- Citizens need to be well informed about the eID-functions, raising trust through marketing campaigns is crucial, eID can only work if citizens trust the eID-system

- Security is not all, usability is one key, reduce the complexity of the software, use international standards for easier integration scenarios

- Applications/ services for citizens are important -> include local and regional companies and governments for building services

- Either benefit or enforcement will increase the usage of secure eIDs, include them in eGovernment-scenarios

Lessons Learned
Challenges

- Legal issues (changes in laws and directives in governmental and commercial processes) take time

- Project management and timing -> experienced project partners are needed and build up experience and competence in the ministry/ delegated agencies

- Not enough to look at eID from the perspective of the service provider, think about benefit of the citizens

- National eIDs cost money. It is not a project, it is a constant effort of maintenance.

- Souvereign ID are always a product of cultural heritage

Further development and activities

Resume

- Modern industry states need an interoperable IT-infrastructure capable of managing securely electronic identities!

- Digital Identity is the fundament for all business and government activities in the internet!

- Integrate local small and medium sized enterprises to implement solutions for the identity infrastructure!

- **One need an overall governance strategy to be able to manage electronic identities and to enable policy decisions and government regulations**!

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