Antilope

Advancing eHealth Interoperability

Antilope – refinement of the eEuropean Interoperability Framework

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Nictiz

SEVENTH FRAMEWORK PROGRAMME

Introduction

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Overview

- Three key messages
- Goals of Antilope
- Deliverables
- **eHealth European Interoperability Framework**
  - Antilope Use Cases
  - Linking Use Cases to IHE and Continua Profiles
  - Templates for Use Cases and Realisation Scenarios
  - Refined interoperability schema
- Three key messages (with solutions from Antilope)

Three key messages

Interoperability requires a shared definition of interoperability levels, terms and use cases
Use Cases are important building blocks in the realisation of interoperability
Using open, international standards and profiles in the implementation of Use Cases future-proofs investment

Goals

- **Refinement of eHealth European Interoperability Framework**
  - Provide a comprehensive set of Use Cases that can be used throughout Europe as a basis for national and regional implementations
  - Provide tools and schemas that can assist in a shared understanding of interoperability issues
- **Educational material**
  - For summits, discussions, collaborations and projects

Deliverables

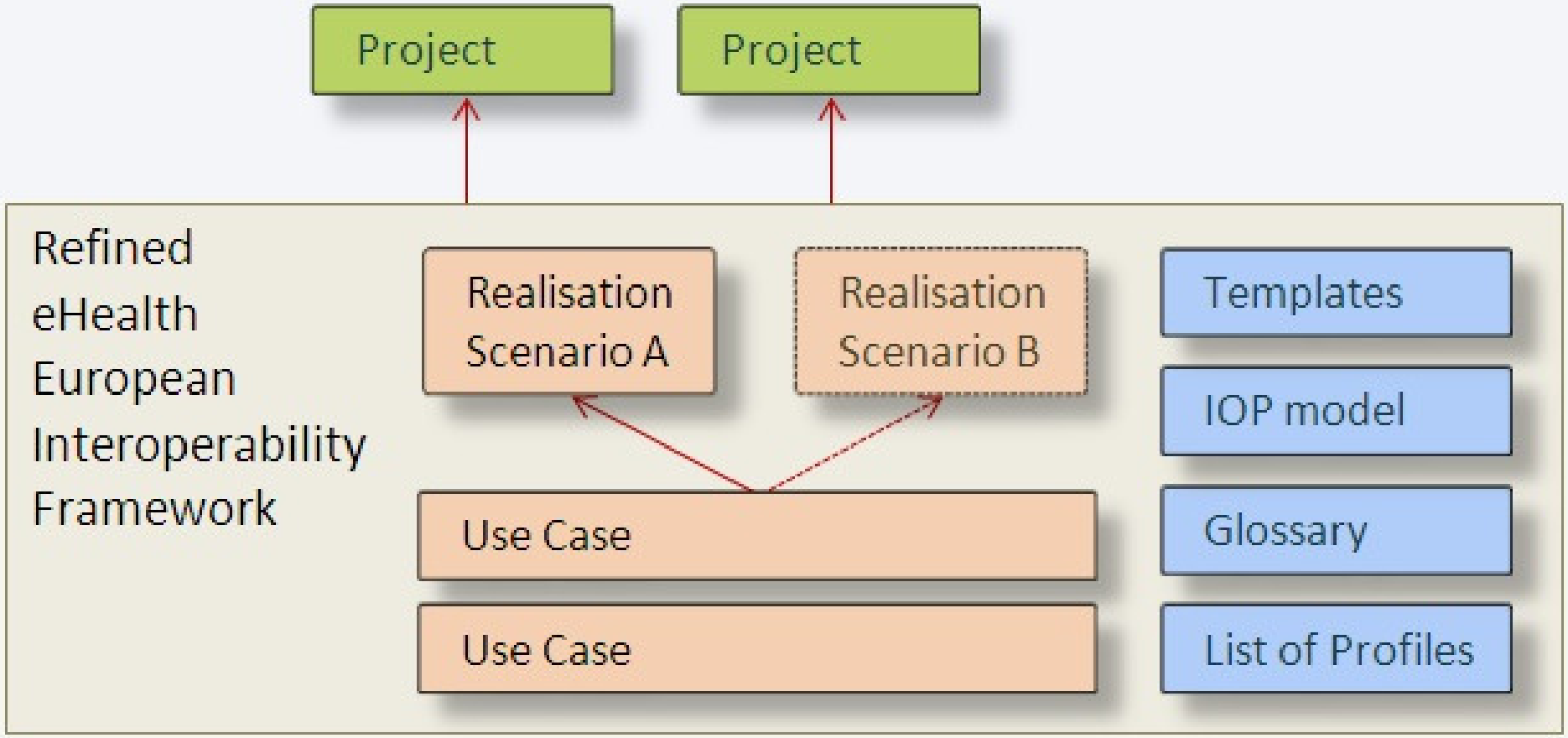
1. D1.1 Refinement Definition document

- Set of Use Cases
- Linking to interoperability Standards and Profiles (through Realisation Scenarios)
- Templates for description of Use Cases and Realisation Scenarios
- Model for interoperability levels
- Glossary of interoperability terms and definitions
- Overview of the IHE and Continua Profiles mentioned in the Antilope Use Cases
- Recommendations for governance and lifecycle

2. D1.2 Educational material

- PowerPoint presentation (this presentation)
- Refinement Definition document (see above)

Interoperability Framework



The Antilope Use Cases

#	Medical domain	Description	Scale
1	Medication	e-Prescription and e-Dispensing	1a) Cross-border 1b) National/Regional 1c) Intra-hospital 1d) Citizens at home
2	Radiology	Request and results sharing workflow for radiology	2a) National/Regional 2b) Intra-hospital
3	Laboratory	Request and results sharing workflow for laboratory	3a) National/Regional 3b) Intra-Hospital
4	Patient Summary	Patient Summary sharing	4a) Cross-border 4b) National/regional 4c) Citizens at home
5	Referral- and discharge reporting	Cross-enterprise Referral and Discharge Reporting	National /Regional 5a) Referral of patient from primary to secondary care 5b) Discharge report from secondary care
6	Participatory healthcare	Involvement by chronic patients in electronic documentation of healthcare information	Citizens at home
7	Telemonitoring	Remote monitoring and care of people at home or on the move using sensor devices	Citizens at home
8	Multidisciplinary consultation	Medical Board Review	National/Regional

Linking Use Cases to Interoperability Profiles

- **High-level Use Case**
  - Functional description of the interactions between the participants in a process, for a certain purpose.
  - Implementation-agnostic.
- **Realisation Scenario**
  - High level direction for the realisation of a Use Case
  - Can be linked to interoperability Profiles.

Linking Use Cases to Profiles

Antilope Use Cases

Functional description of the interactions between the participants in a process

can be realised through

Realisation Scenarios

High level direction for the realisation of a Use Case

make use of

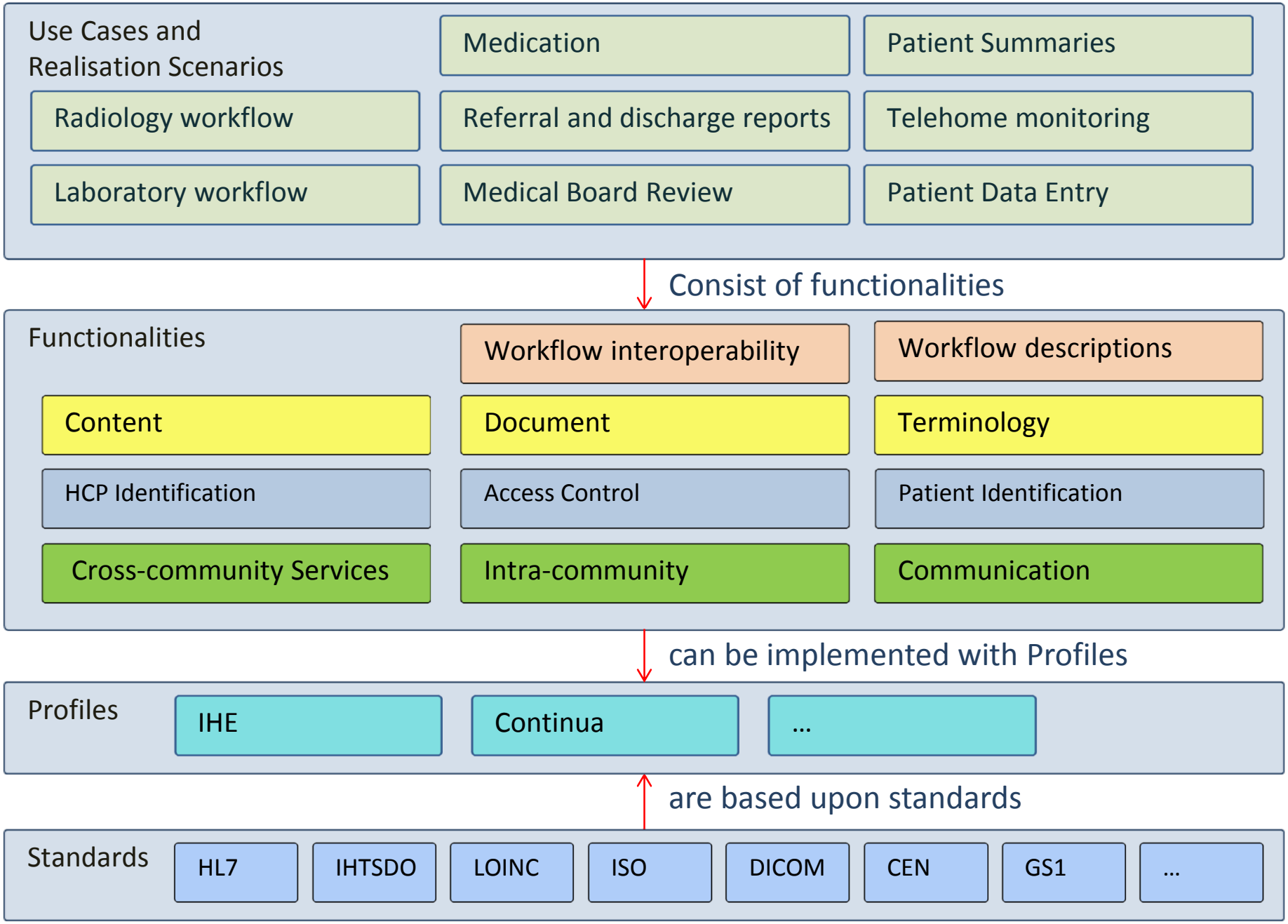
Functionalities, transactions

Abstract processes (for instance, ‘patient login’)

can be implemented using

Profiles and Standards

Guidelines for standards-based implementation


Use Cases and Realisation Scenarios
Medication
Patient Summaries
Radiology workflow
Referral and discharge reports
Telehome monitoring
Laboratory workflow
Medical Board Review
Patient Data Entry
Consist of functionalities
Functionalities
Workflow interoperability
Workflow descriptions
Content
Document
Terminology
HCP Identification
Access Control
Patient Identification
Cross-community Services
Intra-community
Communication
can be implemented with Profiles
Profiles
IHE
Continua
...
are based upon standards
Standards
HL7
IHTSDO
LOINC
ISO
DICOM
CEN
GS1
...

Using Profiles to realise functionalities

Workflow interoperability

- XDW Document Workflow
- XBeR-WD Basic eReferral
- XTB-WD Medical Board Review

Workflow descriptions

- LTW Laboratory Testing Workflow
- SWF Scheduled Workflow (Radiol.)
- CMPD Commun. Medic. PRE and DIS

Content

- XPHR Exch. of Personal Health Record
- XD-LAB Sharing Laboratory Results
- DIS, PRE
- MS Medical Summaries

Document

- DEN Document Encryption
- DSG Document Signature
- DSUB Document Notification

Terminology

- SVS Shared Value Sets
- RTM Rosetta Terminology Mapping
- LCSD Laboratory Code Sets Distribution

HCP Identification

- HPD Healthcare Provider Discovery

Access Control

- XUA(++) Rights and Authorization
- BPPC Patient Consent

Patient Identification

- PIX/PDQ Patient Discovery
- PAM Patient Administration Mgt
- XCPD Cross-Comm. Patient Discovery

Cross-community

- XCA Cross-Community Access

Intra-community

- XDS, XDR Document Sharing
- ATNA Audit Trailing & NA
- CT Consistent Time

Communication

- HRN Health Record Network
- WAN, LAN, PAN Network protocols
- DEC Device-Enterprise Communic.

Templates for Use Case description

- Structured description of Use Cases and accompanying Realisation Scenarios

- Separate templates for the Use Case (= problem description)

  and the Realisation Scenario (= solution direction)

- Can be used for the structured description of additional Use Cases.

Use Case description template

Title	**(Number and) Name of the Use Case**
Purpose	The Purpose of a Use Case describes the objective that needs to be achieved, the goal of the use case. It also describes the relevance of the Use Case (both from the care process and the economical viewpoint).
Domain	The key functional domain of the Use Case: Medication, Radiology, Laboratory, Patient Summary, Referral and Discharge Reporting, Participatory healthcare, Telemonitoring, Multidisciplinary consultation
Scale	Organisational dimensions of the Use. The following scales have been defined for the Antilope Use Cases: Cross-border, National/regional, Intra-hospital, Citizens at home and on the move
Business Case	The Business Case explains the 'why' of the Use Case. It describes the relevance of the Use Case (both medical and economical). This part can contain a short SWOT analysis.
Context	Describes the current situation, influencing factors
Information	High-level description of what type of information is shared, like 'patient summary' or 'medication prescription'
Participants	List of the main participants in the process. These can be individuals or organisational units. They are real-world parties.
Steps	Real-world, functional description of a sequence of interactions between the participants in the different interaction steps of a process

Realisation Scenario description template

Title	(Number and) Name of the Realisation Scenario
Related Use Case	Use Case that this Realisation Scenario is related to
Scenario context	Information and background about the real-world scenario.
Actors	List of the main participating systems, also (confusingly) called Actors, in the process. In this context, an Actor is an ICT system, as opposed to a participant (see above). Actors are involved with each other through transactions.
Transactions	Interoperability workflow steps describing the process steps between systems, including the information that is exchanged.
Process flow	A numbered list of process steps (optionally accompanied by a schematic overview), describing transactions between systems (actors), and the information 'units 'that are exchanged. The process flow describes the interoperability steps, i.e. the steps between the systems, and not the steps within the systems. The process flow can be linked to IHE and/or Continua Profiles. In this part, also swimming lanes and other schemas can be used
Linked Profiles	A list of Profiles that are relevant for the entire process flow, and a numbered list of the Profiles that can be linked to the Process flow steps.
Possible issues	Issues such as legislation and guidelines, social acceptance, language issues, architectural flaws, et cetera, that may affect the realisation of this scenario.

Many different approaches for arranging interoperability levels

Authors	Goh	Goodchild et al.	Bishr	Shanzhen et al.	Ouksel and Sheth	Miller	Tolk	Tolk and Muguira	Bermudez	Shekhar	Schekkerman	Stroetmann	Ding	Nowak	Mohammadi et al.	Kalantari et al.	van Assche	Turnitsa and Tolk	Dekkers	Chen and Daclin
Interoperability level																				
Technical	x	X			x	x		x			x				x	x		x	x	x
Schematic or structural		X	x		x					x				x						
Semantic	x		x	x	x	x		x	x	x	x	x	x	x		x		x	x	x
Organisational		X		x			x				x				x				x	x
Physical																	x			
Empirical																	x			
Syntactic	x	X	x	x	x			x		x		x	x	x			x	x		x
Pragmatic		X		x	x			x									x	x		
Social					x										x		x			
Political or Human						x									x					
Legal		X				x									x	x				
International						x														
Dynamic		X		x	x													x		
Conceptual		X						x										x		

Refined interoperability schema - background

Level 6
Conceptual Interoperability

Level 5
Dynamic Interoperability

Level 4
Pragmatic Interoperability

Level 3
Semantic Interoperability

Level 2
Syntactic Interoperability

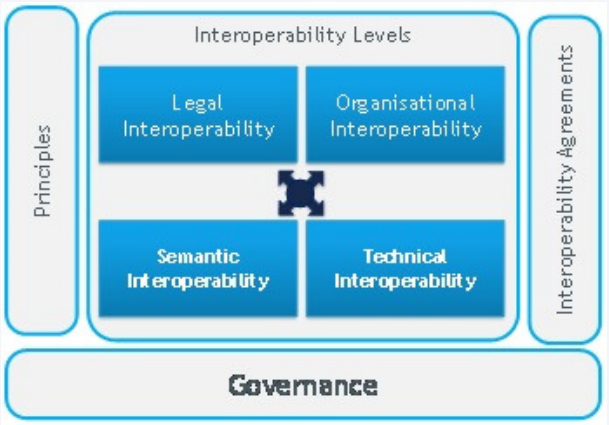
Level 1
Technical Interoperability

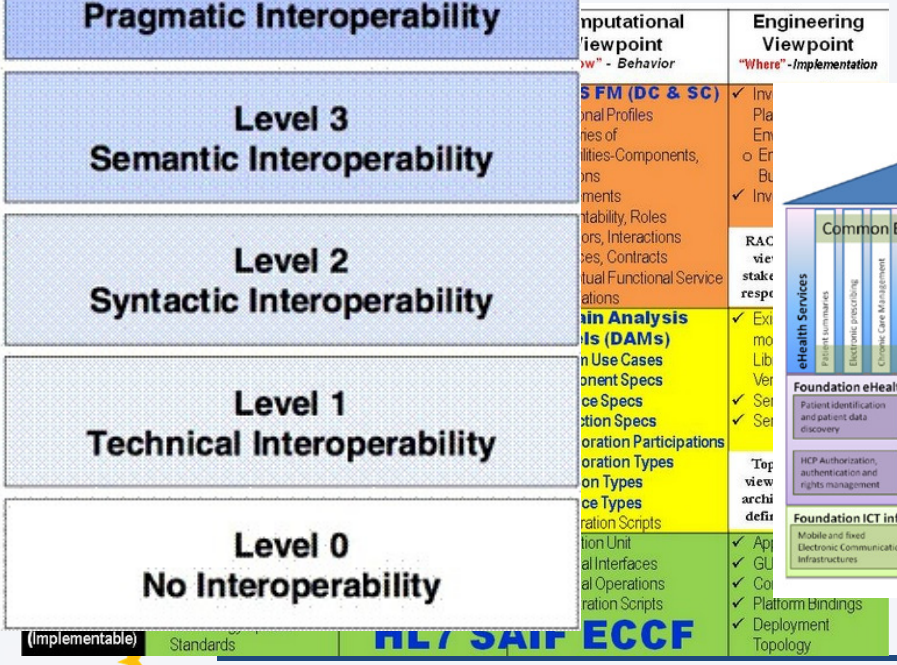
Level 0
No Interoperability

Many different representations

Often:

- too generic to be applicable, or
- too technical to be understandable
- too extensive to be practical





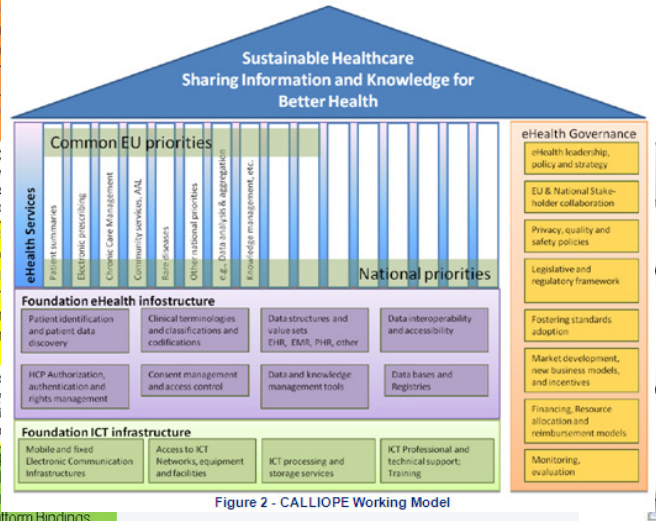
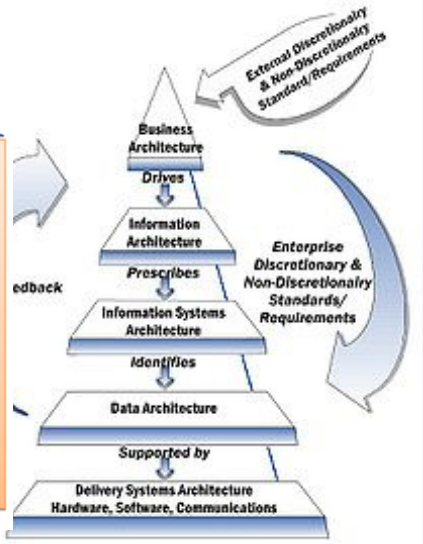
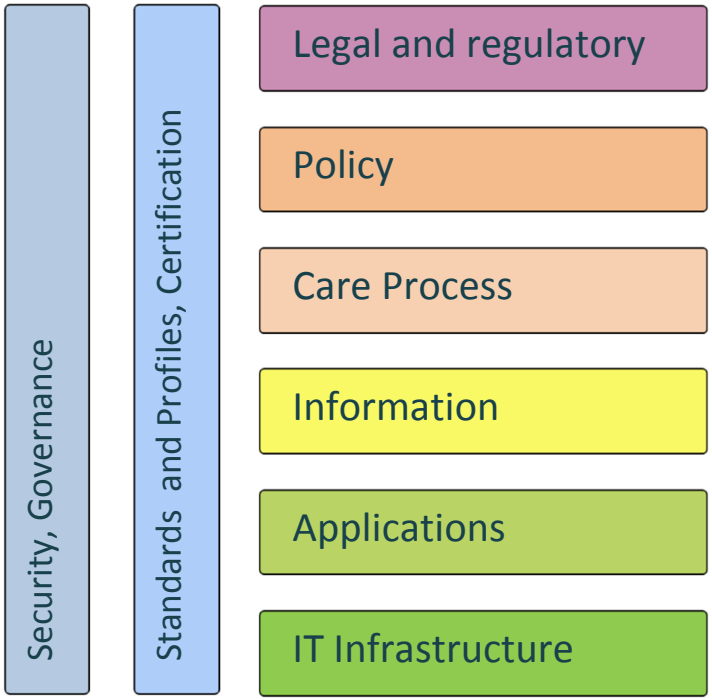


Figure 2 - CALLIOPE Working Model



Antilope Refined interoperability schema



Refined interoperability schema

Activities for reaching interoperability in the different layers

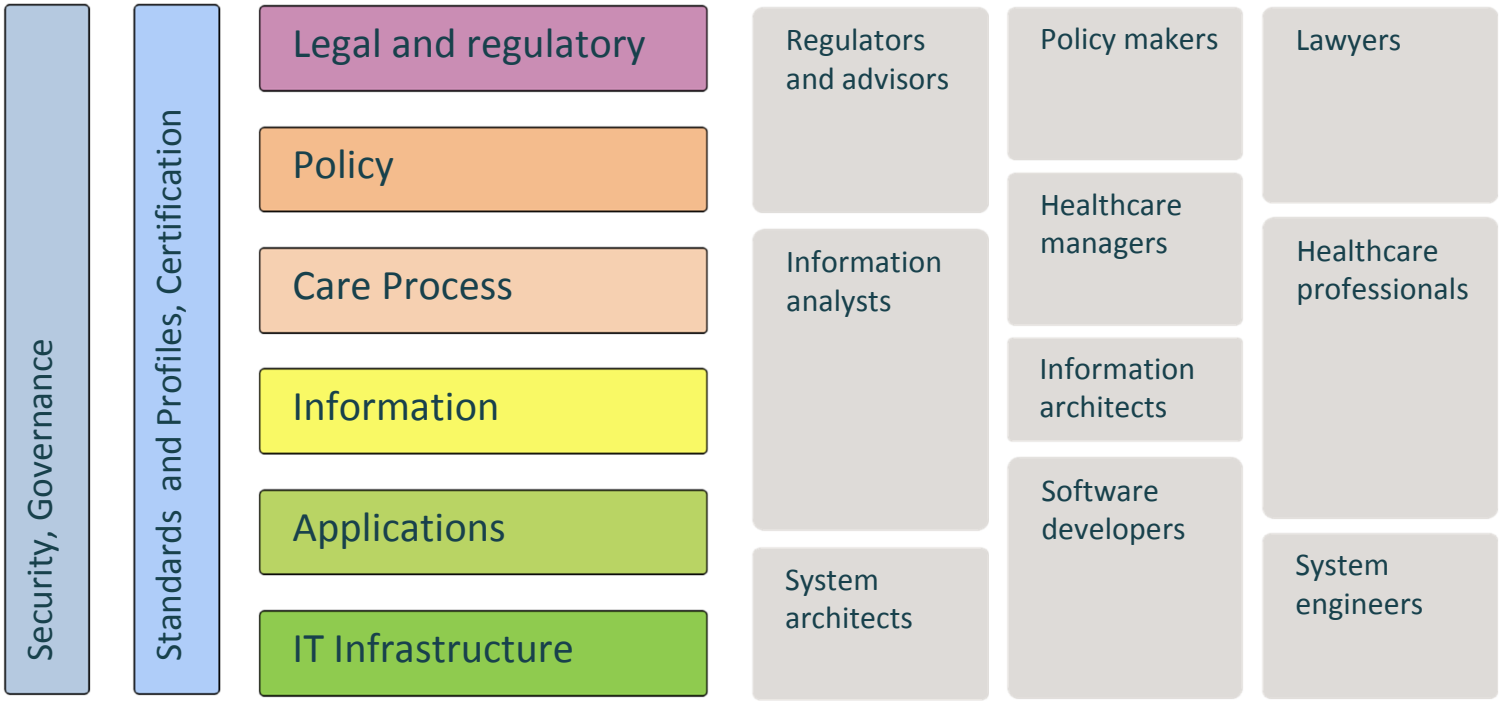
Security, Governance

Standards and Profiles, Certification

Legal and regulatory	**Compatible legislation and regulations**
Policy	**Collaboration agreements between organisations**
Care Process	**Alignment of care processes, shared Use Cases**
Information	**Datamodel, terminologies, interchange format**
Applications	**Integration in healthcare applications**
IT Infrastructure	**Communication, network, servers, databases**

Refined interoperability schema

Stakeholders in the different levels



Three key messages

Interoperability requires a shared definition of interoperability levels, terms and use cases	Antilope offers a set of Use Cases, a glossary of interoperability terms and definitions, a schema for interoperability levels, and a template for the description of use cases.
Use Cases are important building blocks in the realisation of interoperability	The Antilope Use Cases can be used as practical starting points for national/regional eHealth projects.
Using open, international standards and profiles in the implementation of Use Cases is a future-proof investment and facilitates cross-border solutions	The Antilope Use Cases are linked to proven and widely accepted standards and profiles.

Further information

More information is available at the Antilope website:

http://www.antilope-project.eu/