
Advanced security activities for eHealth

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CEN/ISSS eHealth Standardization Focus Group

Fraunhofer Health Telematics Project Group

EFMI WG Security, Safety and Ethics

EFMI WG Electronic Health Records

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- Introduction** All developed countries face the challenge to improve quality, safety and efficiency of their health systems under the conditions of
- demographic developments with aging and multi-diseased citizens,
 - increased expectations to quality of life with increasing demands for health services,
 - growing costs for advanced biomedical, pharmaceutical and technical methods and products for prevention, diagnosis and therapy,
 - changing social and economical environment moving towards globalisation combined with increased flexibility and mobility of citizens, goods and services,
 - reduced insurance funds.

Solution (1)

Turning health systems to customisable, comprehensive and completely integrated care in close relation to efficient public health.

Current development from organisation-centred to process-oriented has to continue to personalised care (body map area, patient monitoring). Emphasis of prevention and home care.

Such development must be supported by appropriate ICT to support health telematics and telemedicine (eHealth).

Solution (2)

Different strategies have been followed for realising a proper ICT approach including effective infrastructural services:

a)

“Monolithic” architecture for comprehensive solutions.

b)

Open, flexible, scalable, portable, user-friendly, standard-based, service-oriented, knowledge-based, semantically interoperable, and trustworthy solution.

Focus Group History

Call for FG

17 December 2003: Kick-off Meeting

Appointment of Chair, Steering Committee and the Editors Ray Rogers and Francois Mennerat

16 August 2004: 1st draft of the FG Report for internal comments

22 November 2004: 1st draft of the FG Report for public comments

22 February 2005: Circulation of the final draft to eHSFG members for endorsement

12 December 2005: Open Conference under Dutch EU Presidency

1 March 2005: Final FG Report

4 March 2005: Submission to the CEN/ISSS Forum



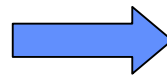
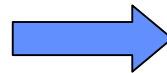
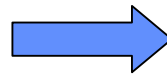
eHealth Europe

Strategic Objectives

Enabling patient mobility as well as cross boundary access to health services

Reducing clinical errors as well as improving patient safety
Improving access to high quality information for both patients and health professionals

Improving efficiency of health services



Critical Applications

Improving access to clinical records:
EHR incl. EHR architecture
Electronic exchange of health data incl. electronic transfer of prescriptions (ePrescriptions)
ePrescribing with decision support

Digital imaging and related services
requests and result reporting

Core Data Sets e.g. for health surveillances

Infrastructure to underpin applications

Management of any principal's identification, in the patient's context including:

- EU Health Insurance Card (enhanced by carrying medical data and providing cross-border access control facilities);
- A common approach to patient identifiers;
- Access control and authentication;

Protecting personal information (based on PKI and data cards (tokens) for professionals and citizens/patients);

Terminological systems for clinical records and medicines;
EU Health Data Cards.

FG Recommendations

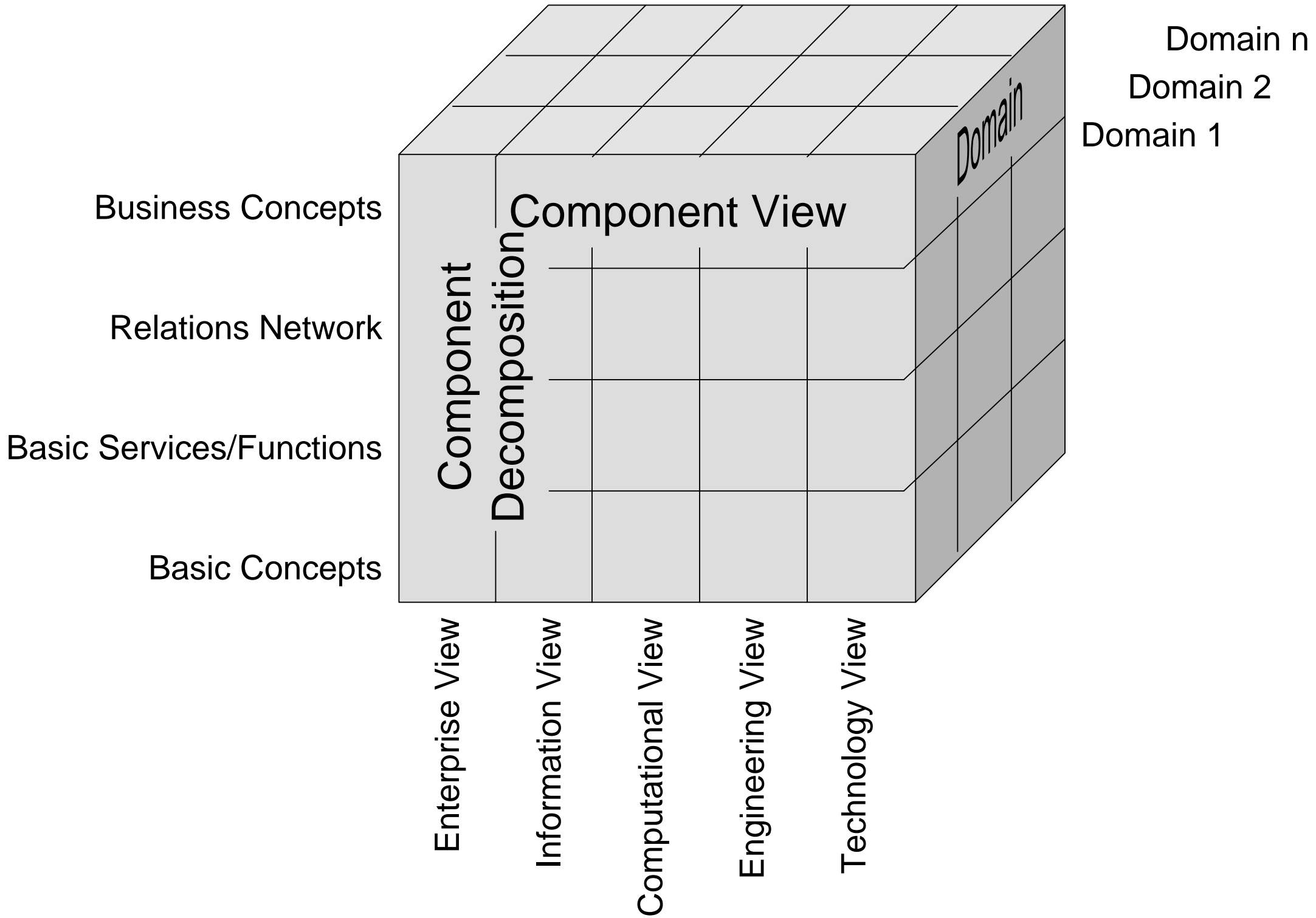
- Main Recommendation: Establishing a permanent eHealth Interoperability Platform
- Improving access to records
- Reducing medication-related errors, and e-prescribing
- Safety of health informatics products
- Improving access to quality health information - Metadata for knowledge resources
- Efficiency of healthcare processes - Workflow models and clinical pathways

FG Recommendations (cont.)

- Electronic transfer of prescriptions
- Information exchange to support inter-working and the mobile citizen
- Case-mix groupers based on diagnoses and procedures
- Quality indicators
- Improving availability of standards
- Commission's support to European standardisation
- Towards an international multilingual reference terminology
- Security services
- Health cards

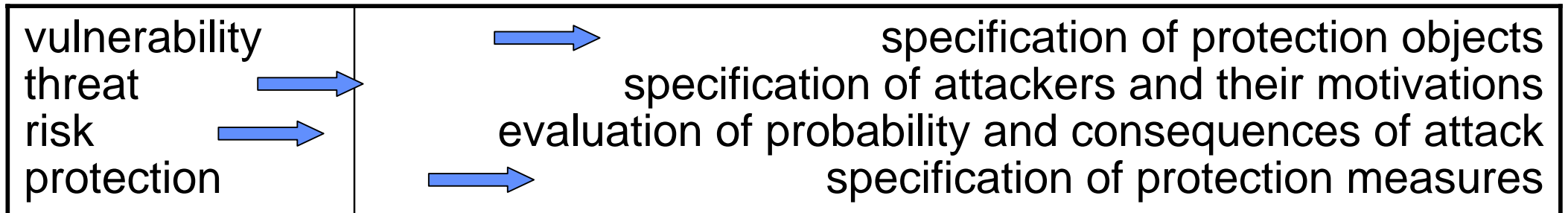
Architectural Paradigms for Future-Proof Semantically Interoperable Health Information Systems

- Distribution
- Component-orientation (flexibility, scalability)
- Separation of platform-independent and platform-specific modelling →
Separation of logical and technological views (portability)
- Specification of reference and domain models at meta-level
- Interoperability at service level (concepts, contexts, knowledge)
- Enterprise view driven design (user acceptance)
- Multi-tier architecture (user acceptance, performance, etc.)
- Appropriate multi-media GUI (illiteracy)
- Common terminology and ontology (semantic interoperability)
- Appropriate security and privacy services



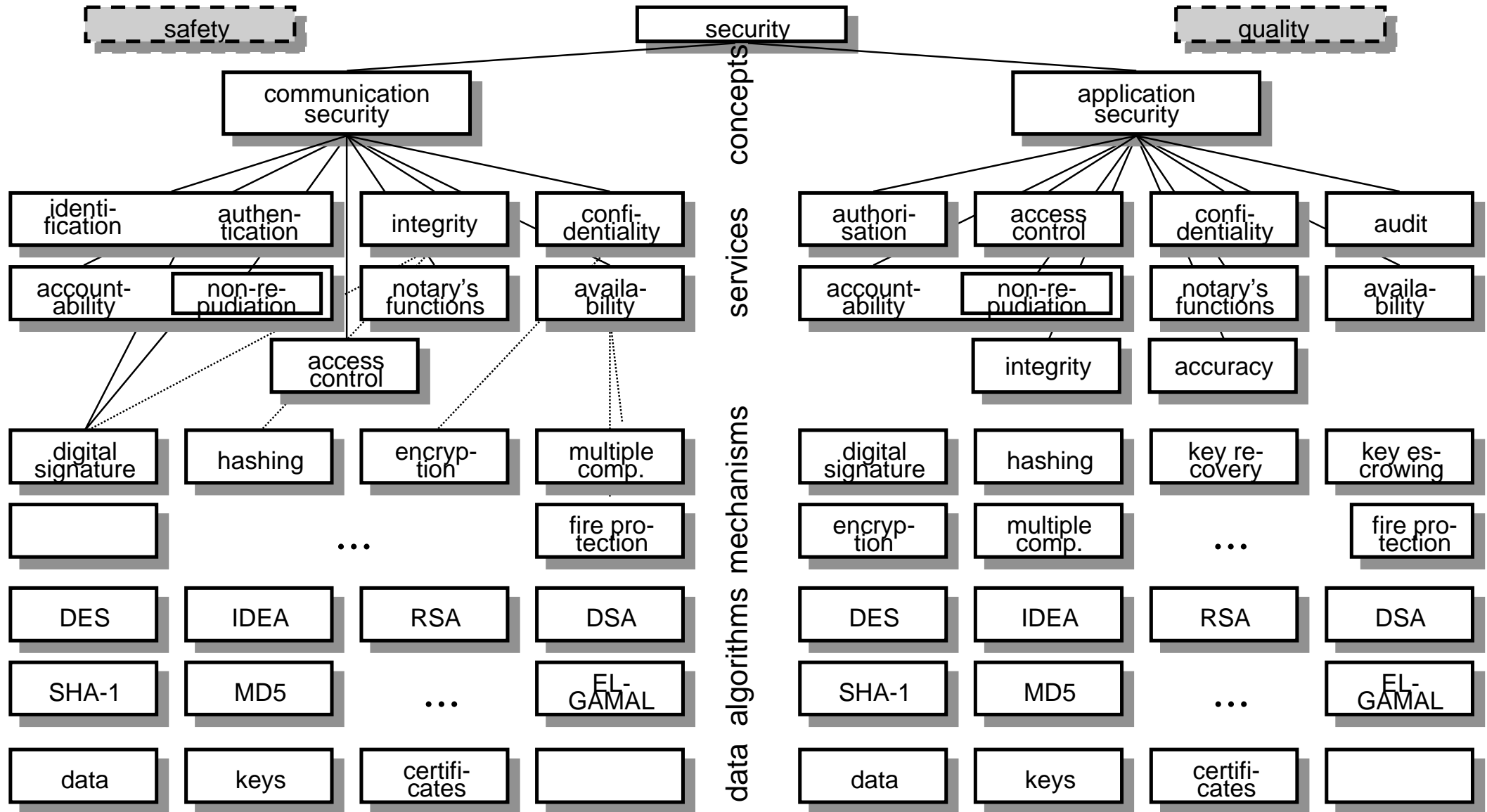
Data Security Concept of an Enterprise

- The data security concept is based on the enterprise business concept, and is part of the general data processing concept
- Security policies must be derived from enterprise policies

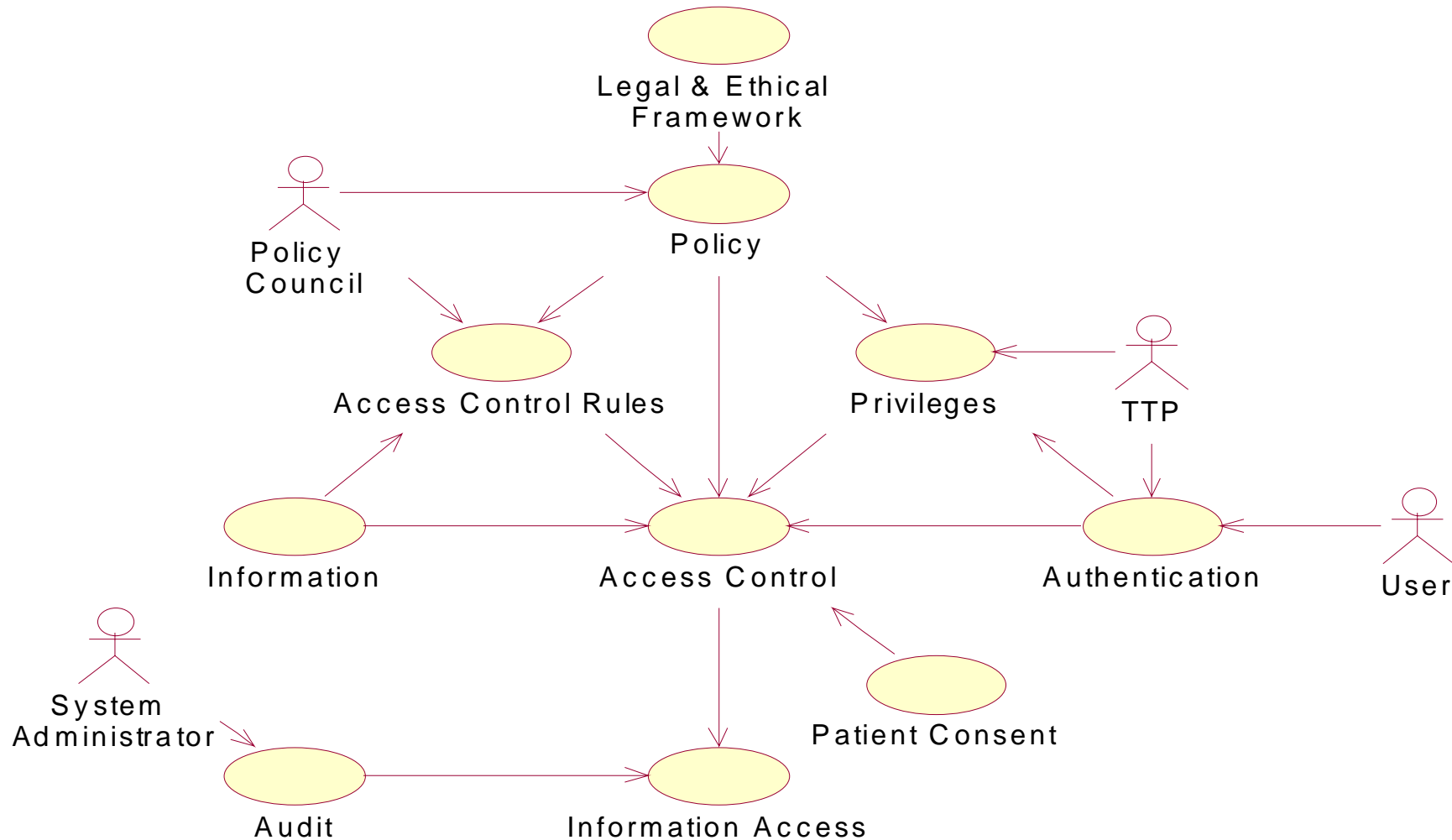


Security Policy

- Security policy is a complex of legal, organisational, functional, medical, social, ethical and technical aspects, which must be considered in the context of data protection and data security.
- Security policy defines the framework, rights and duties of principals involved, but also consequences and penalties in the case of disregard of the fixings taken.



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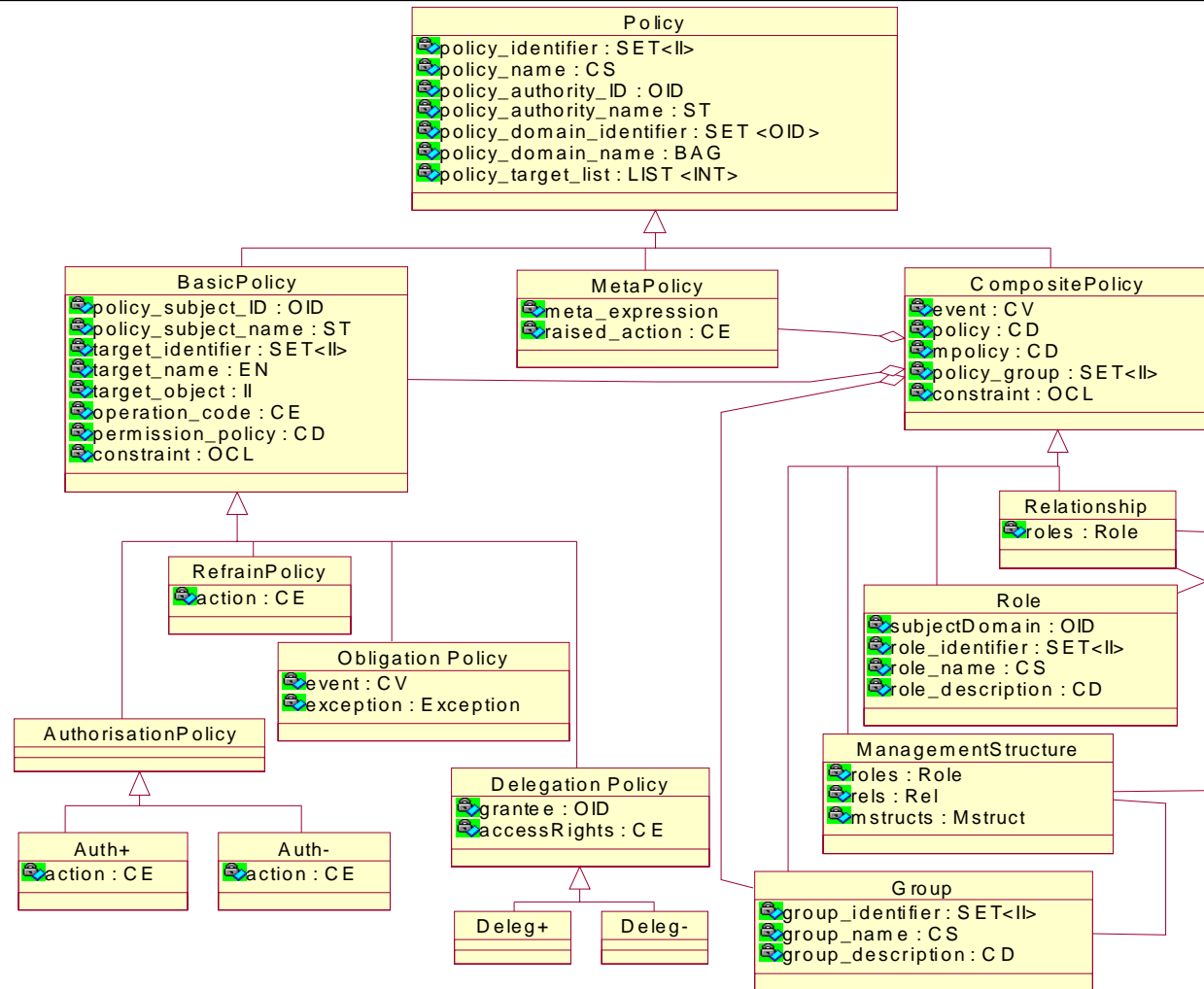
Security-Related Use Case Types

- PolicyManagement
- UserManagement
- RoleManagement
- UserAuthentication
- PatientConsent
- CommunicationInitialisation
- InformationRequest
- AccessControl
- InformationProvision
- InformationTransfer
- Audit

Models Used

- Domain Model
- Authentication Model
- Communication Model
 - Secure Object
 - Secure Channel
- Policy Model
- Role Model
- Delegation Model
- Control Model
- Privilege Management and Access Control Models
- Audit Model

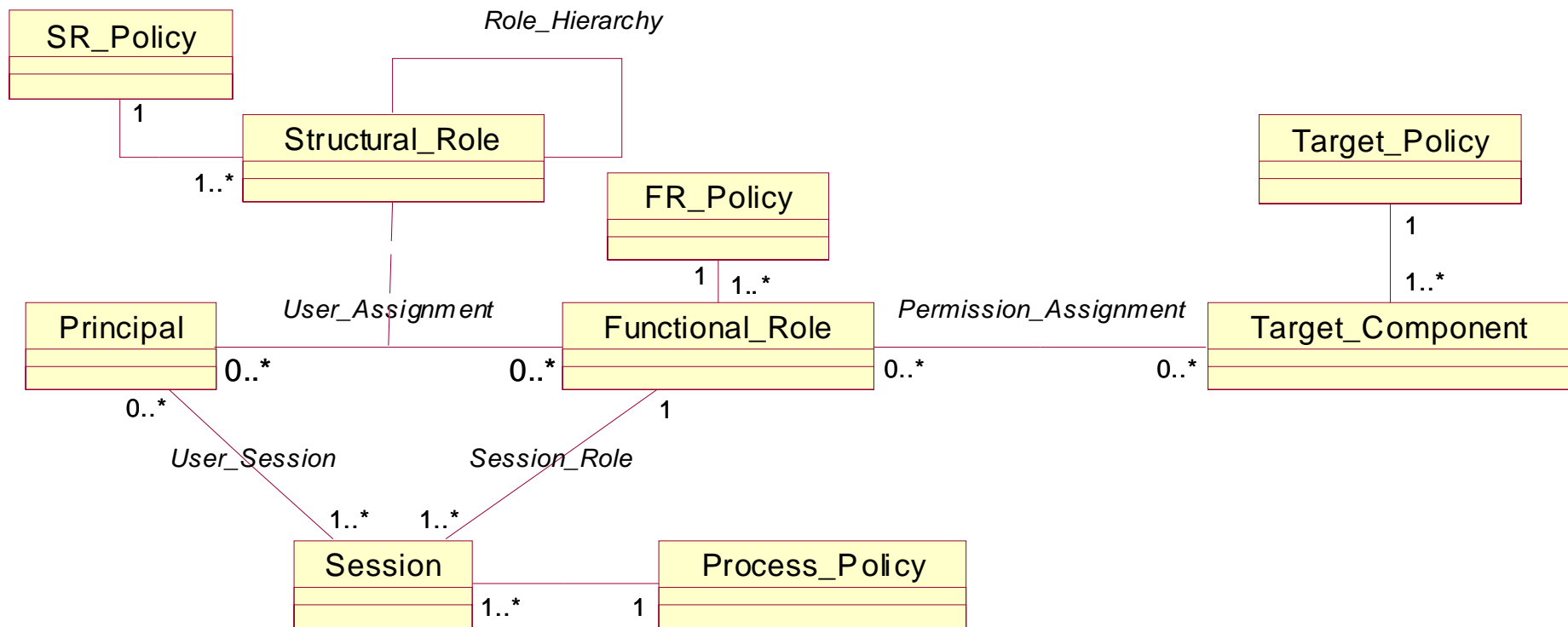
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Roles

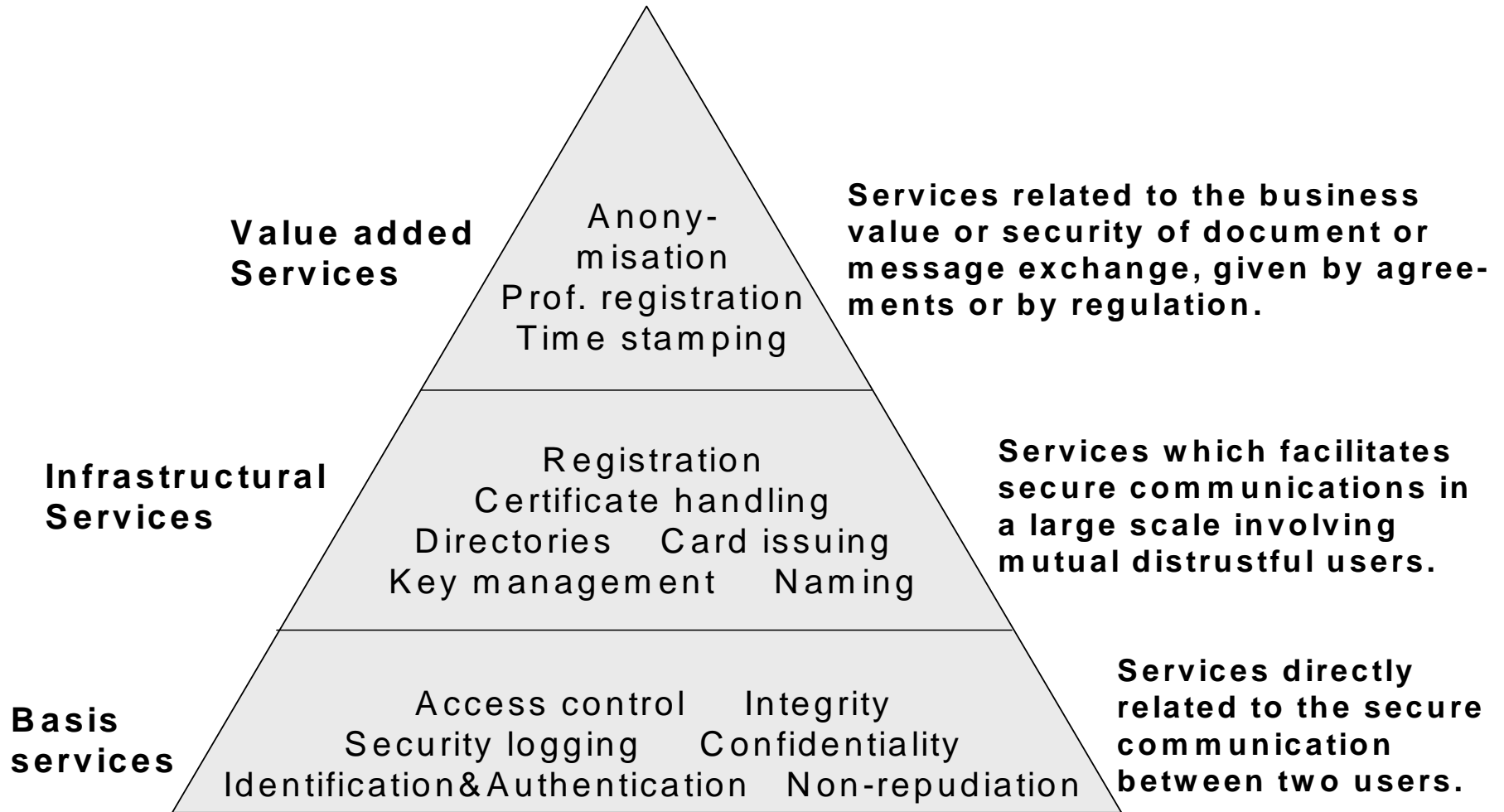
- For managing role-relationships between the entities, organisational and functional roles can be defined.
- Organisational roles specify relations between entities in the sense of competence (RIM roles) often reflecting organisational or structural relations (hierarchies).
- Functional roles are bound to an act. Functional roles can be assigned to be performed during an act. They correspond to the RIM participation.

Policy-Driven, Role-Based Access Control

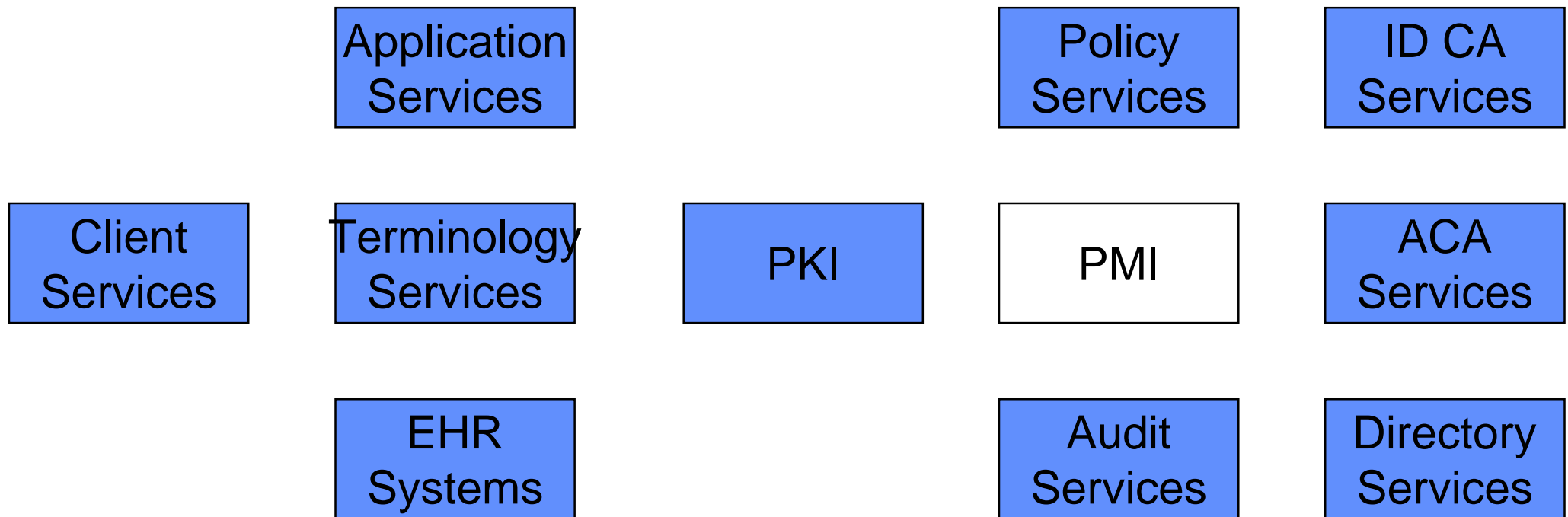


**“Functional
Roles”
Established in the
CEN ENV 13606
Revision**

- Subject of care (normally the patient)
 - Subject of care agent (parent, guardian, carer, or other legal representative)
 - Responsible (personal) healthcare professional (the healthcare professional with the closest relationship to the patient, often his GP)
 - Privileged healthcare professional
 - nominated by the subject of care
 - nominated by the healthcare facility of care (there is a nomination by regulation, practice, etc.)
 - Healthcare professional (involved in providing direct care to the patient)
 - Health-related professional (indirectly involved in patient care, teaching, research, etc.)
 - Administrator (and any other parties supporting service provision to the patient)
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Important eHealth Components (logical view)



Conclusions

European Commission and European SDOs established a project for specifying requirements for eHealth Interoperability, in that context addressing the need for close European and global collaboration of all stakeholder communities, organisations, other SDOs, etc.

Currently, the FG Report is under implementation setting up the political and the legal framework as well as establishing the eHealth Interoperability Platform according to the FG Main Recommendation.

**For further information about the CEN/ISSS eHealth Standardization Focus Group
look at**

www.cenehealth.org

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