



National Integrated Services Framework

29-30 October 2013
Dublin

Part I

Workshop I

Information Architecture

Introduction

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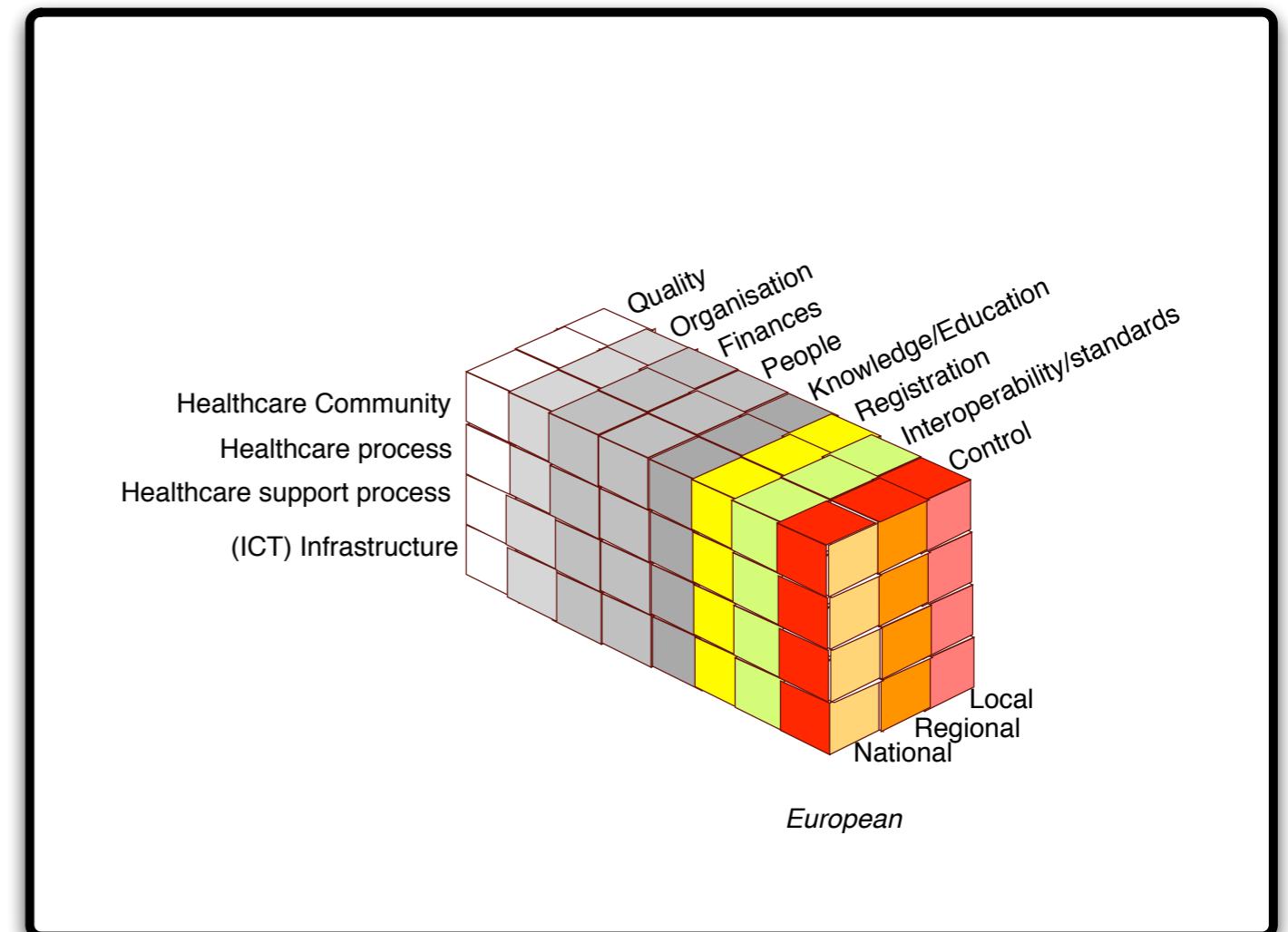
The context of this project is:

Requirements based
facilitation
the exchange of
standardised, structured
health and care data
between IT-systems
based on open International standards

HSE Information Architecture Stakeholders

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- Business and Strategy
- Clinical, Safety and Research
- Technical
- Allied Agencies
- others



Preliminary findings after first Stakeholder Workshop meetings

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Stakeholders involved:

- Business and Strategy
- Clinical, Safety and Research

Preliminary findings after first Stakeholder Workshop meetings

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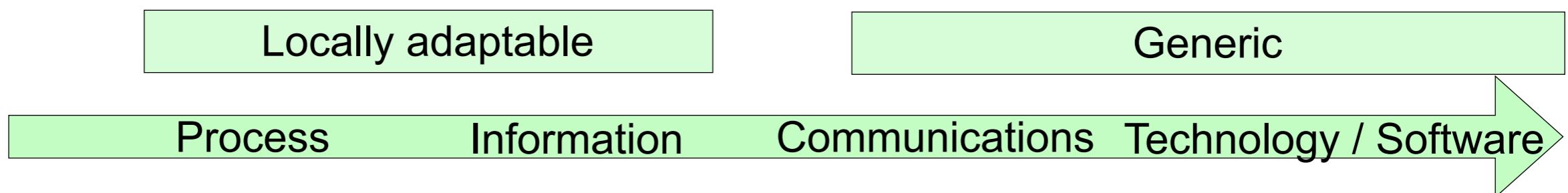
- Strong endorsement and cooperation for the HSE program of work and for the creation of a common Data Dictionary and an Information Architecture Reference Model
- Stakeholders show a clear vision on business opportunities and how existing business functions can be supported / leveraged
- Use of open International standards for structured safe patient data exchange is endorsed
- epSOS data set will be used for the Proof of Concept
- Privacy is important

Introduction

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What is important?



Healthcare is in the lead

P

I

C

T

IT is in the lead



Introduction

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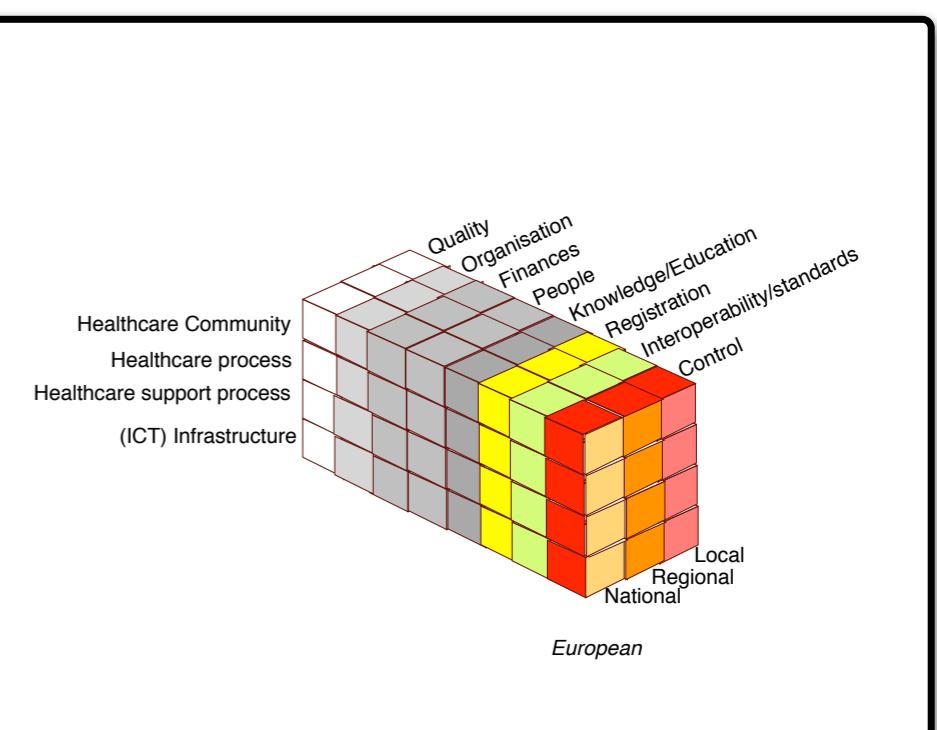
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Complexity

- **IT is complex?**
- **Exchange of data between systems is complex?**
- **Healthcare is complex?**
- **Co-operation in healthcare is complex?**

How must/can we reduce complexity for:

- **healthcare providers?**
- **authorities?**
- **IT-industry?**



- **Introduction: Setting the scene**
- **Why Standards**
- **What standards**
- **Exchange of data between systems**
- **Patient Summary: epSOS**

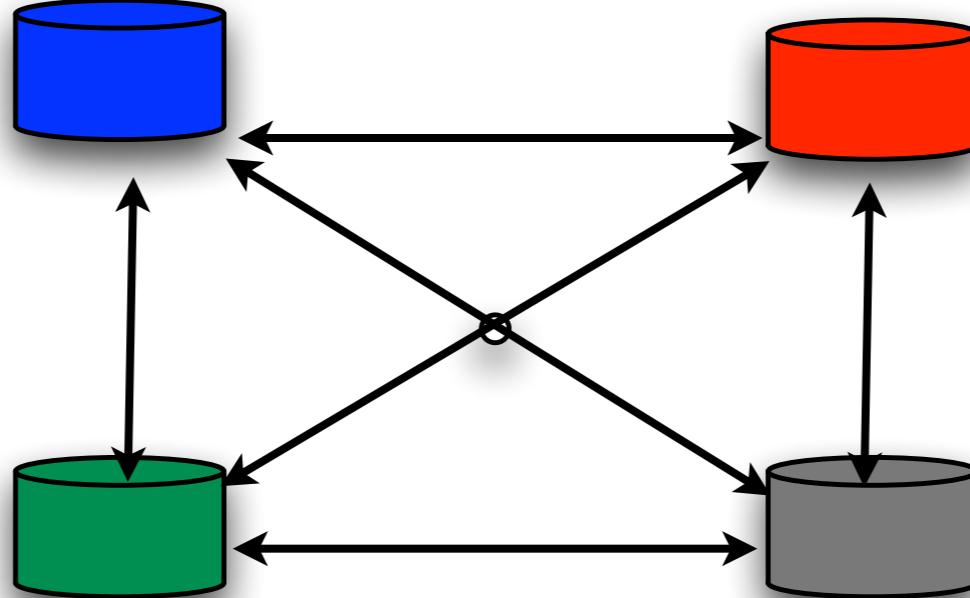
Why Standards

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NO STANDARDS

$$N = n*(n-1) / 2$$



$$n = 100$$

$$N = 100*(99) / 2$$

$$N = 9900 / 2$$

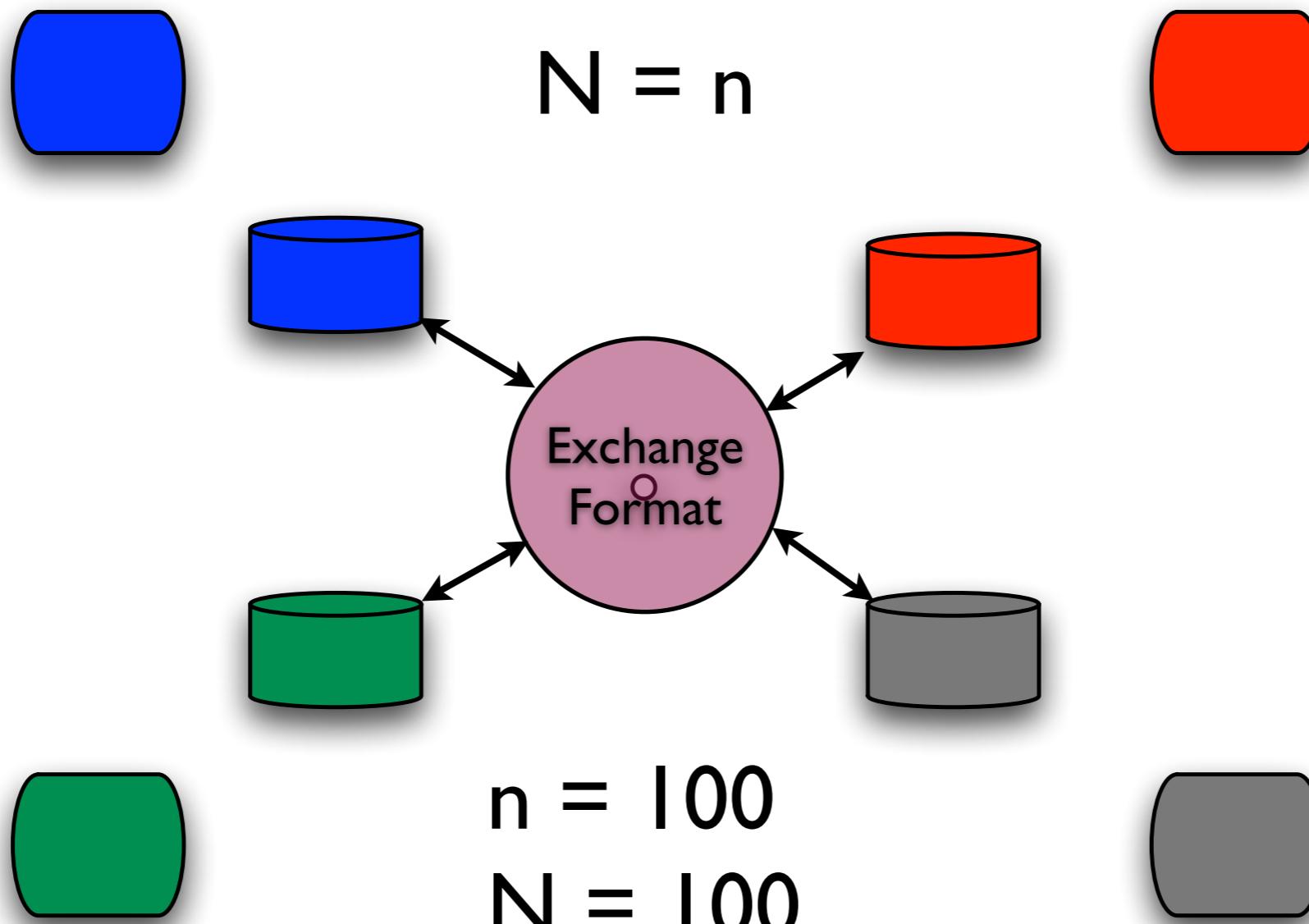
$$N = 4950$$

Why Standards

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EXCHANGE STANDARD



Why European Standards

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- **27 European countries**
- **Many cultures, many languages**
- **One united European Community**
- **Free movement of goods, people, money and services**
- **One big competitive European economic space**

European Standardisation

European standards play
a special role:

- Only National standards derived from European standards can be used in *legislation*
- National and European standards play a role in *procurement*

European developments



Directive on patients' rights in cross-border healthcare



Directorate-General for
Health & Consumers

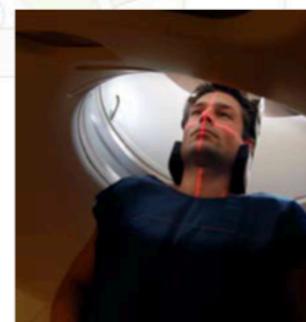
The 3 aims of this Directive



1. Help patients to exercise their rights to reimbursement for healthcare received in another EU country

2. Provide assurance about safety and quality of cross-border healthcare

3. Establish formal cooperation between health systems



European developments



Directive on patients' rights in cross-border healthcare



3. Cooperation between health systems

■ **Recognition of prescriptions**

A prescription issued in another EU country will be more effectively recognised

■ **European Reference Networks**

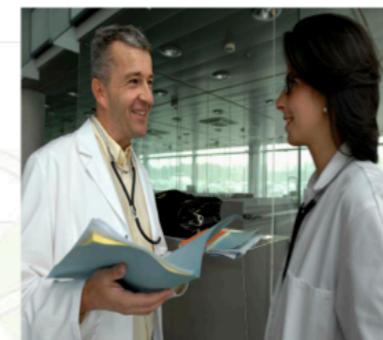
They will bring together specialised centres across Europe helping health experts to disseminate information and expertise

■ **Health Technology Assessment**

A permanent EU structure of cooperation to help decision-makers to make the right decisions on health investment and spending

■ **eHealth**

A first step towards "interoperability" of ICT for health at EU level for safety and quality of care, continuity of care, and health research



European developments



Directive on patients' rights in cross-border healthcare



Directorate-General for
Health & Consumers

The legislative process

- **Adoption** of the Commission proposal: 2 July 2008
- **First reading:** July 2008 - September 2010
- **Second reading:**
 - 19 January 2011: Vote in Parliament
 - 28 February 2011: Formal adoption of the Council
- **Publication in the Official Journal:** 4 April 2011
- **Entry into force:** 24 April 2011

European developments



Directive on patients' rights in cross-border healthcare



Directorate-General for
Health & Consumers

The transposition process

■ **Transposition period:** 30 months (**25 October 2013**)

■ **Bilateral discussions** with 27 Member States (MS):

- COM questionnaire on the transposition of the measures provided for in the Directive (May – October 2011)
- COM bilateral visits in all 27 MS (2011 – 2012) to discuss particular issues related to transposition

■ **Committee on Cross-Border Healthcare**

- Formal forum created by the Directive where all 27 MS will meet regularly to vote on implementing acts and discuss general issues linked with the transposition of the Directive.

European developments



EUROPEAN
COMMISSION

Brussels, 6.12.2012
COM(2012) 736 final

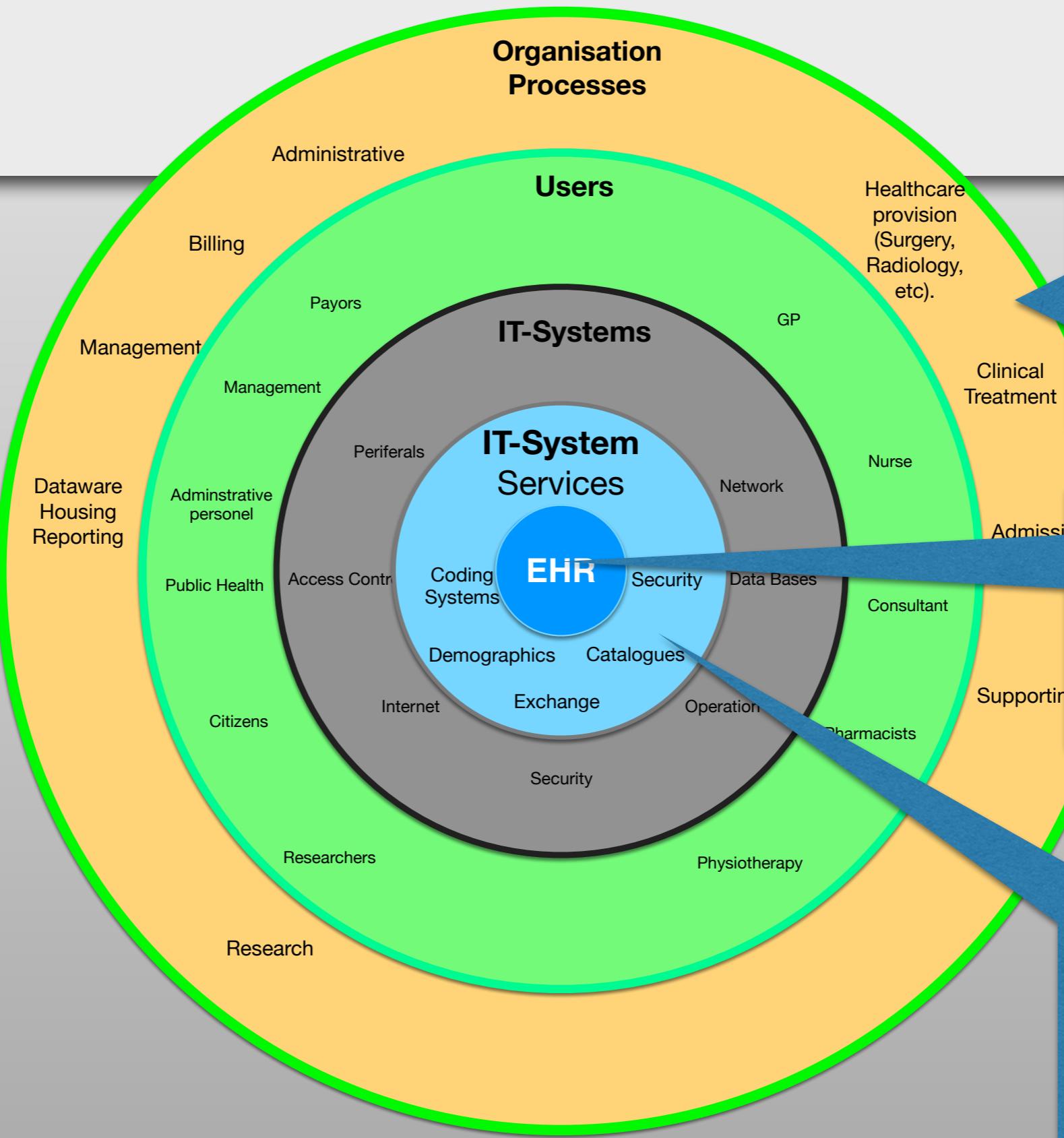
**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

eHealth Action Plan 2012-2020 - Innovative healthcare for the 21st century

The European Commission's
eHealth Action Plan 2012-2020
provides a roadmap:

- to empower patients and healthcare workers,
- to link up devices and technologies, and
- to invest in research towards the personalised medicine of the future.

CEN/ISO ConcurrentUSe



CEN/ISO
ContSys

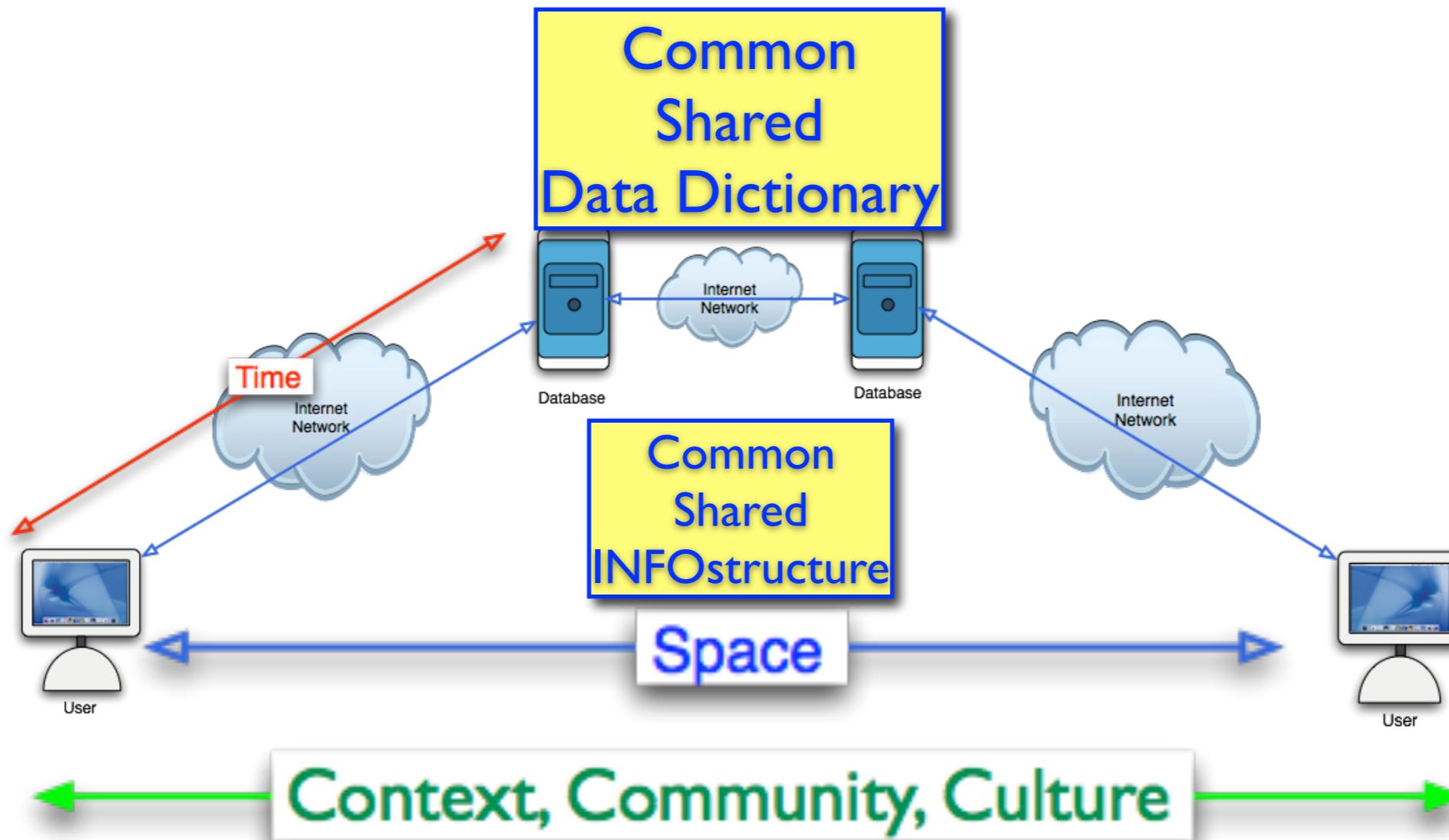
CEN/ISO
HISA

CEN/ISO
HISA

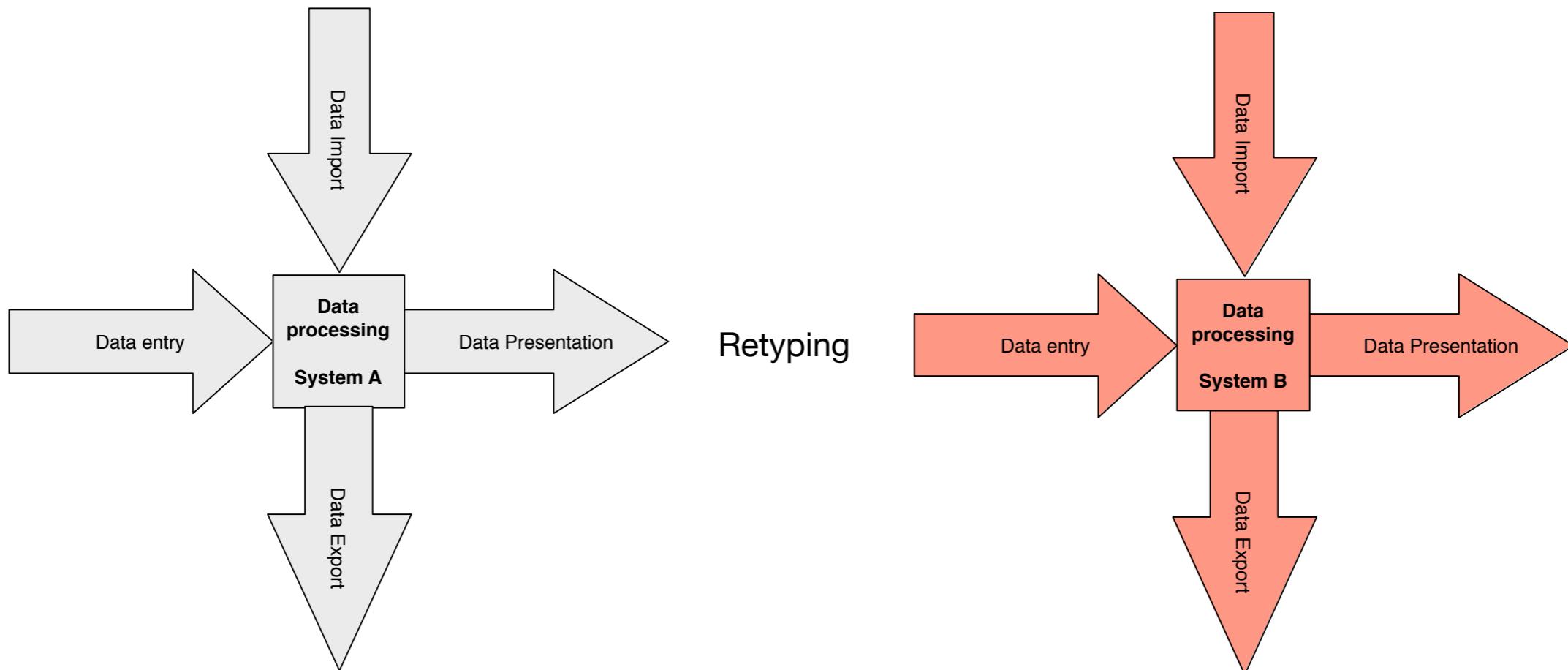
WHAT Exchange of Data

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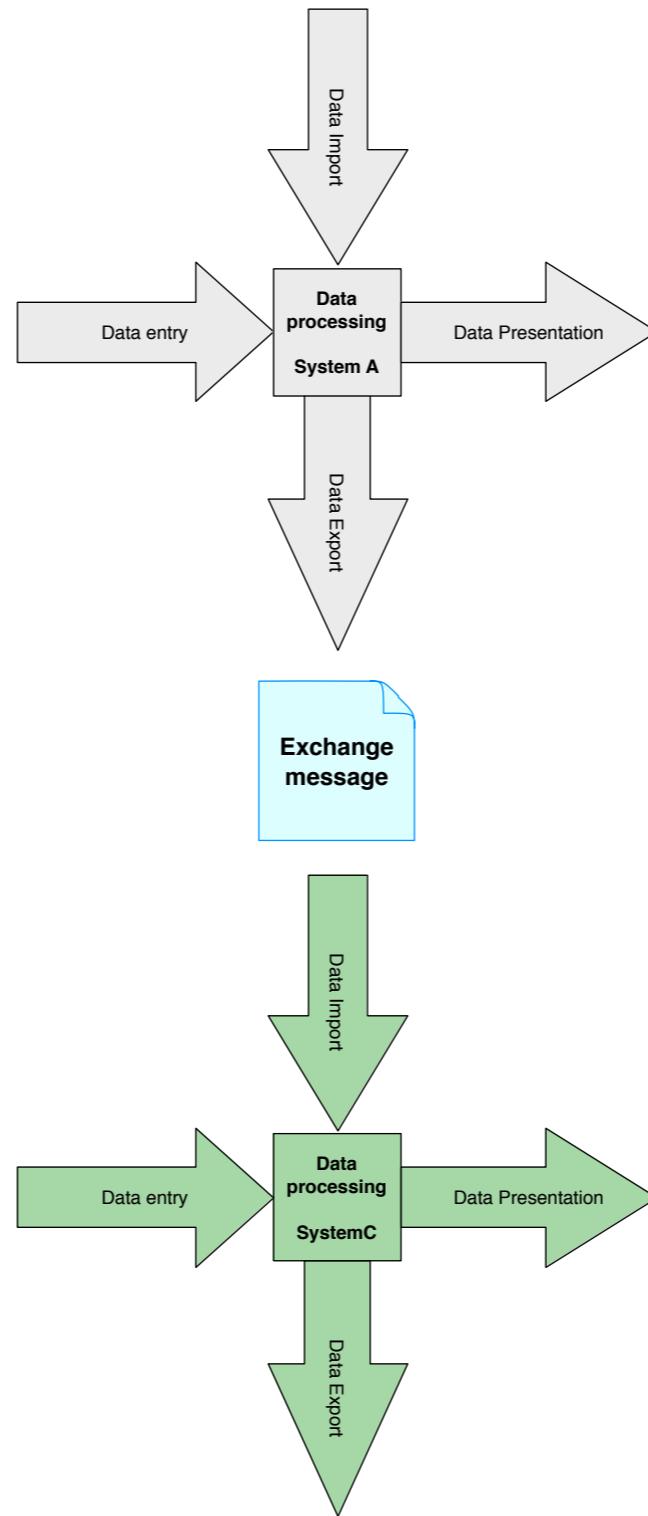
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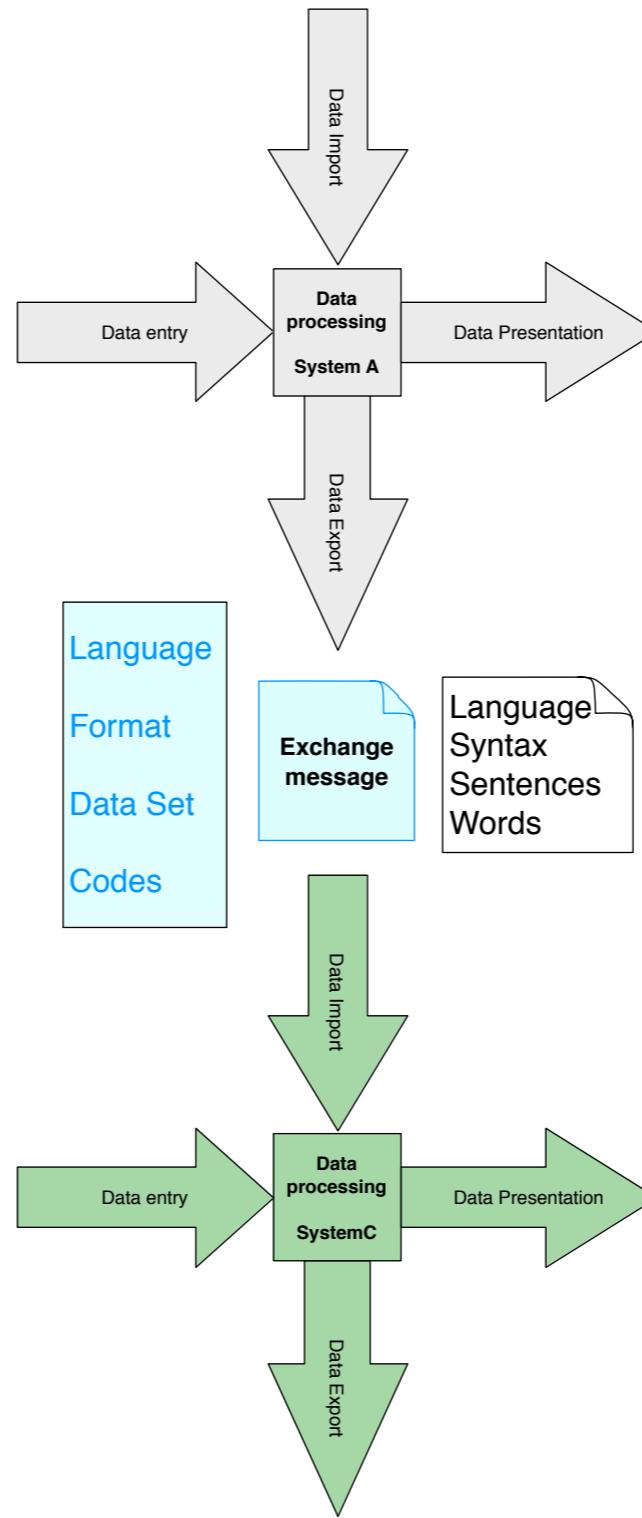
What Standards for IT-System Data Exchange



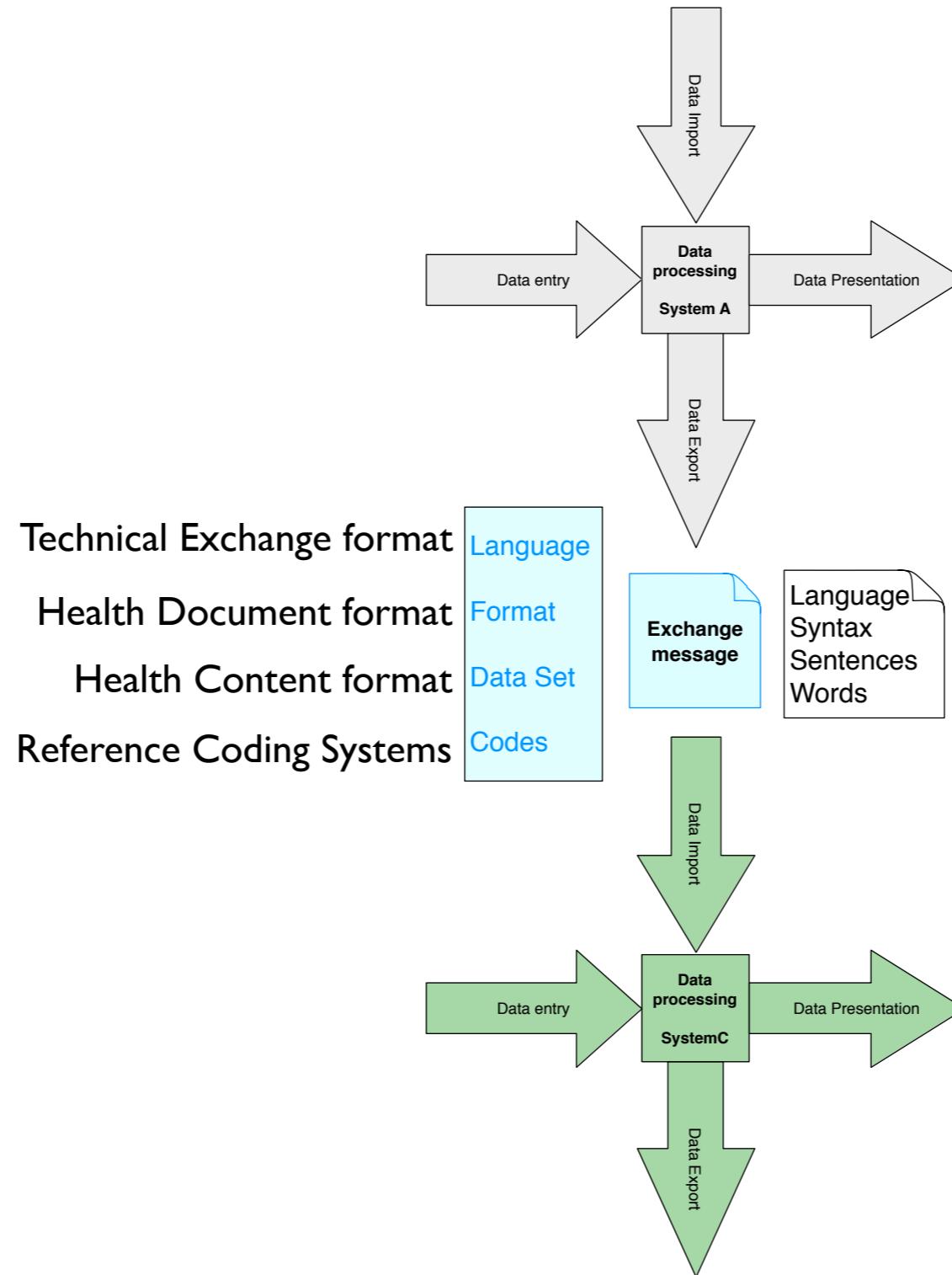
What Standards for IT-System Data Exchange



What Standards for IT-System Data Exchange



What Standards for IT-System Data Exchange

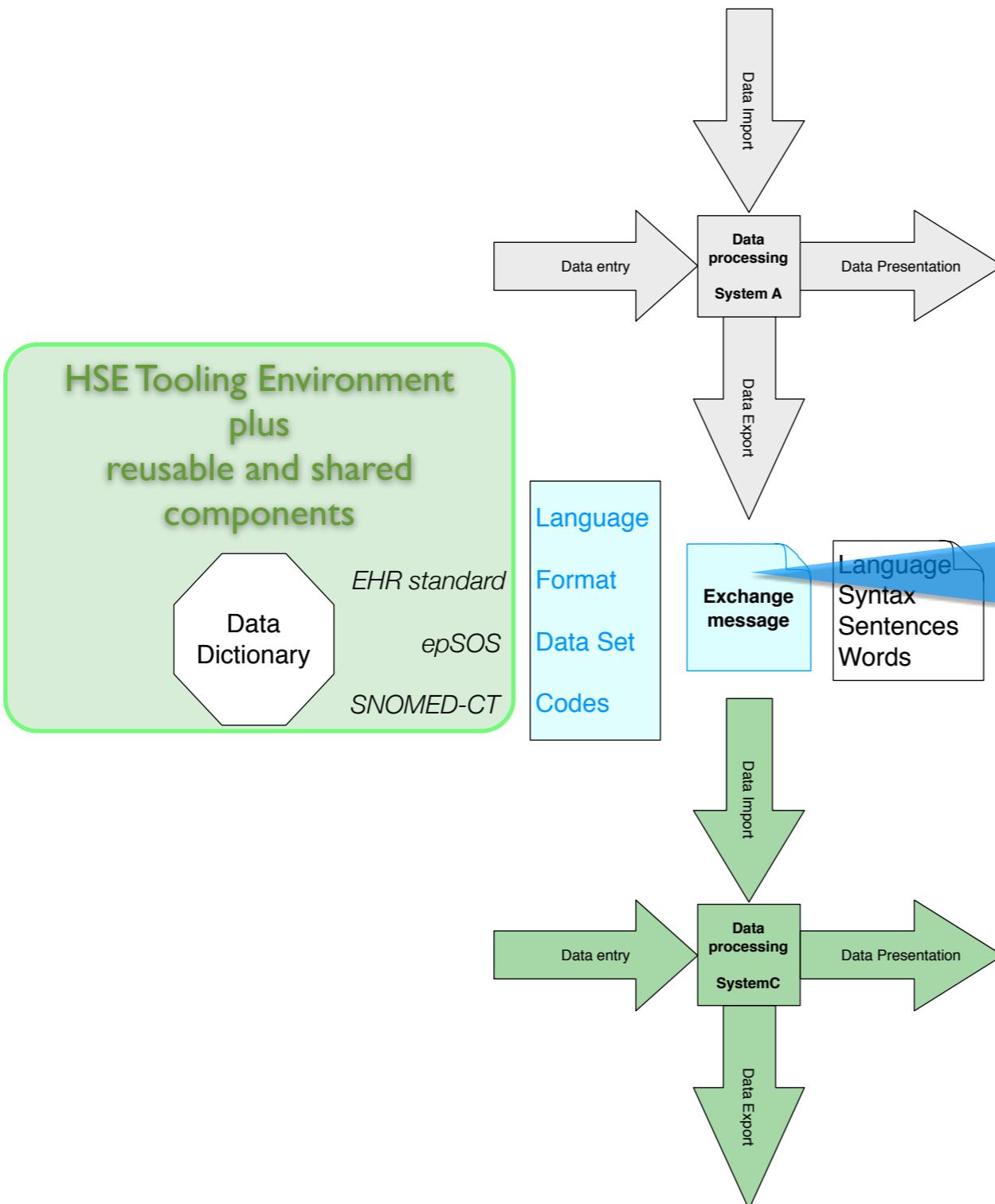


All these are part of
the Information Model

What Standards for IT-System Data Exchange

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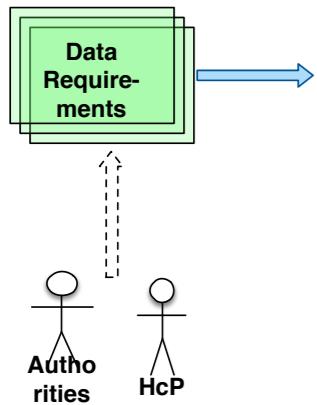


Can we agree that
we need
well governed facilities
for structured
standardised
data?

Benefits

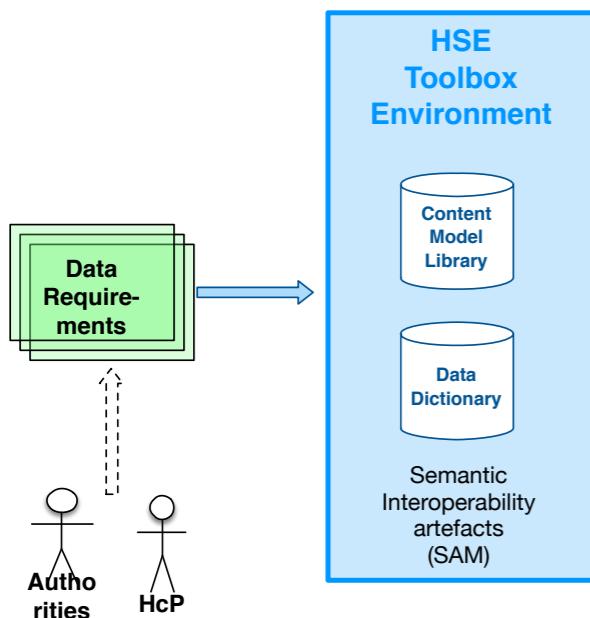
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Co-operating Stakeholders
define Data Sets they need

The HSE Tooling Environment operated by a Health Information Expert:



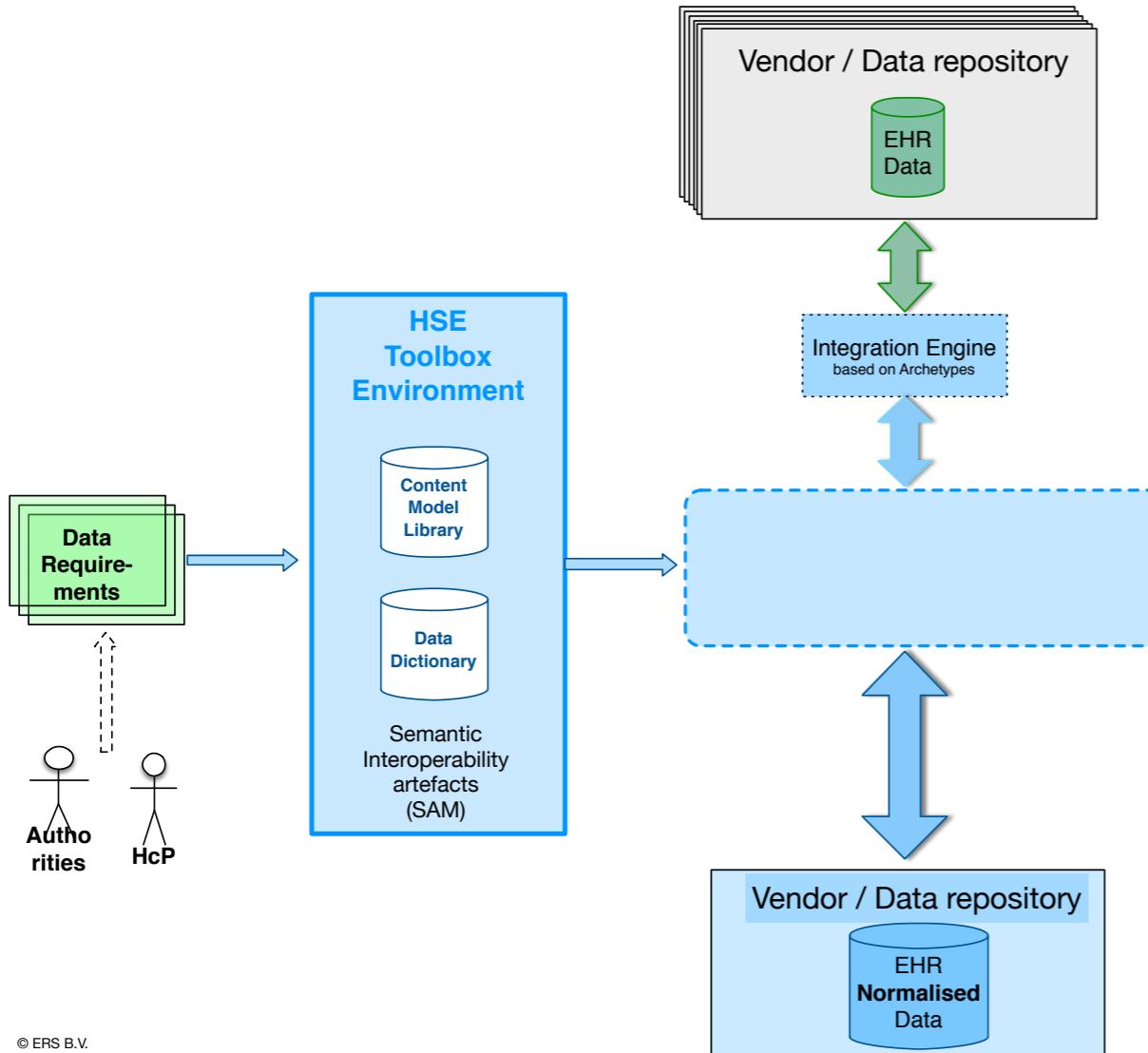
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- I. Content Models
2. Content Model Editor
3. Codes from a Reference Coding system (SNOMED-CT) attached
4. Data Dictionary with precise curated definitions

Benefits

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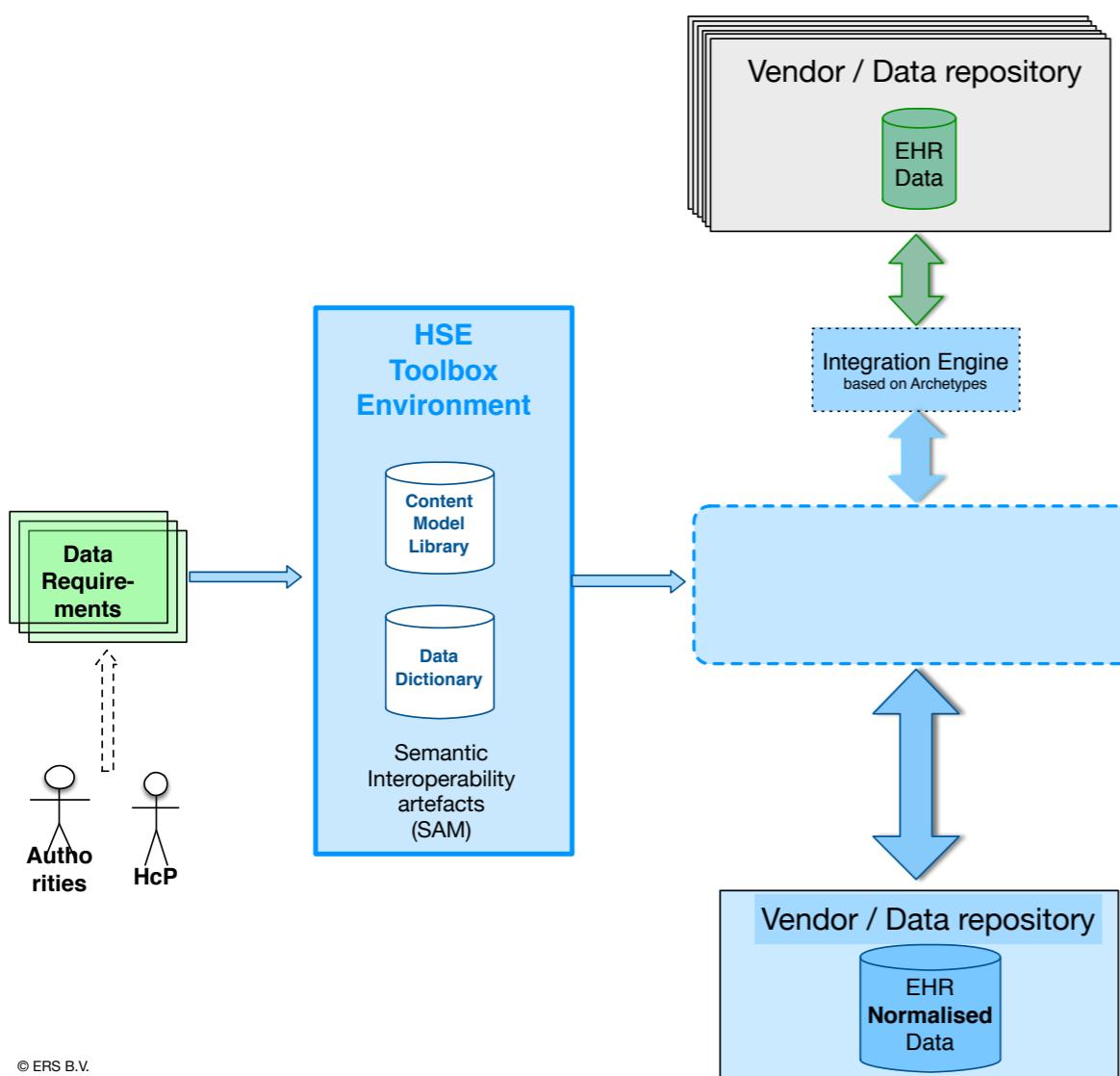


Possibilities:
The vendors can be informed via procurement about requirements and about the data set the IT-system must be able to support

Benefits

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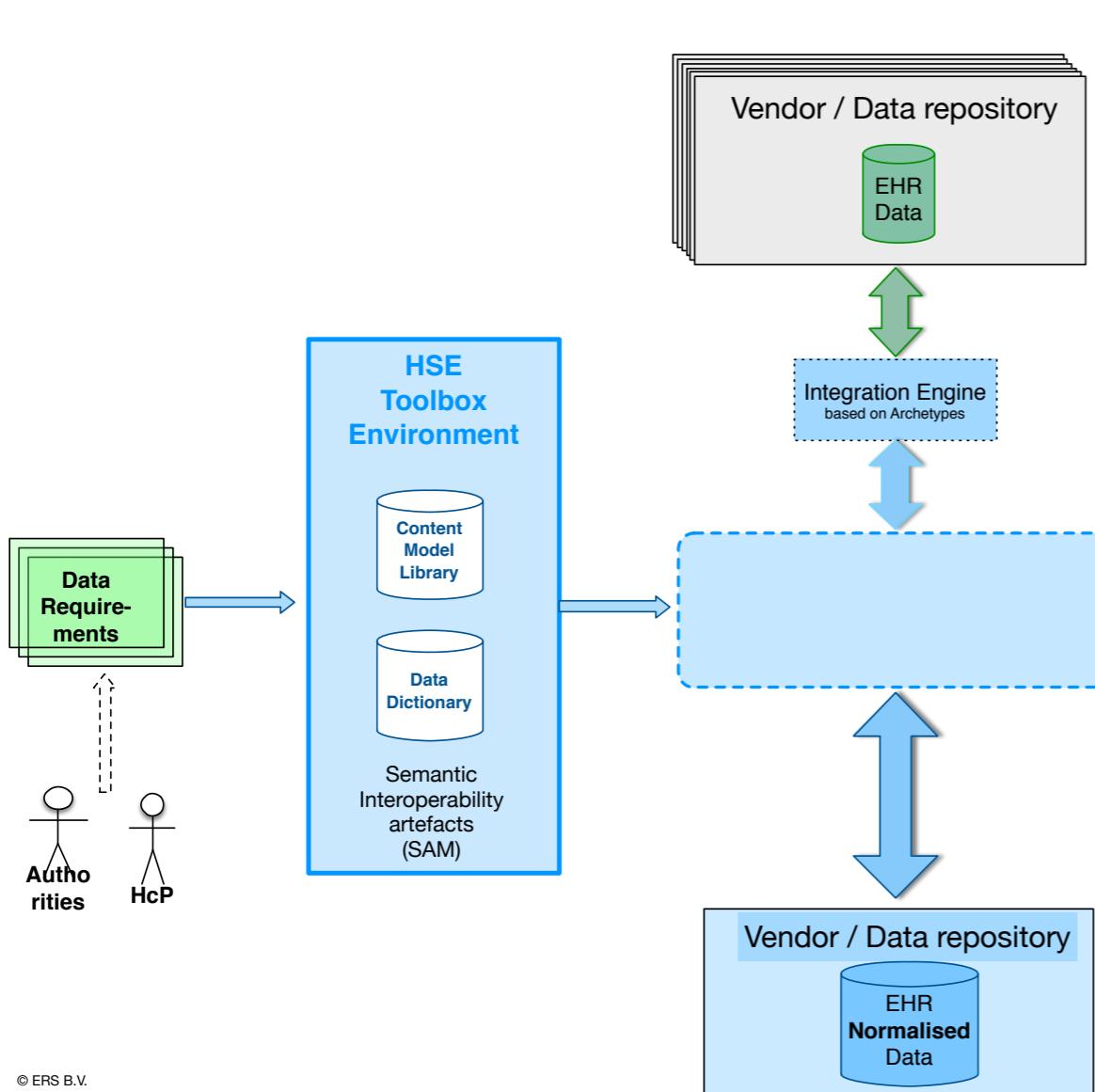
Possibilities:
Tools exist that help integration
of legacy systems to the HSE
INFOstructure

In the future IT-systems that are
conformant to standards
do not need
the Integration support

Benefits

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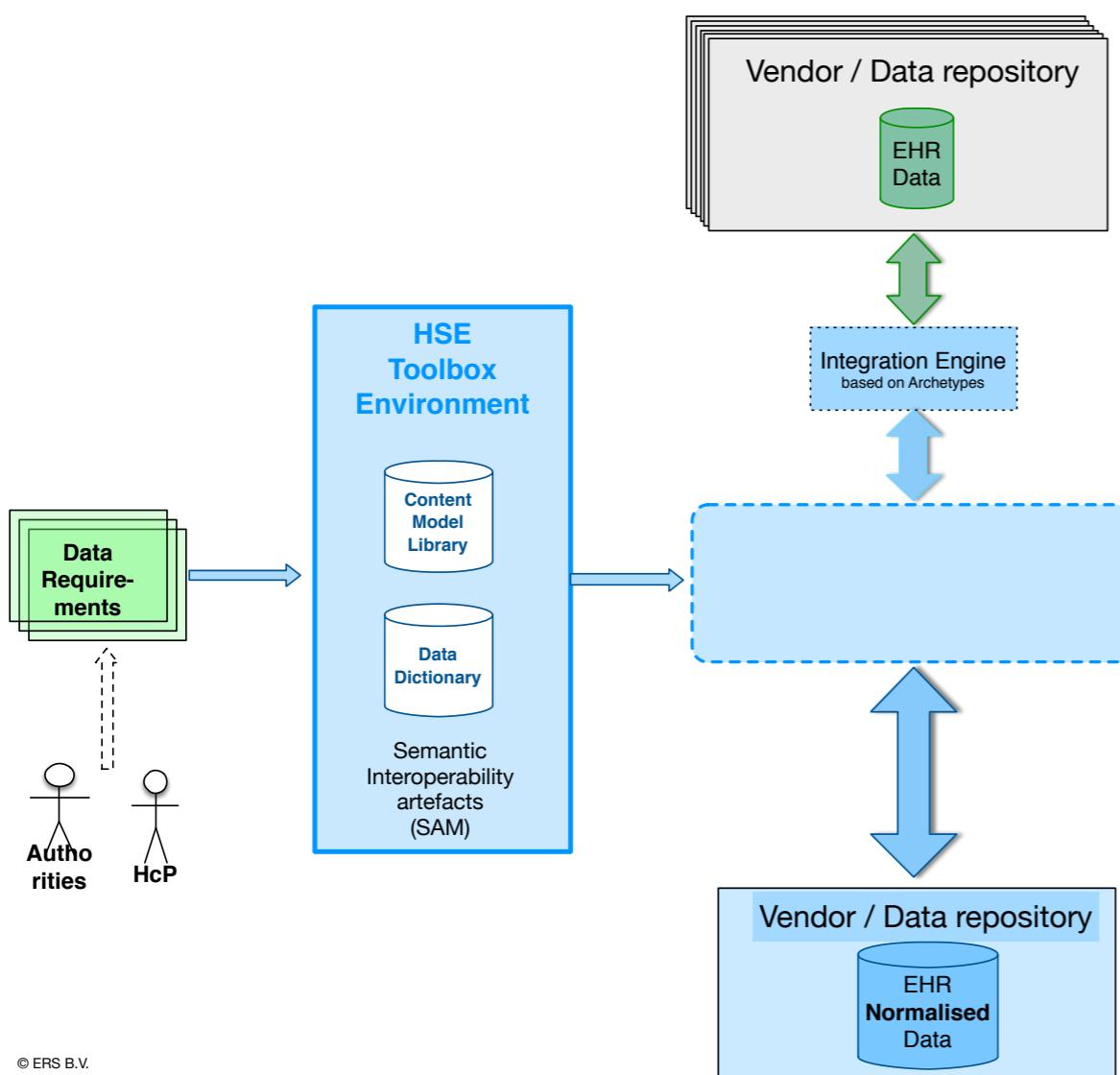
Enhancing message based
solutions
and portals

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Benefits

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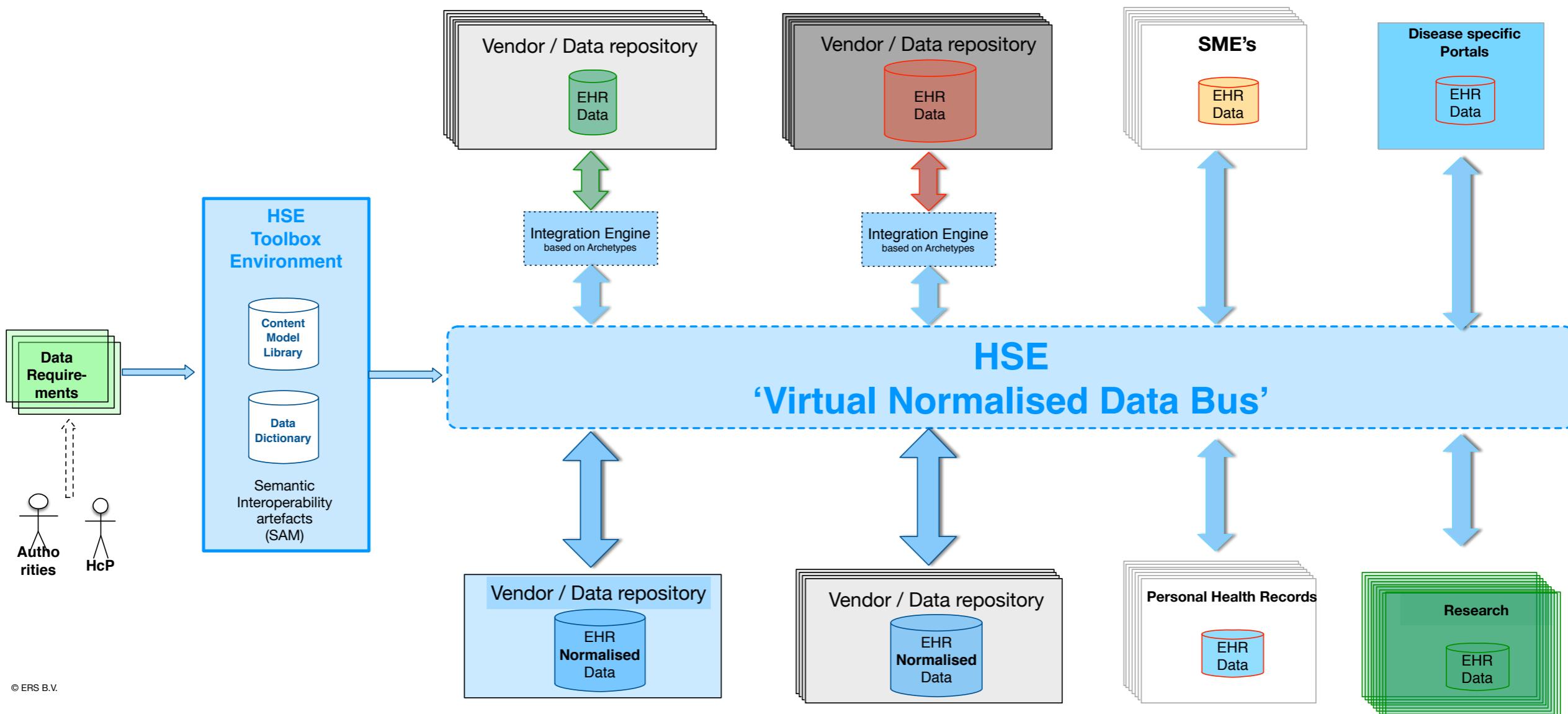
Because of the HSE Tooling Environment and re-usable components an ecosystem can emerge that encompasses:

1. Personal Health Records
2. Disease portals
3. Registries
4. eHealth Apps
5. Research
6. Reporting

Benefits

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Data sets Subject Area Models

(for screens, reports, exchange, etc.)

- **Health care stakeholders need to define their data requirements (data set)**
- **Each group will have its own requirements**
- **Each group must be able to construct its own data set and validate it**
- **Co-operating partners will have their own data sets as defined as part of the co-operation contract**
- **Each IT-vendor must be able to support every, and ever changing, data set inside and between the IT-systems**

Can we agree upon these principles?

Data Sets and Use Cases

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- Use cases provide the context for the Data Sets as the Subject Area Model (SAM).
- In the present project we will construct a demo using the epSOS Data Set.
- In an other project, for example, the Diabetes Use Case and Data Set can be selected as SAM to be deployed in real life.

Irish Standards Based Diabetes Core dataset for Primary Care							
Data Set Element	Comment	Formal Name	Type & Latency	Description	Parameter	Definition	Field No
1	Demographic Data	Practice name	n/a	IMC Practice Code 27527 Format	6 Digit Practice Code	The GP practice name is received from the Health Atlas Directory.	
	Demographic Data	Practice Identifier	n/a	IMC Practice Code 27527 Format	6 Digit Practice Code	The GP practice code is received from the Health Atlas Directory.	
	Demographic Data	Principal treating hospital identifier	n/a	IMC Practice Code 27527 Format	8 Characters	The Hospital Identifier code is received from the Health Atlas Directory.	
	Demographic Data	GP IMC code	n/a	IMC Practice Code 27527 Format	6 Digit Code	The GP IMC code is the personal identification number issued to each doctor by the Irish Medical Council permitted approval to practice medicine within the Irish Republic.	
	Demographic Data	GP GMS number	n/a	GMS Practice No. 27527 Format	6 Digit Code	General Practitioners (GPs) provide services to medical card holders in Ireland free of charge. Those GPs in the Primary Care Re-imbursement Service (formerly known as the 'General Medical Services') scheme enter into contracts with Health Service Executive (HSE) Areas to provide services. The PCRS / GMS number of the GP should be entered in this field.	

Goal: Cross border

- “to develop a practical eHealth framework and ICT infrastructure that will enable secure access to patient health information, particularly with respect to a basic patient summary and ePrescription, between European healthcare systems.”

PILOT OPERATION

Patient Summary

- access to important medical data from the patient's home country when receiving treatment abroad

ePrescription and eDispensation services

- access to an individual's ePrescription from the home country
ePrescribing: electronic prescribing of medicine using software to transmit the prescription data to the pharmacy
- dispensing: electronic retrieval of an ePrescription, the dispensing of the medicine to the patient and the submission of an electronic report

epSOS Data Set Patient Summary

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General Information

- Name, birth date, gender, identification, address, contacts, insurance

Medical Summary

- Alerts (allergies, vaccinations), current medical problems, medical implants, major surgical procedures during the last 6 months, treatment recommendations, list of current medications, life style, pregnancy, physical findings, blood group

Other information

- When and by whom generated, updated, etc.

Each disease is unique
ONE LANGUAGE

Each patient is unique
used by all

Each healthcare provider is unique

when all need to collaborate

Each health organisation is unique

and need to exchange data

Each process is unique

Presentatie
Functionaliteit
Code stelsels
Database

Questions?



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National Integrated Services Framework

28-29 October 2013

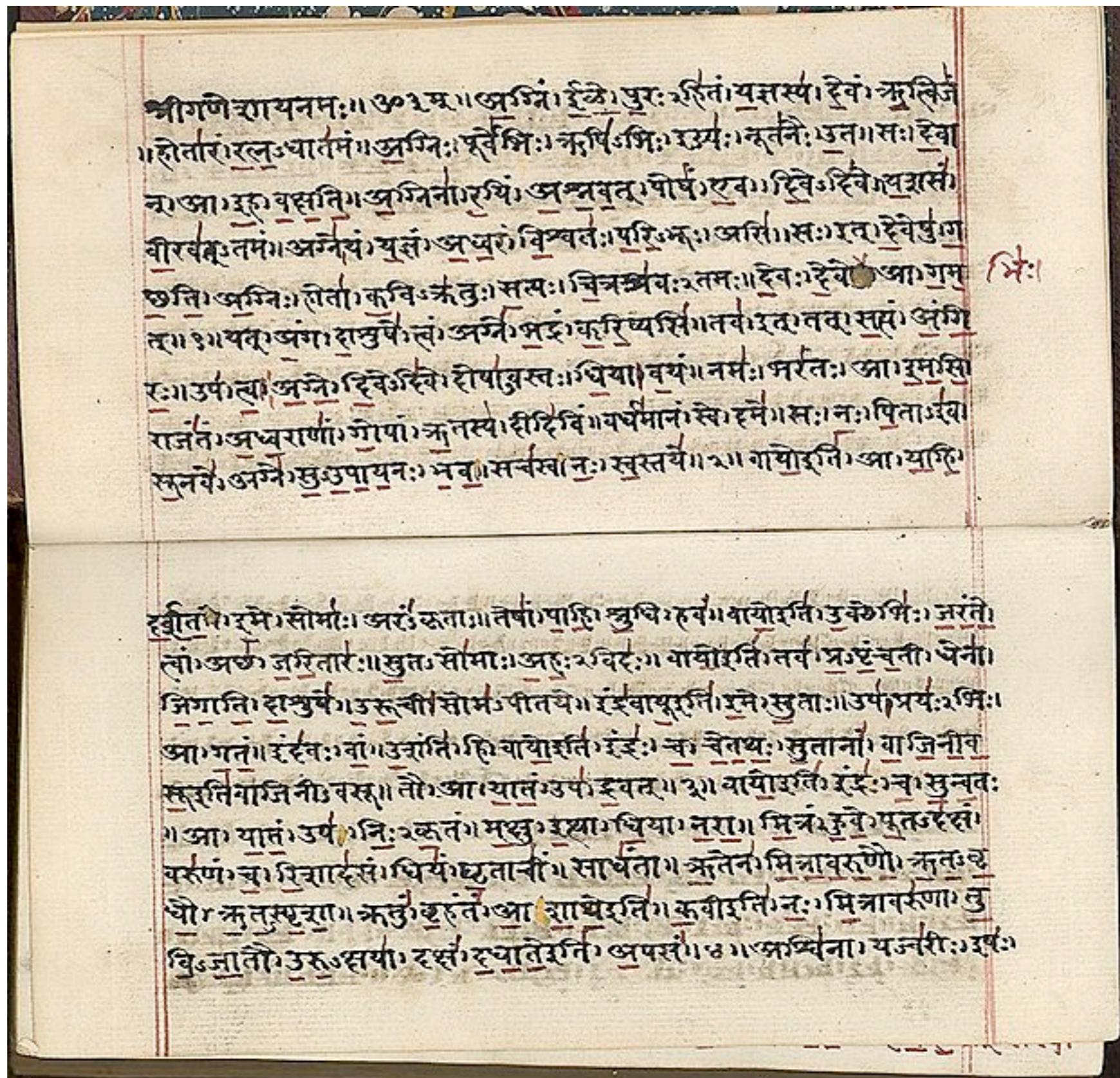
Part 2

- **Recapitulation**
- **HSE Tooling Environment**
- **Re-usable Components**
- **Why a Data Dictionary**
- **What are the benefits**
- **Summary**

Recapitulation

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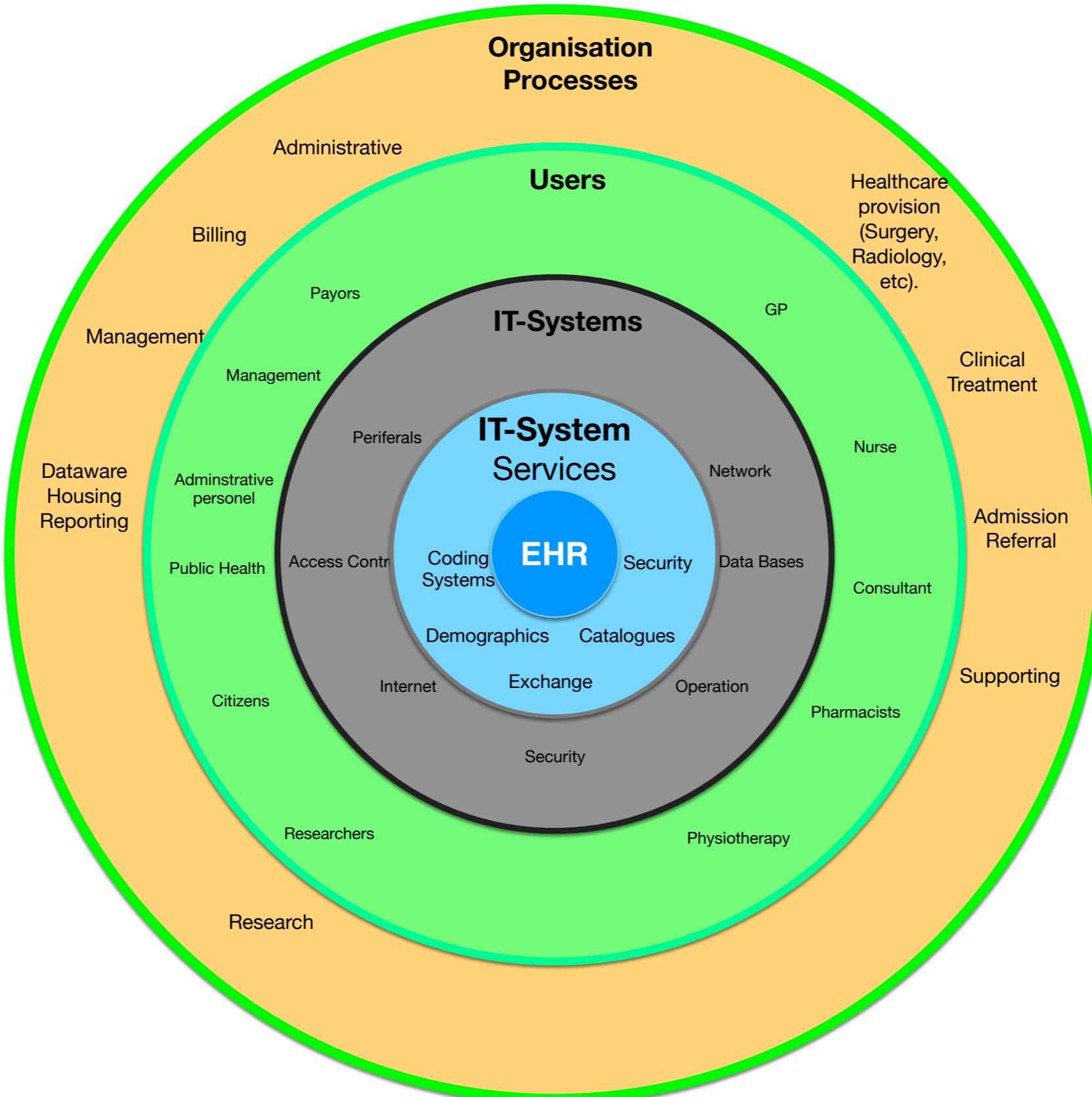
National Integrated Services Framework

- Exchange of health and care standards based structured data for primary and secondary (re-)use
- Health, Care and Management requirements based
- Health, Care and Management process driven
- HSE Tooling Environment plus re-usable common components
- Based on existing open International standards
- Usable in IT-systems procurement
- Evolutionary change process, gentle migration

EHR in Context

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Example Use Case Child Health Care

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Stakeholders	Activities
GP	Treats most common problems and needs to maintain an overview, Referral and discharge notes.
Pharmacists	Dispensing prescribed medicinal products and advice
Community Nurse	Monitoring the development new born, young children. Vaccination program
School	Monitoring the development of young children
Pediatrician	Clinical disease episodes, referral en discharge notes
Public Health	Monitoring: child developments, environment, infectious diseases, ...
Researcher	Own academic research or on behalf of third parties
Authorities	Monitoring the health care organisations and programs and projects
Patient / parents	Personal Health Record: collecting and reporting data obtained
Disease specific portal	E.g. Disease specific portal for Diabetes or Asthma , or ...

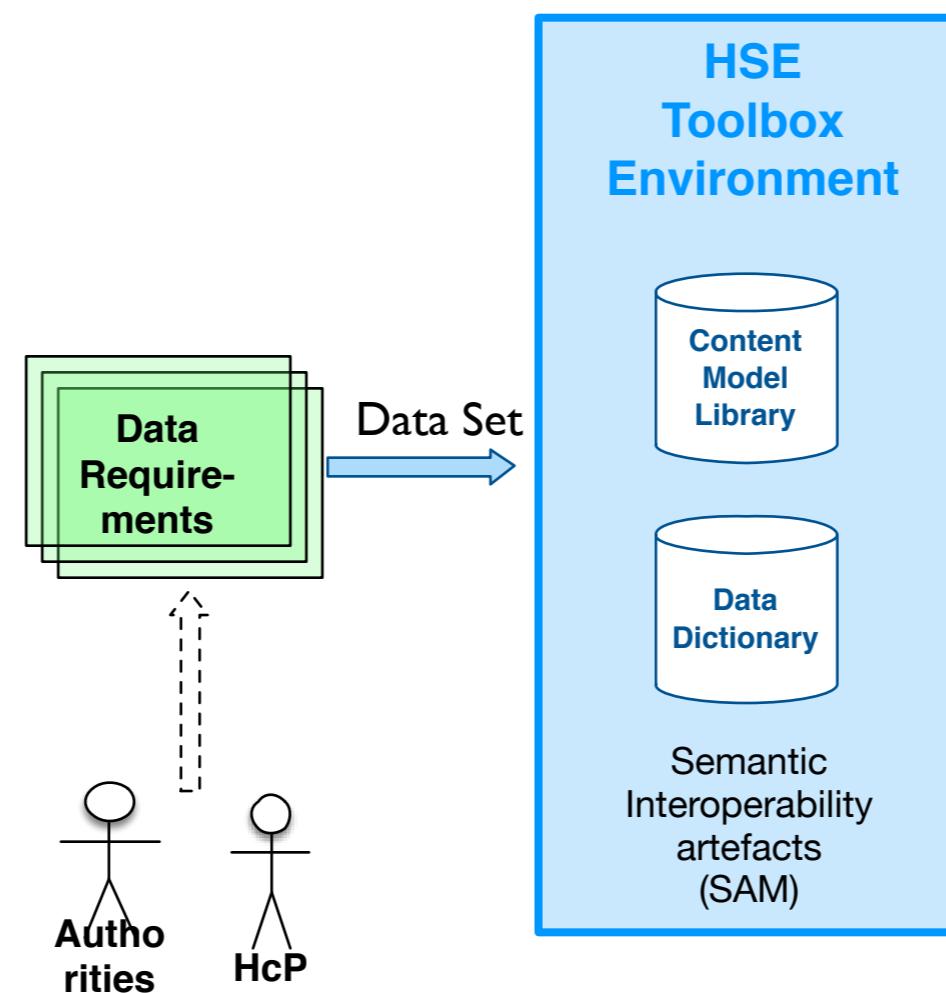
Intended process

- Definition of Data Sets by healthcare Stakeholder groups
- Production of Semantic Interoperability Components (Content Models)
- Inserting codes for Reference Terminology
- Validation of health content
- Insertion and curation in the Data Dictionary
- Quality Assurance
- Publication and deployment

HSE Tooling Environment

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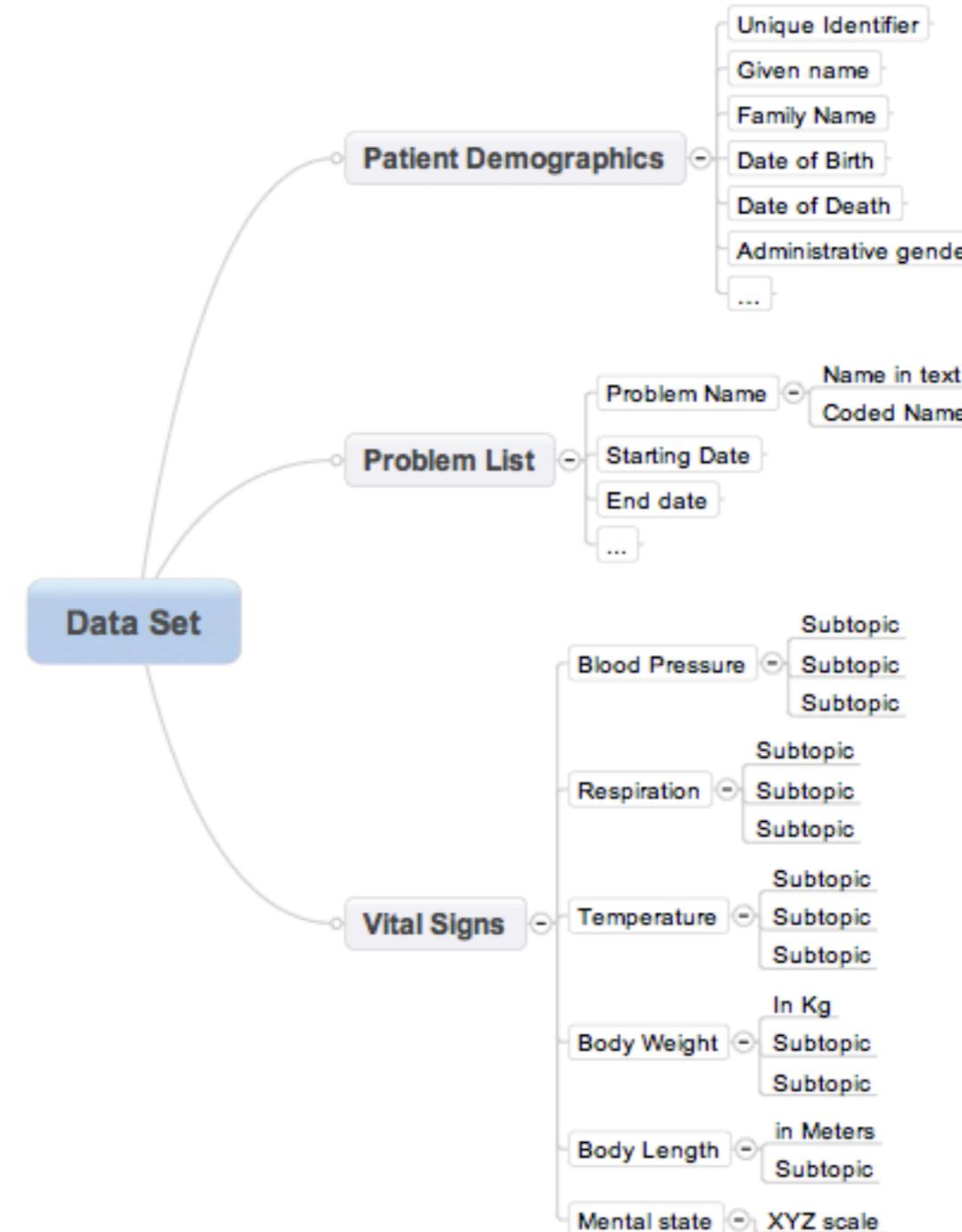


Collaboration platform
Content Models
Content Model Library
Content Model Editor
SNOMED-ct
Data Dictionary

Requirements can be captured in many formats:

- free text
- an excel
- or a Mind Map

And transformed in to an Content Model using the Content Model Editor

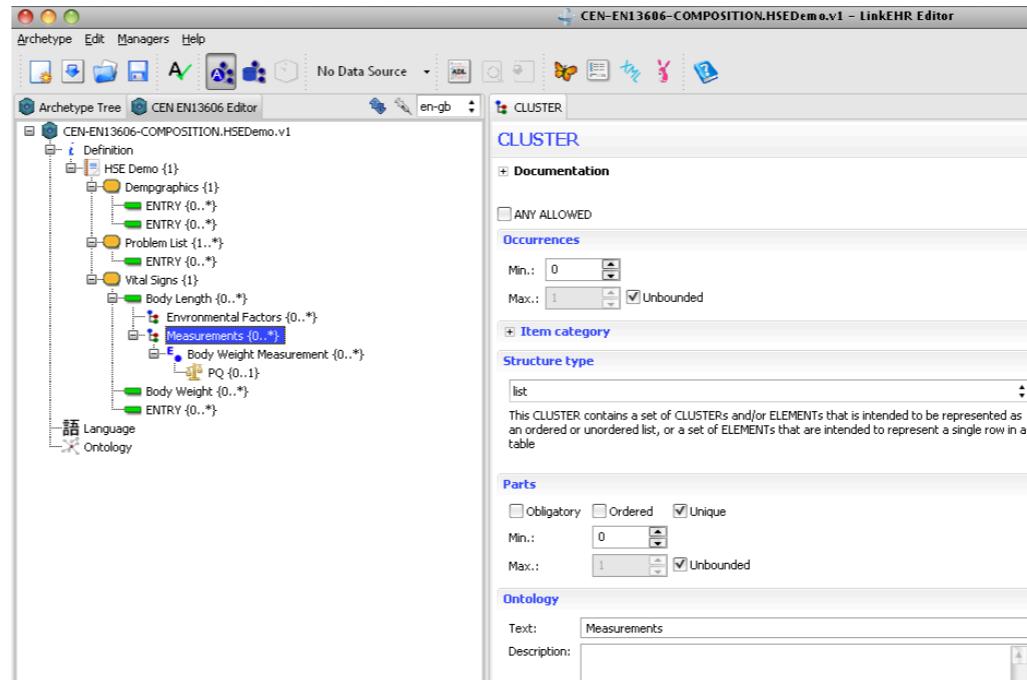


HSE Tooling Environment

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The Content Model Editor uses pre-defined re-usable shared components from the HSE Content Model Library.



**The pre-defined components have codes from SNOMED-CT attached to it.
Local codes can be mapped to the reference codes.**

```
1 archetype (adl_version=1.4)
2   CEN-EN13606-COMPOSITION.HSEDemo.v1
3
4 concept
5   [at0000]
6
7 language
8   original_language = <[ISO_639-1::en-gb]>
9
10 description
11   original_author = <
12     ["organization"] = <"ERS B.V.">
13     ["email"] = <">
14     ["name"] = <"GR">
15     ["language"] = <"en-gb English (United Kingdom)">
16     ["date"] = <"20131024">
17   >
18   lifecycle_state = <"Draft">
19   details = <
20     ["en-gb"] = <
21       language = <[ISO_639-1::en-gb]>
22     >
23   >
24
25 definition
26   COMPOSITION[at0000] occurrences matches (1..1) matches ( -- HSE Demo
27     content existence matches (0..1) cardinality matches (0..*; unordered) matches (
28       SECTION[at0001] occurrences matches (1..1) matches ( -- Demographics
29         members existence matches (0..1) cardinality matches (0..*; unordered; unique) matches (
30           ENTRY[at0008] occurrences matches (0..*) matches ( -- ENTRY
31             items existence matches (0..1) cardinality matches (0..*; unordered; unique) matches (*)
32           )
33           ENTRY[at0009] occurrences matches (0..*) matches ( -- ENTRY
34             items existence matches (0..1) cardinality matches (0..*; unordered; unique) matches (*)
35           )
36         )
37       )
38     SECTION[at0002] occurrences matches (1..*) matches ( -- Problem List
39       members existence matches (0..1) cardinality matches (0..*; unordered; unique) matches (
40         ENTRY[at0007] occurrences matches (0..*) matches ( -- ENTRY
41           items existence matches (0..1) cardinality matches (0..*; unordered; unique) matches (*)
42         )
43       )
44     )
45   )
46 
```

In this way any data set can be defined and data can be re-used.

Why a Data Dictionary

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One language, one meaning More than one way to express the same meaning

The diagram illustrates how the same concept can be expressed in different ways across different systems.

Data Dictionary (Top):

- Information entity:** No Previous History:
Diabetes
- Information entity:** Past History:
Diabetes Yes No Unknown
- Information entity:** Past History:
Not diabetic

Clinical History Form (Bottom Left):

- History**
 - Symptoms / Problems: Choose ...
Chest Pain
 - Family History Heart Failure: Yes
No
Unknown
 - Diabetes: Yes
No
Unknown

Clinical Diagnosis Form (Bottom Middle):

- History**
 - Symptoms / Problems: Choose ...
Pain | Chest
 - Family History: Choose ...
Heart Failure
Yes
No
Unknown
 - Other diseases: Choose ...
no diabetes
- Diagnosis**
 - Suspected heart failure caused by physical exercise

Clinical Diagnosis Form (Bottom Right):

- History**
 - Symptoms / Problems: Choose ...
Chest Pain
 - Others: Choose ...
FH of heart failure
No diabetes
- Diagnosis**
 - Heart Failure
- Status**
 - Suspected
- Cause**
 - Physical Exercise

Why a Data Dictionary

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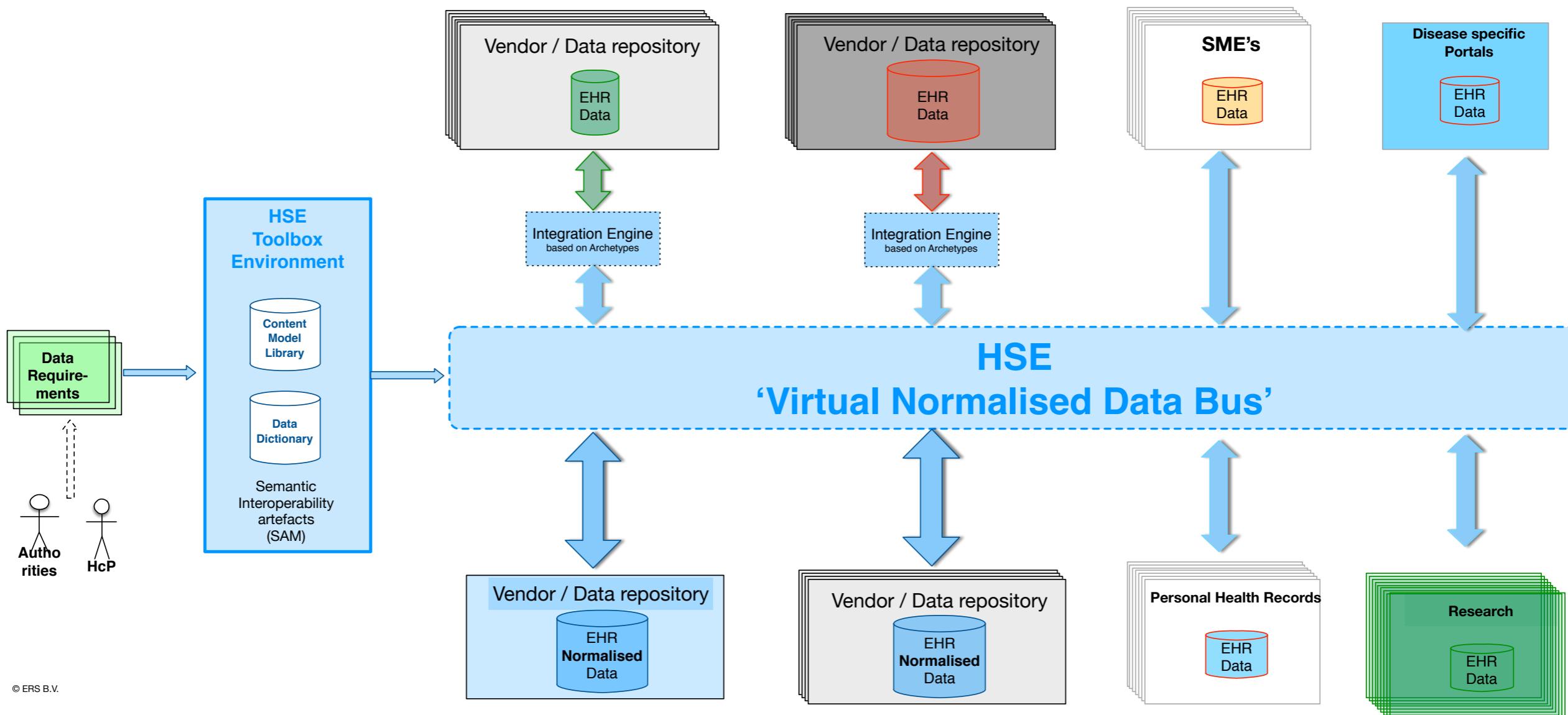
The Data Dictionary contains standard data definitions and data elements for use in any Irish health or community services data collection.

The Data Dictionary is the authoritative source of information about endorsed national data standards and provide the basis for consistent national collection, exchange and reporting.

Benefits

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Your expectations for data exchange and usage?

Your experience or perception of the major obstacles to achieving your data requirements?

What existing datasets, codes or standards if any you currently use?

Relevant current and emerging business activity?