



Interoperability of Identification Management in eHealth

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I2-Health project background

- Growing awareness that emerging eHealth applications might stop at European borders
- Multiple policy drivers for eHealth interoperability
 - Citizen mobility
 - Free healthcare market (limited EU-responsibility)
 - Decision of the European Court of Justice
 - Border regions
 - Pressure from stakeholder groups



EU Support Action: i2-Health - *the Interoperability Initiative for a European eHealth Area*

Objectives

- focus on fundamental interoperability issues
- analyse priority applications relating to e.g. e-prescription, electronic patient record and messaging
- develop a roadmap and concrete projects involving all relevant actors

Workplan Elements

- **Generic elements**
 - Conceptual framework (WP1)
 - Analysis of infrastructure concepts and building blocks (WP2)
- **Specific subjects for in-depth analysis**
 - **Identification management of actors, organisations and fundamental interoperability issues (WP3)**
 - Workflow interoperability – e-prescribing and messaging (WP4)

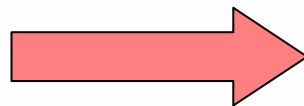


ID management in eHealth – Difference to the conventional setting

Identification and authentication of actors in healthcare is a mixture of administrative measures, common sense, and personal human interaction.

To fake a physician in conventional setting you need an office, yellow pages listing, big desk, nice manners, framed diplomas, trusting employees, etc...

To fake a physician in the electronic world you just need a digital certificate file



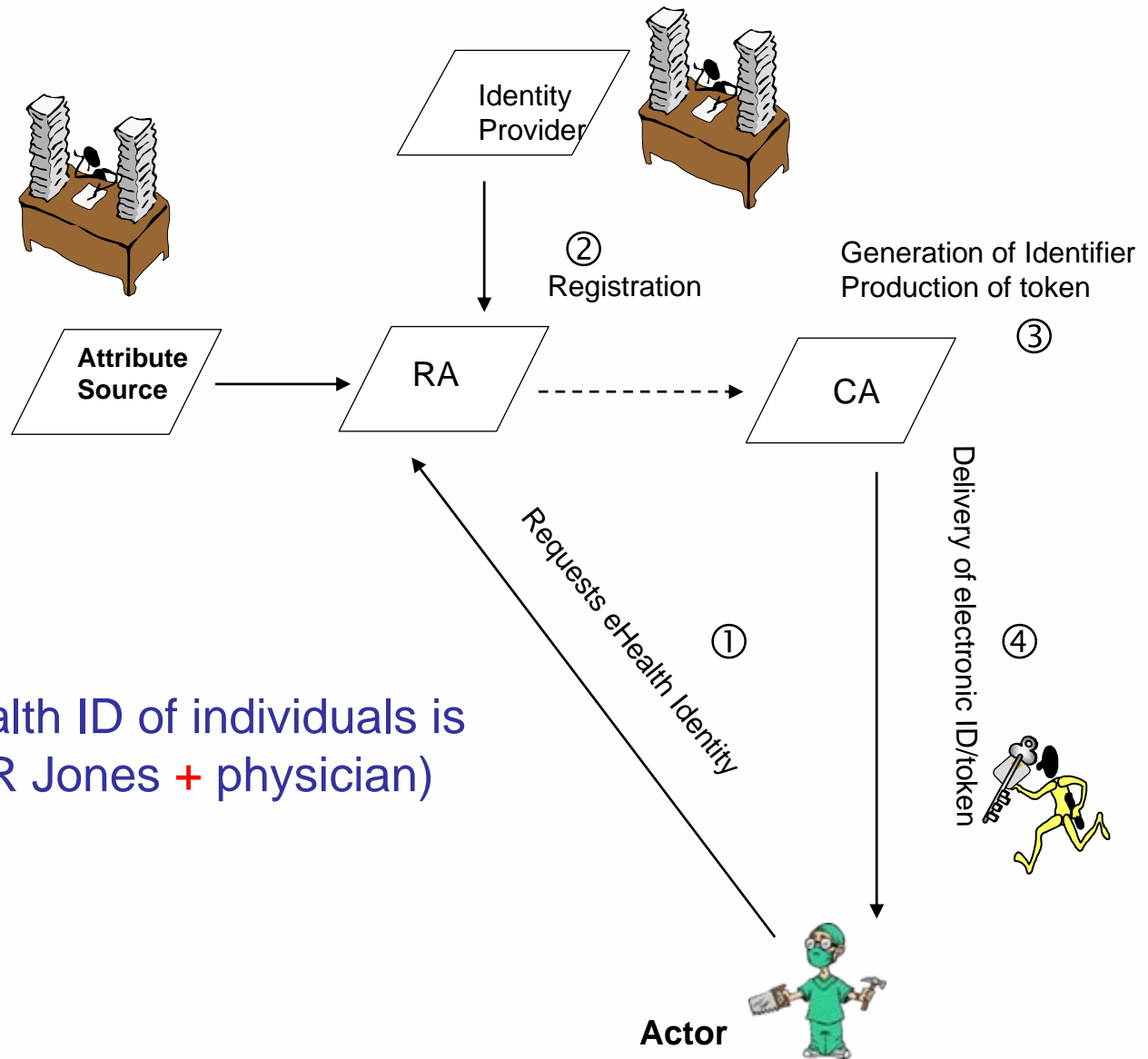
This needs to be trustworthy!
(thoroughly designed for its whole life-cycle)

ID management in eHealth

- Just emerging on national level
 - Natural persons (citizens, patients, health care professionals)
 - Institutions (care providers, insurance organisations)
- Less advanced for other entities (e.g. system components, messages, etc.)
- Requirements for use cases not comprehensively defined (e.g. administrative vs. medical patient identification)
- European use cases?

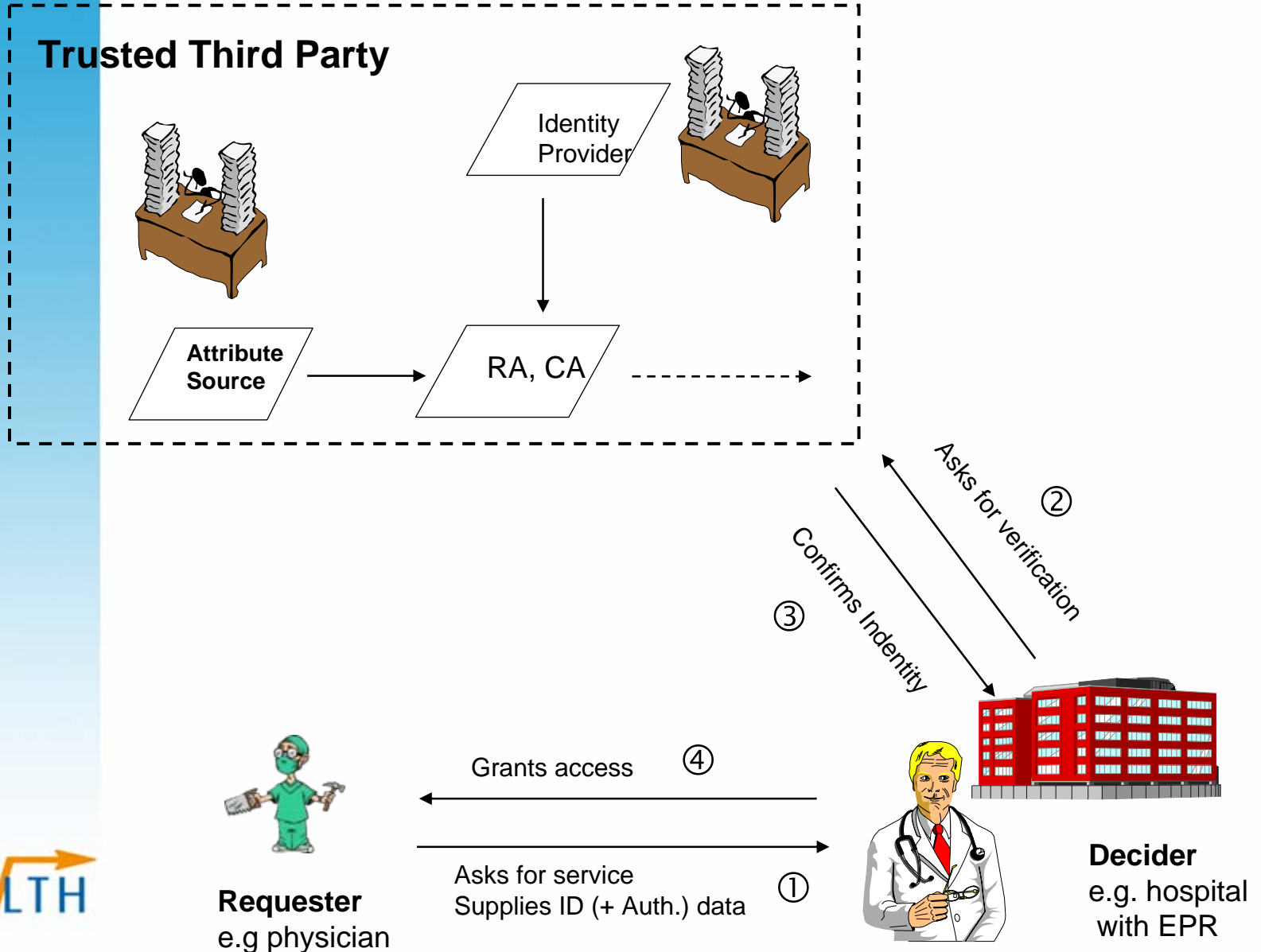


Generating an eHealth ID

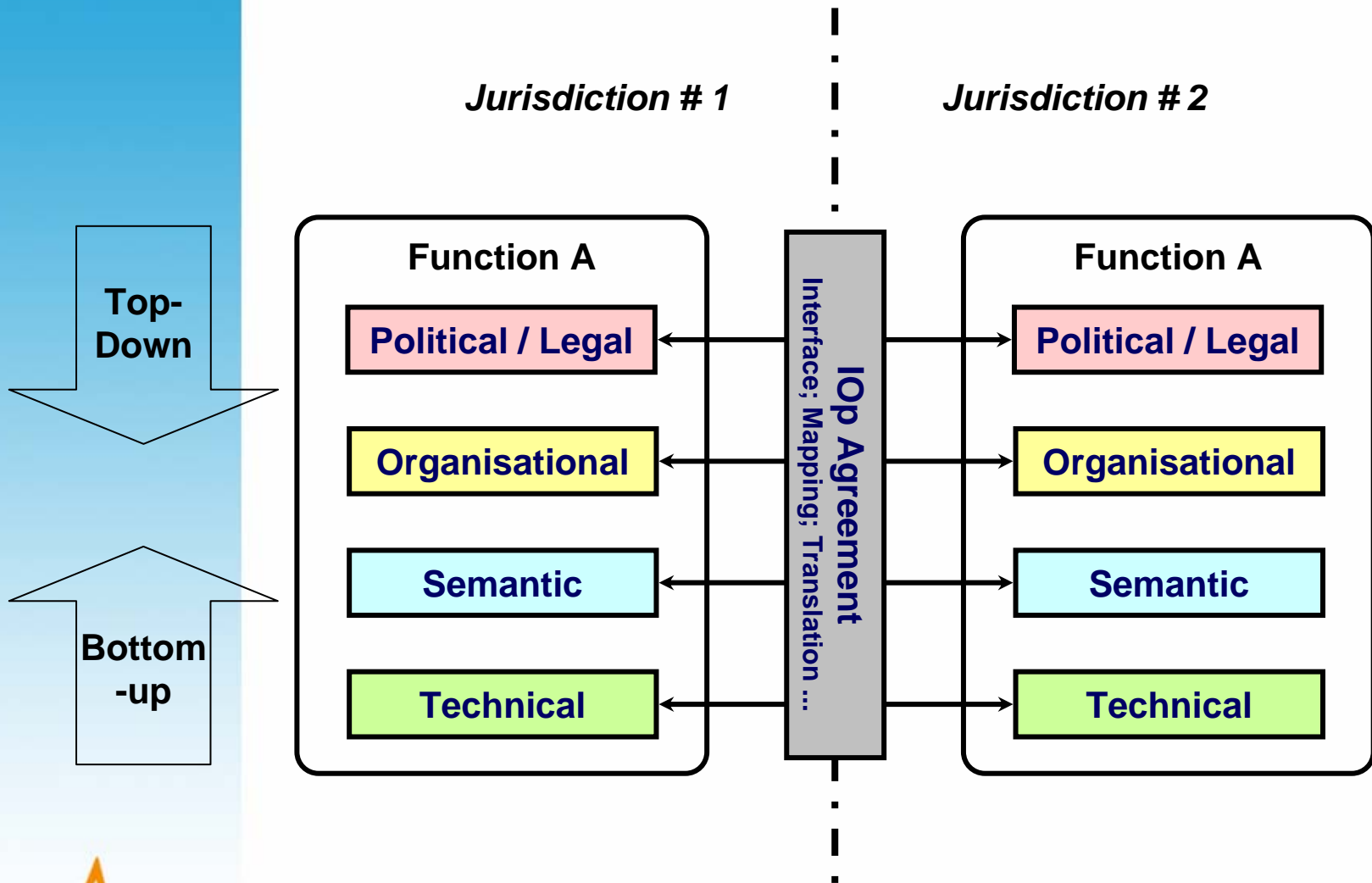


Specific to eHealth ID of individuals is the attribute (MR Jones + physician)

Utilizing an eHealth ID



i2Health Interoperability Model



Layer Model of ID Management

- What is the legal base for issuing/using the identifier
- How is the registering process organised?
- Which identifier is to be used?
- On which support is the identifier available?

Political / Legal

Legislation, nomination of responsible authorities, definition of covered entities

Organisational

Registration procedures, verification procedures

Semantic

Data models, identifiers, numbering systems

Technical

Certificates, ID-tokens (e.g. cards), directory databases, networking infrastructure

Technical Layer of ID

- On which support is the identifier available?

Technical

**Certificates, ID tokens (e.g. cards),
directory databases,
networking infrastructure**

- There are European initiatives working on the interoperability of this layer
 - eEHIC
 - Netc@rds
 - HPC standardisation

Semantic Layer of ID

- What qualities does the identifier have?

Semantic

- Domain
 - Definition of sector or entity group
 - Application of global object ID schemes?

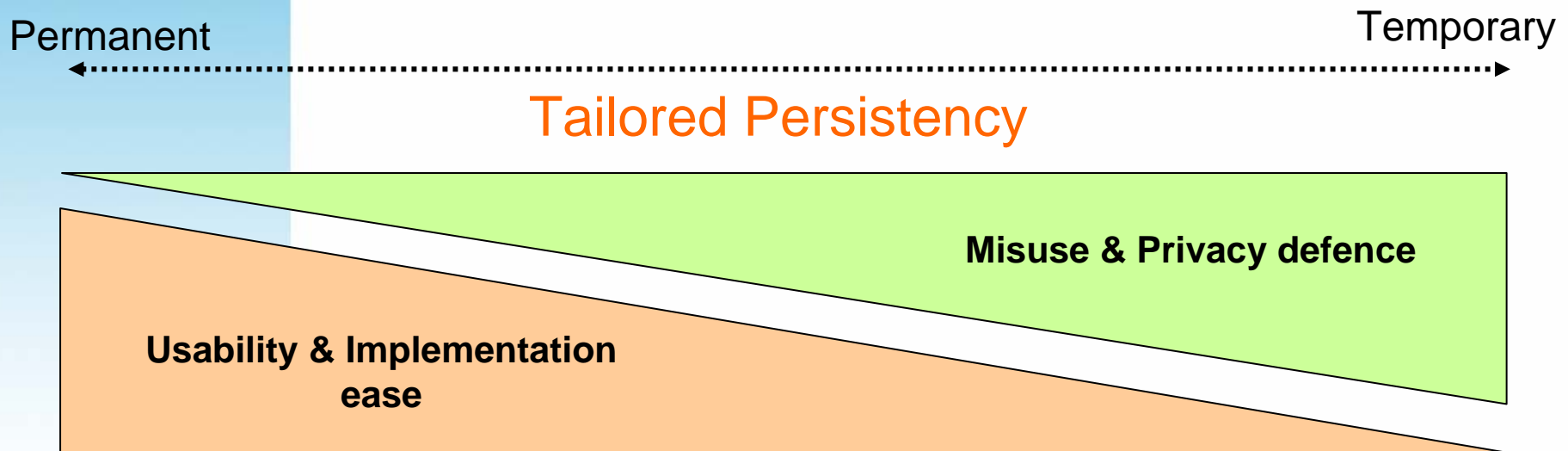
Domains

- **A physician might have many different Ids (example Germany)**
 - Unique physicians number
 - Unique ambulatory register number
 - Ambulatory reimbursement number
 - Ambulatory institutional number
 - Continuous medical education number
 - Supplementary (private) insurance reimbursement number



Persistence of identifiers

- Biometric identification is utmost permanent
 - No alterations or revocations are possible
 - If copied and maliciously used no defence option exist
- “Almost” permanent identifiers are e.g. Social security numbers
 - Alteration or revocation organisationally difficult



Confinement

- Internal or public?

Semantic

Example 1: UPIN (USA)

- Unique lifelong physician identification number
- Mandatory for Medicare/Medicaid scheme
- Established 1993
- Publicly available in directories (www.upinregistry.com)
- 6-digit alpha-numeric
- Crucial transactions bound to an internal billing-ID

Example 2: BAN (Germany)

- Unique lifelong physician identification number
- Mandatory for all physicians
- Established 2003
- Internal within chambers
- 8-digit alpha-numeric



Semantic load

- Additional information carried by identifiers
 - Sex (e.g. odd or even digit in Danish social security number)
 - Date of birth (frequently visible in social security/health insurance numbers)
 - Region of occupational residence (e.g. German physicians number)
- Potential collision with privacy aspects
- Difficulties arise when carried information becomes invalid (e.g. sex change)

Organisational Layer of ID

- How is the registration process organised?

Organisational

Registration policy, level of attachment, relationship to supreme ID

- What elements are to be identified?

1. Individual or juridical persons

- Health Care Professionals
- Patients
- Insurance Providers
- Health care institutions
- Others (Government, Research)

Identifiable entities among care providers

○ Health Care Professionals (HCP)

- HCP based on a qualification
 - Registered
 - Certified
- HCP based on employment at a health care provider structure
 - Named
 - Pseudonym

○ Organisations

- Registered to provide services under the social security scheme
- Nominated/Registered for a specific service type



The sum of details causes the problem

MS X | MS Y

Organisational

Semantic

For opening an electronic prescription the identification of both the institution and the employee is required in nation E

A patient may not have an EHIC because he/she is not covered by a social security scheme in country A

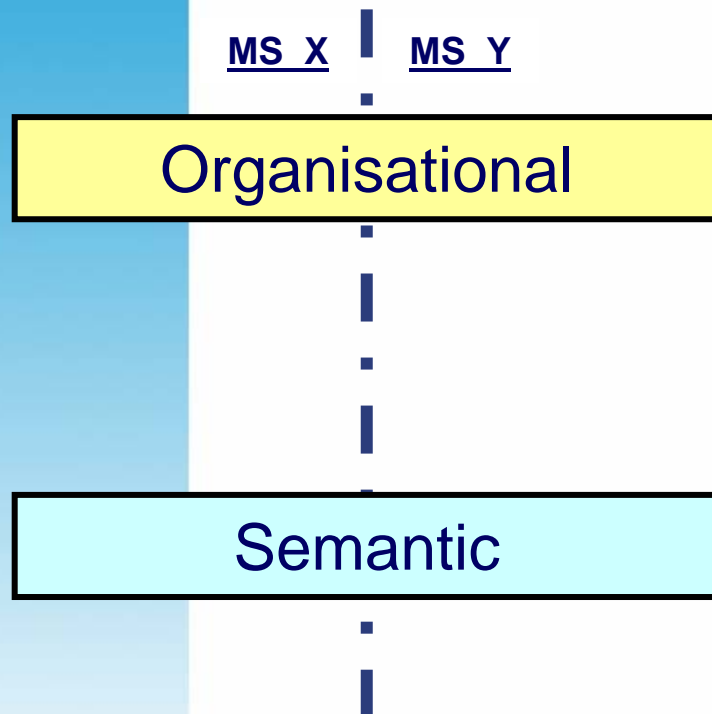
Being spouse of a general practitioner is the only attribute of several thousands of individuals who participate in healthcare in country B

The professions “speech therapist”, “dietary consultant” and “podologist” are neither registered or protected in country C

Patient transport services are not recognized as healthcare services in country D



The Interoperability Issue



- Are all entities comparables?
- Are the registration authorities recognised across borders?
- Are the registration procedures recognised across borders?

- Are the identifiers usable across borders?
- Are their formats acceptable across borders?

Superimposed Obstacles

- **No common definitions on EU-level**
- **Inconsistent awareness on eID fundamentals by authorities and industry**
- **Lack of common descriptive model**
- **Privacy aspects frequently undervalued**
- **Dependency on domain definitions and uses case requirements frequently not appreciated**

Health professional ID Interoperability – for what exactly?

- **Answering this question is crucial because:**
 - **Interoperability is use case (domain) specific**
 - **Activity needs to be explained and justified**

Solution - Approach

- **Define priority use cases**
 - Patient ID
 - Health care professional ID
- **Analyse existing base matched with interoperability layer model**
- **Perform a gap analysis**
- **Facilitate solutions**



Use case: administrative insured ID (EHIC)

Political / Legal

European regulations 1408/71, 574/72, Decisions no. 189-191, ...

Organisational

Registration procedures exercised by MS

Semantic

EHIC identifiers (Insured and insurance providers)

Technical

Eye-readable EHIC, Code list database of insurance providers



Use case : Medical patient ID

- **The insured ID from the EHIC as medical patient ID?**
 - **Some categories of (potential) patients are out of the “EHIC scheme” (7% of the population in Germany, Civil servants from EU ...)**
 - **Consent required**
 - **Harborer of medical information frequently independent from insurance provider**
 - **Requirements of ID-System not designed for lifelong EPR**

Use case: Mobile health care professional

- **A physician from nation A shall utilize his/her electronic proof of professional attribute in nation B**
 - **Electronic document e.g. on a health professional card shall be accessed by authorities**
 - **Identity and professional attribute must be confirmed**

Use case: Cross border health message between health professionals

- **Patient medical data shall be transmitted by a physician in nation A to a colleague in nation B**
 - E-mail address of recipient must be located
 - Identity and professional attribute of recipient must be confirmed
 - Message linked to a patient ID must be securely transmitted
 - Receiving physician must receive confirmation of ID and professional attribute of the sender



Health professional ID is elementary

- **Focus on simple elementary use cases:**
 - **Cross border remote access to an eHealth resource by a health care professional**
 - Identity and professional attribute must be remotely accessed and verified
 - Start with professional groups covered under Directive 2005/36/EC
 - Limitation to attribute values as specified in Directive 2005/36/EC
 - **Utilization of an eID token (health professional card) in another nation**
 - To be accessed and acknowledged as a professional certificate

eHealth-ID Workshop on March 20&21, 2006 in Amsterdam, NL – extract of results

1. The electronic communication of medical data calls for the highest level of security.
2. As a healthcare professional, you have to prove who you are and what you are e.g. mrs.J.A. Claassen, general practitioner.
3. There is a need to identify who is responsible for ID management in each country.
4. The patient should be in the lead in reading and having access to his record.
5. There should always be logging.
6. There should be an adequate system of supervising the logging process.



Recommendations

- **Agree on a common descriptive framework of eID**
- **Involve competence centres for health professional ID and patient ID,**
- **Specify use cases for cross border access to a prototype eHealth application in multi-bilateral setting,**
- **Facilitate running demonstrators to achieve and prove cross border interoperability,**
- **Involve regulatory bodies to accompany this activity by the negotiation and conclusion of recognition agreements,**
- **Involve users in pilot areas,**
- **Support the European regulative process to anchor respective elements into future legislation.**



www.i2-health.org

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