

European eHealth Programs & Smart Cards: An Enabler for eHealth Services

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Content

- Motivation for eHealth Programs
- eHealth Programs of the European Commission
- eHealth Programs of EU Member States (G5)
- Standardization on eHealth
- Smart Card as Enabler
- Challenge for the Semiconductor Industry

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■ Motivation for eHealth Programs

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Motivation for eHealth Programs

Economy Drivers



■ Operation Cost Reduction

- Streamlining of Administration Efforts
 - (e.g. paperless workflow)
- Business Process Rationalization
 - (e.g. faster & secure information exchange)
- Prescription & Claim Management

■ Prevention of Fraud

- Electronic Identification
- On-line Authorization
- Visual Security
- Optional:
 - Robust Health Insurance Document
 - Compact size

Healthcare & Social Security Costs are having a direct impact on the National Economy.

Motivation for eHealth Programs

Political Drivers



- Well managed healthcare services protects the human capital\
 - Emergency data available

- Highly visible projects to citizens
 - Improve Services to the Citizens
 - Coordinate Health Services
 - Protect Citizen 's Privacy

Along with Education, Healthcare is one of the highly visible public services to the Citizens.

- Facial picture printed on card
- Card holder authentication with PIN
- Mainly Contact-based smart card today
- Memory size from <1k to 32k memory
- Highly secured durable material
- Security certification for the hardware
- Security certification for the operating system
- Migrating to authentication with fingerprints
- Migrating to higher capacity of 64k to 80k
- Migrating to crypto card
- Migrating to multi-application card
- Migrating to contactless (or combi) smart card

Content

■ Motivation for eHealth Programs

■ **eHealth Programs of the European Commission**

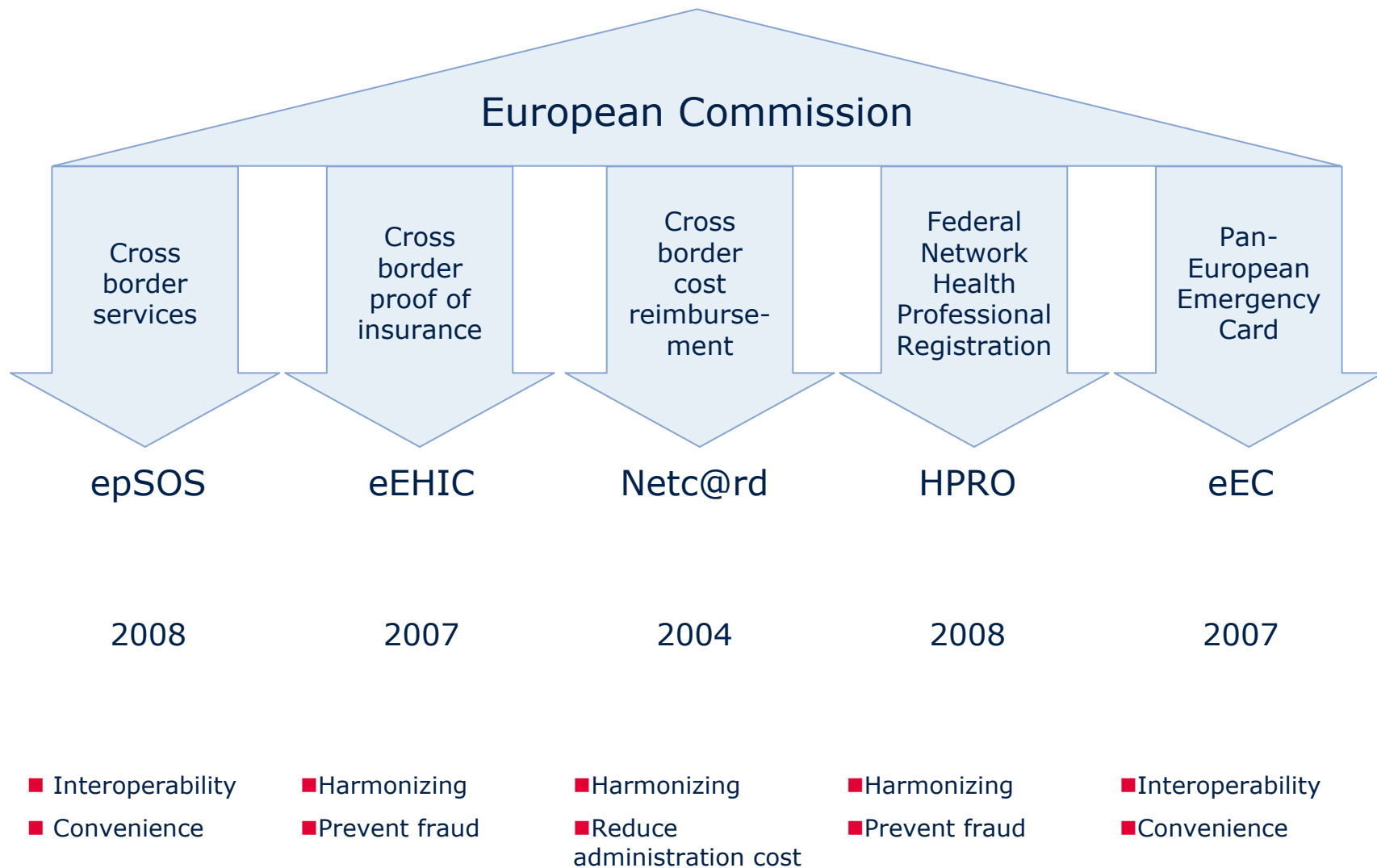
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Landscape Europe on eHealth Services, Smart Card enabled



Example: EHIC & eEHIC



■ EHIC: European Health Insurance Card

- The insured person can then benefit from a simplified procedure for receiving any medical assistance that might become necessary during a temporary stay
- The information on the European health insurance card is
 - Personal: Names, Personal Identification Number, DOB (Date of Birth)
 - Non-Personal: Insurance Identification Number, Card Identification Number, Expiry Date
- The European health insurance card does not contain medical data

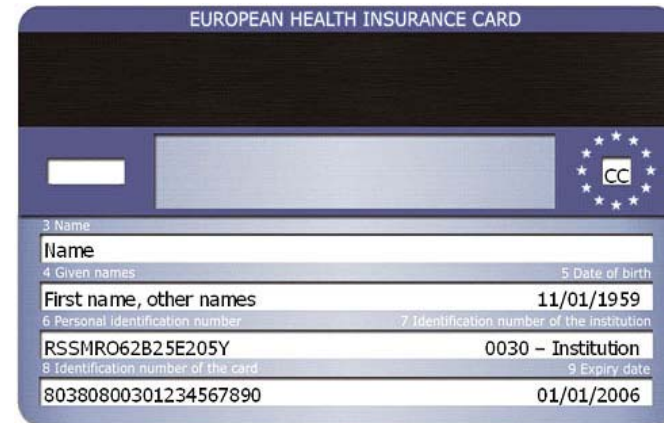
Front Variant:

-Most Member States preference



Back Variant:

- Austria, Germany, Italy, Luxembourg, Lithuania, the Netherlands and Liechtenstein





Example: HPRO

■ HPRO: Health Professional European Card

- Started in March 2008
- Objective:
 - To ease the free movement of the health professionals in Europe whilst ensuring the patient safety
 - Others are the validation of continuing education, or the access to medical records.
- The health professional European card will show two sides:
 - Harmonized Side: European and clearly states the contact details of the competent authorities of the originator country
 - National Side: Solely designed by competent authorities in line with issuer country laws

Harmonized Side:



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G5: eHealth Programs



27 Member states

Germany: KVK to eGK: Starting 2009
France: Sesam Vitale: Starting 2001
UK: HPC: Starting 2001
Italy: CNS: 1st & 2nd Generation: Starting 1998
Spain: TASS: Starting 1995

⋮

G5: The Beginning

Country	Population (Mio)	Started Since	Starting Technology	Data Content on Card	Data Content in Card	Application
Germany	82.3	1994	<1K Memory CB	Insurance info, Names, DOB, Address	Unknown	Insurance Card
France	63.4	1998/2001	Microcontroller CB	Insurance info, ID No., Names, Address, Issuing & Expiry Date, Sex	Entitlement validity	Vitale Card (Carte Vitale) & Health Card Professional (CPS)
United Kingdom	60.6	2001	Microcontroller CB	Identity of card holder (Health Professional)	Unknown	Medical records
Italy	59.1	1998 for (CNS) 2001 for (CIE)	16K Microcontroller CB	Personal Data, National Registration Number, Emergency Data, E111 Netlink Data	E111 as per Netlink specification & Asymmetric Keys	National Service Card (CNS)
Spain	45.1	1995	3K Memory CB	TASS (Names, Affiliation No.) & TSI (Names, ID No., SS No., Personal Identifier)	Entitlement Type, Expiry Date, Personal Identifier, Names, Issuing Territory Code	Social Security Affiliation Card (TASS) & Health Insurance (TSI)

G5: Current Status & Moving Forward

Country	Migration Starting	Current Technology	Data Content on Card	Data Content in Card	Data Management System	Applications
Germany	2008	68K Microcontroller CB	Front: Names, Photo, Insurance info, Braille Back: EHIC	Mandatory: Administrative Data, ePrescription, EHIC Voluntary: Medication Documentation & risks, Saving Emergency Data, Patient's files	De-centralized	Insurance Card Medical Information Emergency Information
France	2007	36K Microcontroller CB	Front: Names, Photo, Insurance info, Braille Back: EHIC	Health Record Emergency Insurance Prescription	De-centralized	Insurance Card Medical Information Emergency Information
United Kingdom	No migration	Microcontroller CB	Identity of Card Holder (Health Professional)	Unknown	Centralized	Medical records
Italy	2008	68K Microcontroller CB & CL	Front: Localized Back: EHIC	Insurance Prescription	De-centralized	Insurance Card Medical Information Emergency Information
Spain	2006	Microcontroller	TASS (Names, Affiliation No.) & TSI (Names, ID No., SS No., Personal Identifier)	Entitlement Type, Expiry Date, Personal Identifier, Names, Issuing Territory Code	Centralized	Social Security Affiliation Card (TASS) & Health Insurance (TSI)

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Standardization on eHealth

- What are standards for eHealth?
 - Not for the internet connection
 - Not for the introduction of IT

- They are about
 - Collecting, Recording & Sharing Data
 - Management of digital data
 - Insurance data
 - Medical data
 - (e.g. medical records, prescription, emergency)

- To support Clinical & Administrative Procedures
 - Compatibility & Interoperability between Independent (Modular) systems
 - Safe exchange of Patient's information between systems & organizations

Standardization on eHealth

■ TC 215: Health Informatics

- Creation date: 1998
- Secretariat: ANSI (USA)
- Secretary: Ms. Audrey Dickerson
- Chairperson: Dr. Yun Sik Kwak (Korea) until end 2009

■ Scope:

- Standardization in the field of information for health, and Health Information and Communications Technology (ICT) to achieve compatibility and interoperability between independent systems. Also, to ensure compatibility of data for comparative statistical purposes (e.g. classifications), and to reduce duplication of effort and redundancies.

■ Related ISO standards published: 54

■ www.iso.org

■ Next meeting: 26-30 April 2009 Edinburgh (United Kingdom)

Standardization on eHealth

■ Participating countries: 26

Australia (SA)	Austria (ON)	Belgium (NBN)	Brazil (ABNT)	Canada (SCC)	China (SAC)
Czech Republic (UNMZ)	Denmark (DS)	Finland (SFS)	France (AFNOR)	Germany (DIN)	Ireland (NSAI)
Italy (UNI)	Japan (JISC)	Malaysia (DSM)	Netherlands (NEN)	New Zealand (SNZ)	Norway (SN)
Serbia (ISS)	Spain (AENOR)	Sweden (SIS)	Turkey (TSE)	United Kingdom (BSI)	USA (ANSI)
Russian Federation (GOST R)		Republic of Korea (KATS)			

■ Observing countries: 21

Argentina (IRAM)	Bulgaria (BDS)	Croatia (HZN)	Cyprus (CYS)	Ecuador (INEN)	Thailand (TISI)
Hungary (MSZT)	India (BIS)	Ukraine (DSSU)	Israel (SII)	Kenya (KEBS)	Mongolia (MASM)
Poland (PKN)	Portugal (IPQ)	Singapore (SPRING SG)	Slovakia (SUTN)	South Africa (SABS)	Switzerland (SNV)
Iran, Islamic Republic of (ISIRI)		Hong Kong, China (ITCHK SAR)		Zimbabwe (SAZ)	

Standardization on eHealth

■ ISO/TC 215 Health Informatics

- CAG 1: Executive council, harmonization and operations
- WG1: Data Structure
- WG2: Data Interchange
- WG3: Semantic Content
- WG4: Security
- WG5: Health Card
- WG6: Pharmacy and Medicines
- WG7: Devices
- WG8: Business Requirement
- WG9: Harmonization

Standardization on eHealth

ISO/TC 215 Health Informatics
Executive Council



International
Organization for
Standardization



American National Standards Institute



TRANSFORMING HEALTHCARE THROUGH IT



European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

WG5:
Health
Card

WG1: Data
Structure
(Definition, Frameworks &
Models, Templates, Data
Sets)

WG2: Data
Interchange
(Harmonization &
Adaptation of clinical &
Administrative Message)

WG6:
Pharmacy
&
Medicine

WG3: Semantic
Content
(Terminology, Knowledge
Representation)

WG4: Security
(Confidentiality, Integrity
and Availability,
Accountability, Security
Management, Information
Systems Safety)

WG7:
Devices

TF: eBusiness for
Healthcare
Transactions

TF: Multi
Disciplinary

WG9: JWG for
SDO
Harmonization

WG8: Business Requirements for EHR

Joint Initiative Council for
Standardization Developing
Organizations Harmonization



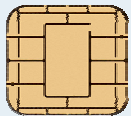
Standardization on eHealth

- ISO 20301:2006
 - Health informatics – Health cards – General characteristics
- ISO 20302:2006
 - Health informatics – Health cards – Numbering system and registration procedure for issuer identifiers
- ISO 21549 Health Informatics – Patient Health Card Data
 - ISO 21549-1: 2004: General Structure
 - ISO 21549-2: 2004: Common Objects
 - ISO 21549-3: 2004: Limited Clinical Data
 - ISO 21549-4: 2006: Extended Clinical Data
 - ISO 21549-5: 2008: Identification Data
 - ISO 21549-6: 2008: Administrative Data
 - ISO 21549-7: 2007: Medication Data

■ ISO 20301:2006

- Health informatics – Health cards – General characteristics
- Purpose 1):
 - Identification of the application provider and health card holder.
- Purpose 2):
 - Provision of information for contacting the card issuer and the health card holder within the service area

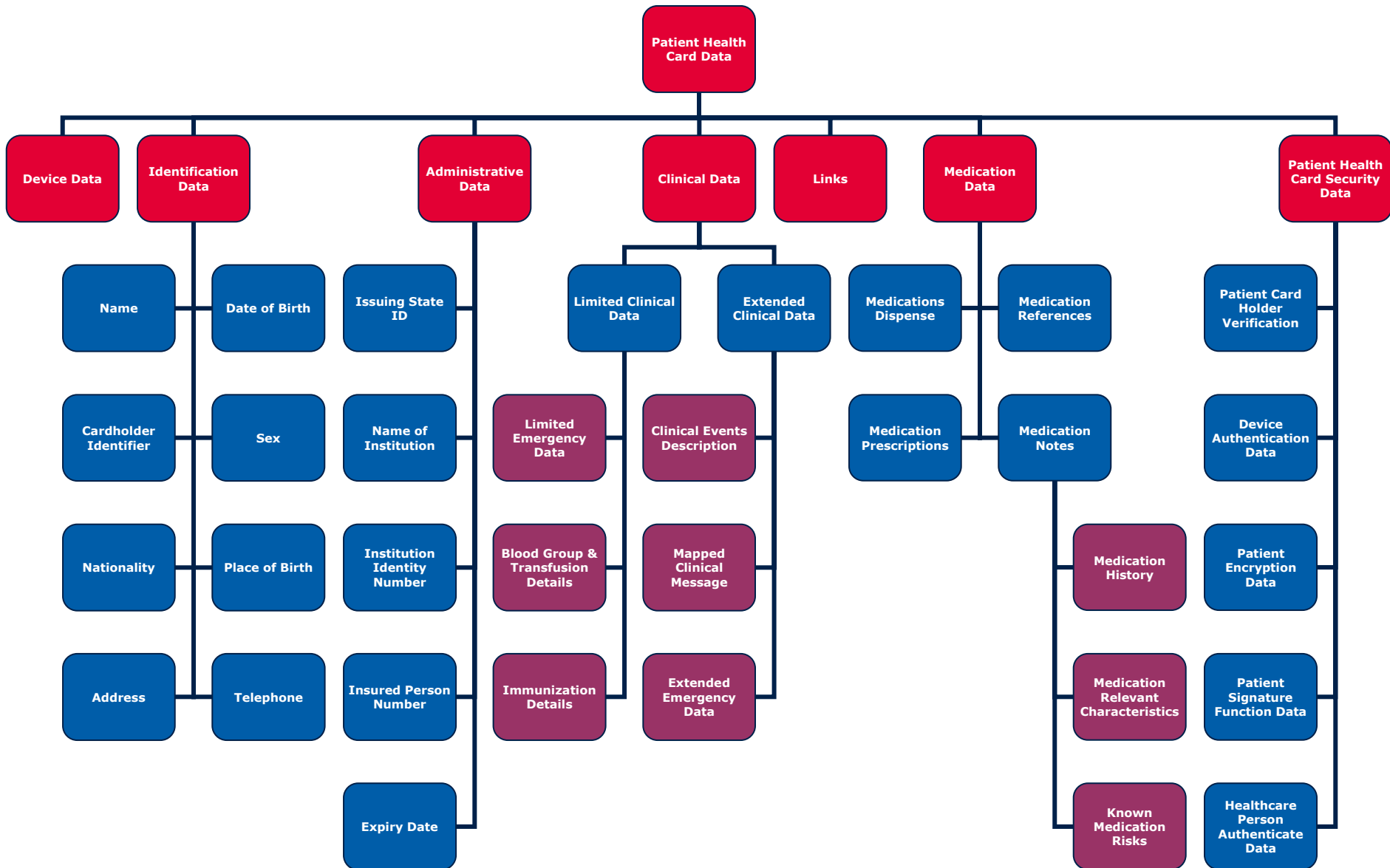
Application Name



Photo

Insurance Holder Identifier
Insurance Holder Name
Registration Country

Application Provider Identifier
Application Provider Name
Application Provider Address
Application Provider Telephone



Standardization on eHealth

- Others relevant standards
 - ISO 13606-1:2008
Health informatics – Electronic health record communication – Part 1: Reference model
 - ISO 13606-2:2008
Health informatics – Electronic health record communication – Part 2: Archetype interchange specification
 - ISO 13606-3:2009
Health informatics – Electronic health record communication – Part 3: Reference archetypes and term lists
 - ISO 17090-1:2008
Health informatics – Public key infrastructure – Part 1: Overview of digital certificate services
 - ISO 17090-2:2008
Health informatics – Public key infrastructure – Part 2: Certificate profile
 - ISO 17090-3:2008
Health informatics – Public key infrastructure – Part 3: Policy management of certification authority
 - ISO/TR 18307:2001
Health informatics – Interoperability and compatibility in messaging and communication standards – Key characteristics
 - ISO/TS 18308:2004
Health informatics – Requirements for an electronic health record architecture
 - & etc.

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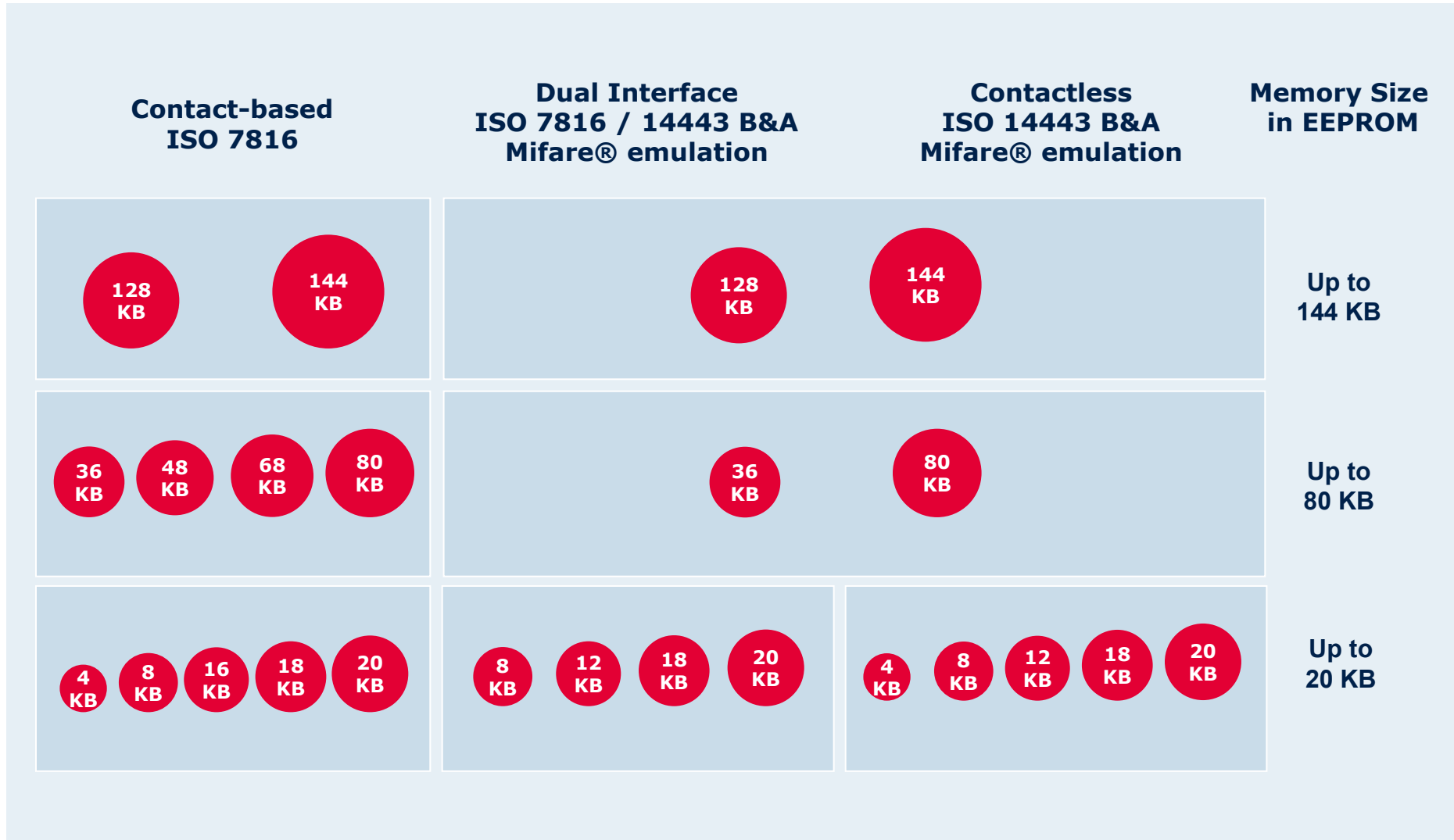
Smart Card as Enabler

- Durability aspect
 - Secured token
- Digitization aspect
 - Digital data management
- Economical aspect
 - Fraud reduction in the health sector
 - Increasing of services and decreasing of administration costs
- Privacy aspect
 - Protect citizen's privacy
- Convenience aspect
 - Combination of eID, Insurance Information & Medical Data

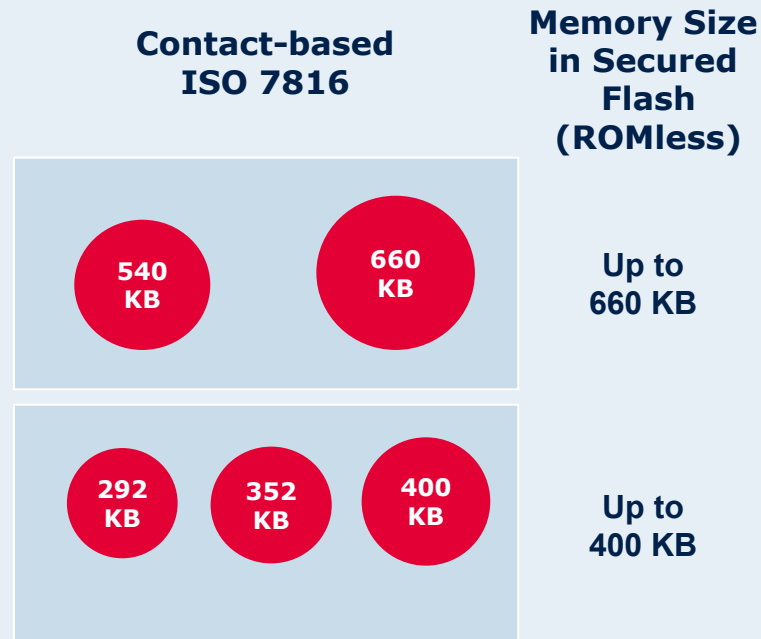
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Challenge for the Semiconductor Industry Controller Availability EEPROM



Challenge for the Semiconductor Industry Controller Availability Secured Flash (ROMless)



Challenge for the Semiconductor Industry

Controller Features

Multiple Interfaces

High quality ISO interfaces covering the whole spectrum

- ISO/IEC 14443: Type A and Type B (Contact less mode)
- ISO/IEC 7816: (Contact mode)



International
Organization for
Standardization

Proven Security

Comprehensive certification and powerful crypto accelerators for CL operations

- Common Criteria EAL 5+ (high) and EMV Co certification
- Symmetrical & Asymmetrical HW crypto accelerator (RSA, ECC, 3DES)
- Certified libraries for RSA and ECC
- True random number generator compliant with AIS-31



Common Criteria

Robust Interaction

Outstanding communication robustness & infrastructure compatibility

- Type A and Type B up to 848kbps transfer rate in both directions (Contact less mode)
- Real parallel operation of contact based and contact less mode

Volume Delivery

Volume production

- Field proven with References



We commit.
We innovate.
We partner.
We create value.

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Never stop thinking