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HSE ISF

ERS proposal

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9 April 2014

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Introduction: ISF

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Irish National ISF

National ISF Core Objective

"A Standards Based Framework which will ensure key systems and components, can share data in timely and organised fashion."

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Irish National ISF

National ISF - Key Strategic Objectives:

- Cost Avoidance
- Greater Efficiency
- Better Control
- 3rd party delivery of systems
- To facilitate the development of Electronic Health Records (EHR)
- To enable horizontal data integration and overcome data silos
- To facilitate a more controlled development environment
- Greater re-usability of key components

Irish National ISF

Approach

- Approach based on 12 Work streams
- Suppliers Framework for provision of specialist services
- LOT: 4 Tender for HSE National Information Architecture Model
- Award made to ERS B.V. in the Netherlands
- LOT 4: Now at final draft stage

Irish National ISF
LOT 4

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- Simplified overview of the model and key components
- Understanding the recommendations
- Making it real and deployable in simple terms
- Next stage ‘quick win’ options
- Simple deployment scenarios
- Costs and Benefits

HSE ISF
IA-RM and SAM

ERS advocates a dual model approach as determined by the consultations and the Proof of Concept initiatives

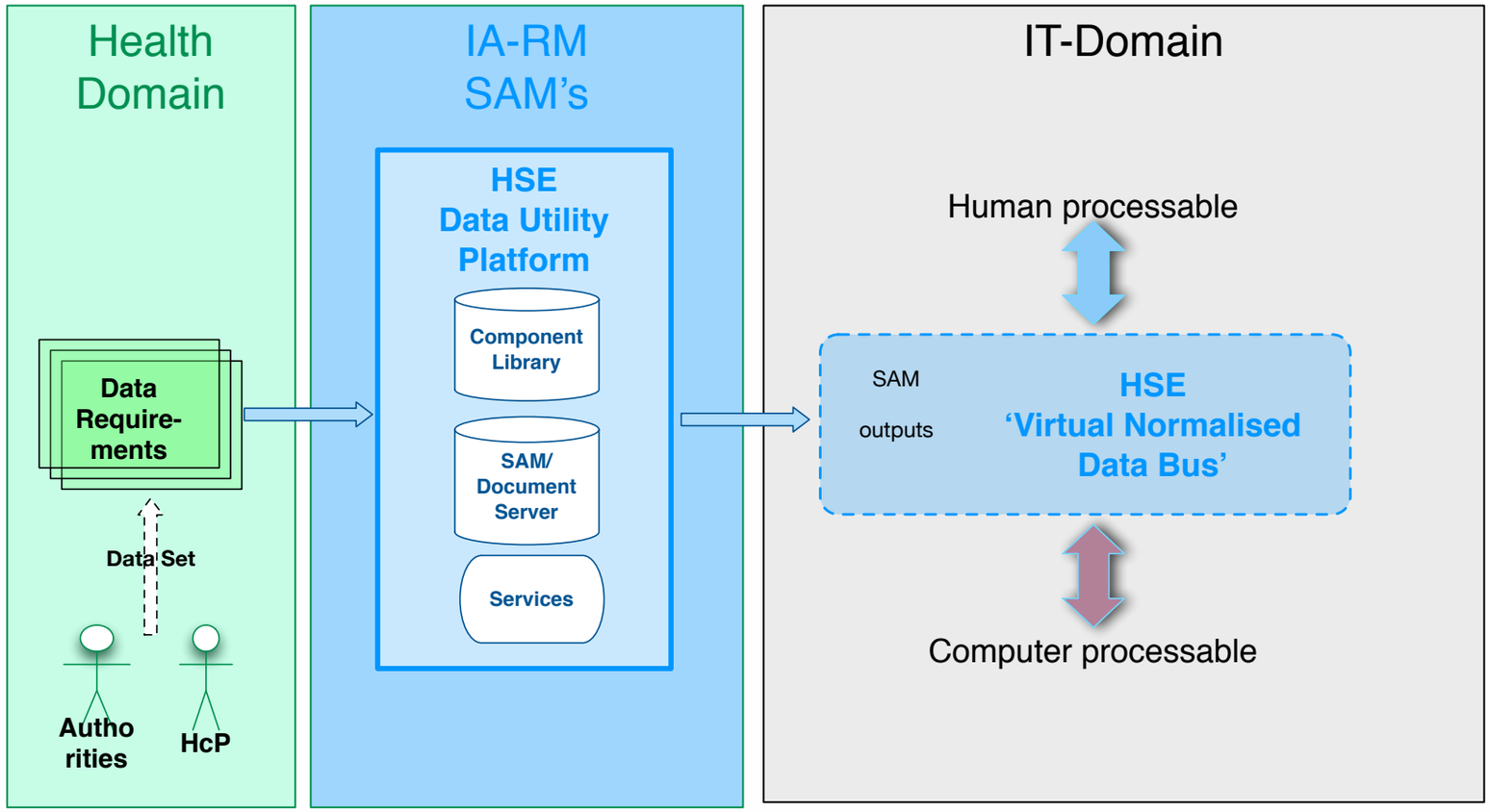
(1) Information Architecture Reference Model

- IA-RM as the basis for deployment in Ireland

(2) Subject Area Models

- SAM's as the expression of consensus data sets needed for Healthcare Providers to collaborate in clinical pathways

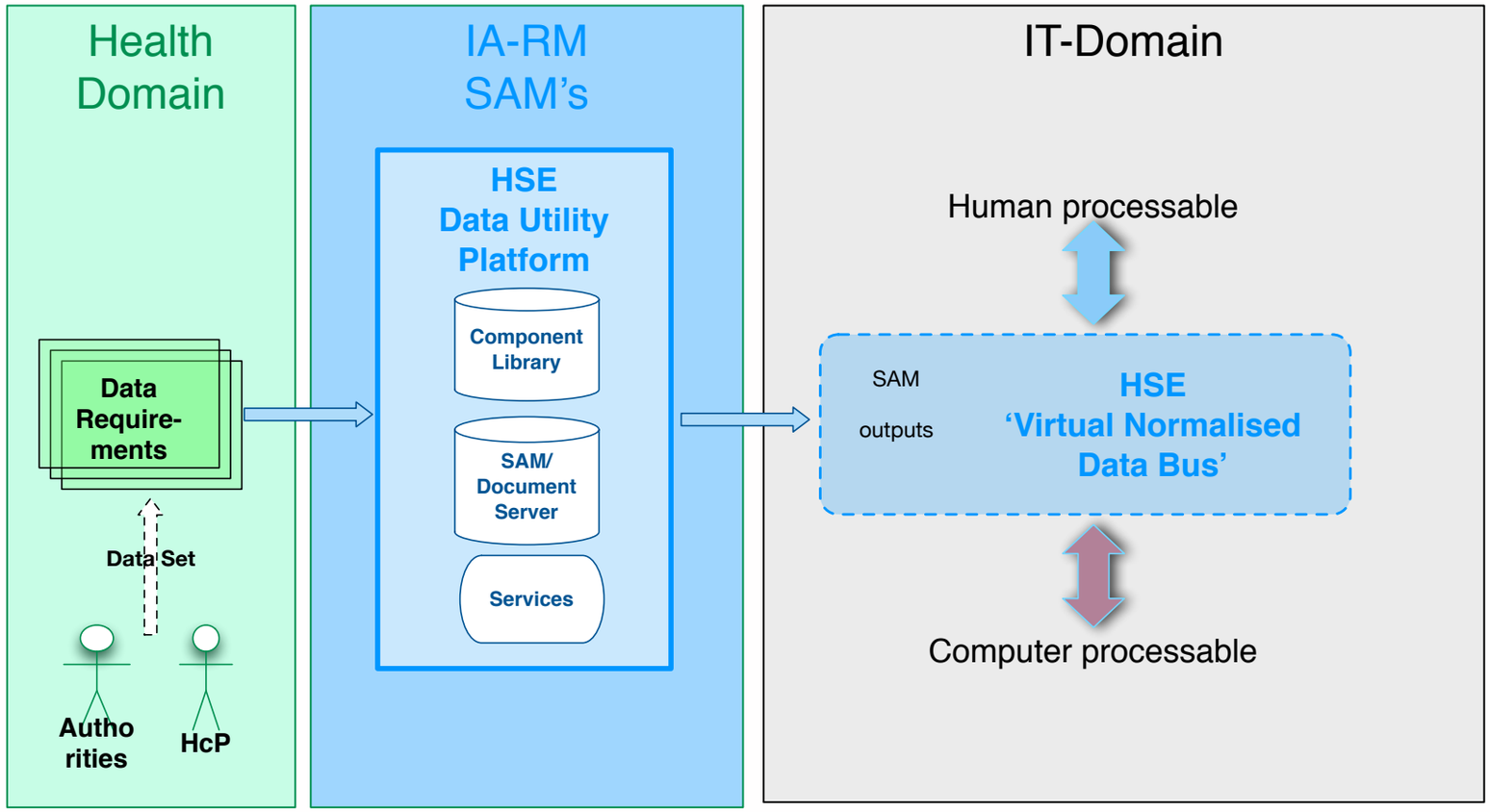
HSE ISF
IA-RM and SAM



Data requirements are transposed to a data set
(e.g. as defined by a clinical programme)

The Data Set is then transposed to a Subject Area Model

HSE ISF
IA-RM and SAM



A series of tools and services (the HSE Data Utility Platform) is needed to generate SAM's
From SAM's different outputs (human readable, technical) are generated
These are needed by all actors (Health- and IT-Domains).

When the SAM's are deployed via Procurement a 'Virtual Normalised Data Bus' will create a level green playing field for IT-vendors and other actors, based on open International standards

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Information Architecture Reference Model

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IA-RM

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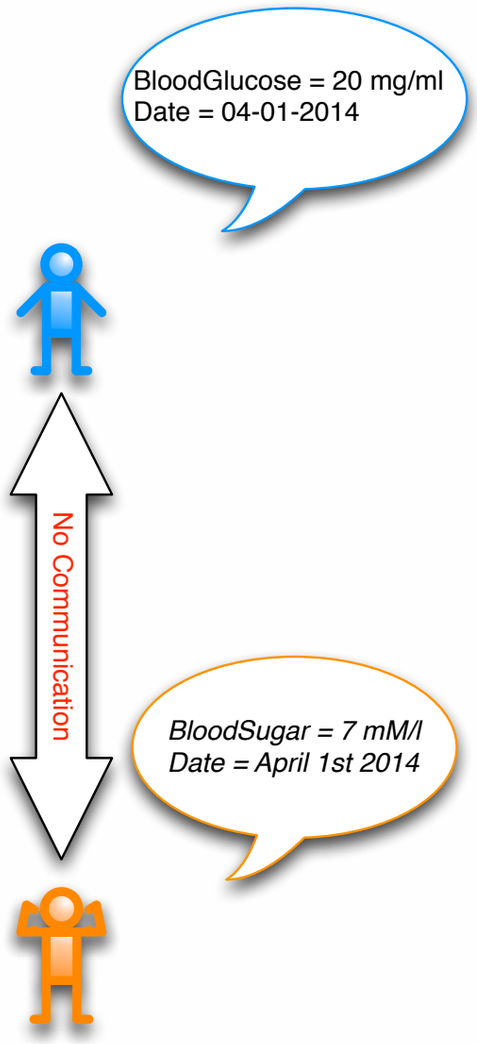
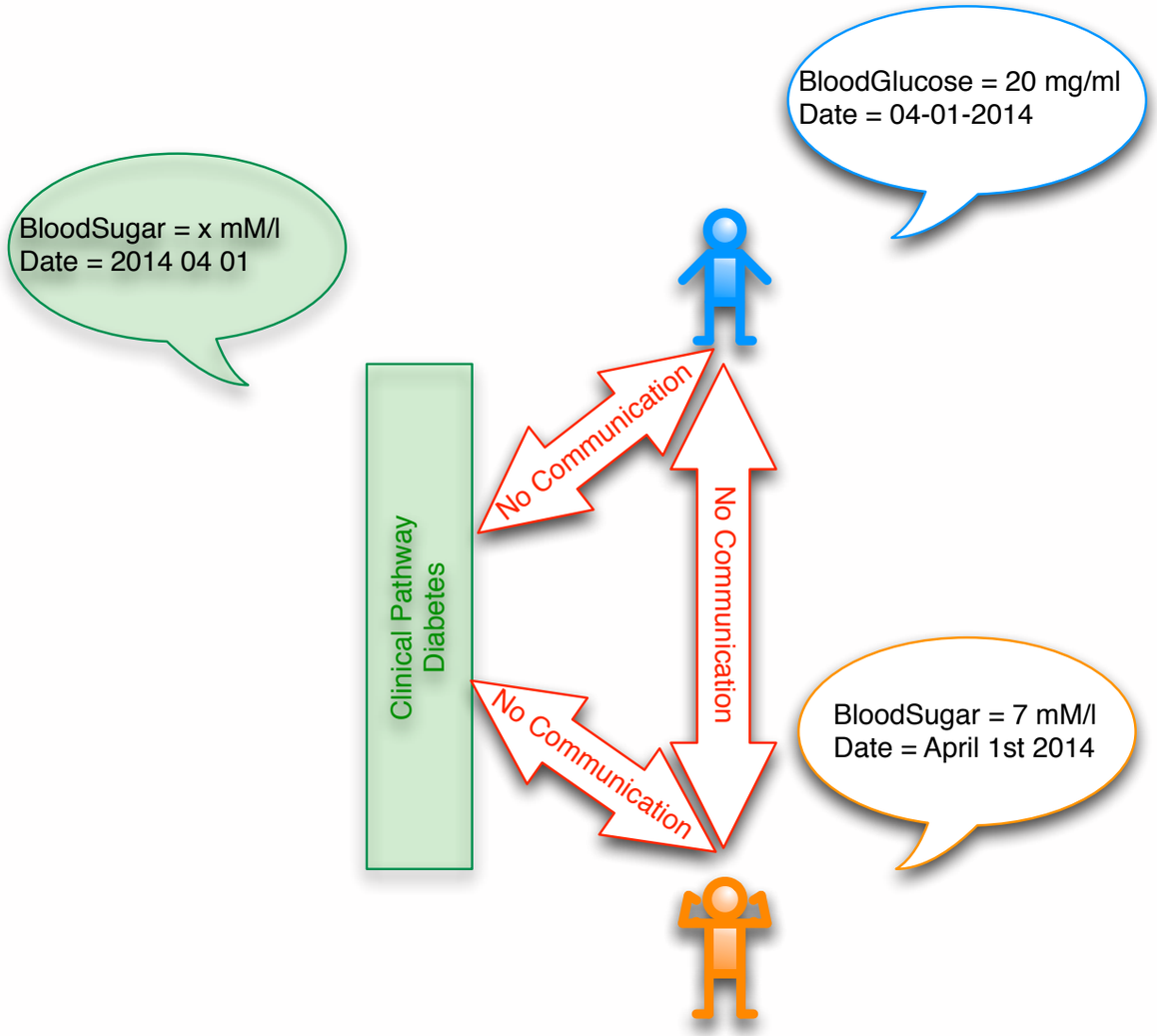


Why is an Information Architecture necessary?

- Both collaborating actors need to ‘understand’ each other
- Humans know how to bridge the gap; Computers do not
- Machine exchange of data needs very detailed and precise uniform agreements between IT-systems

IA-RM

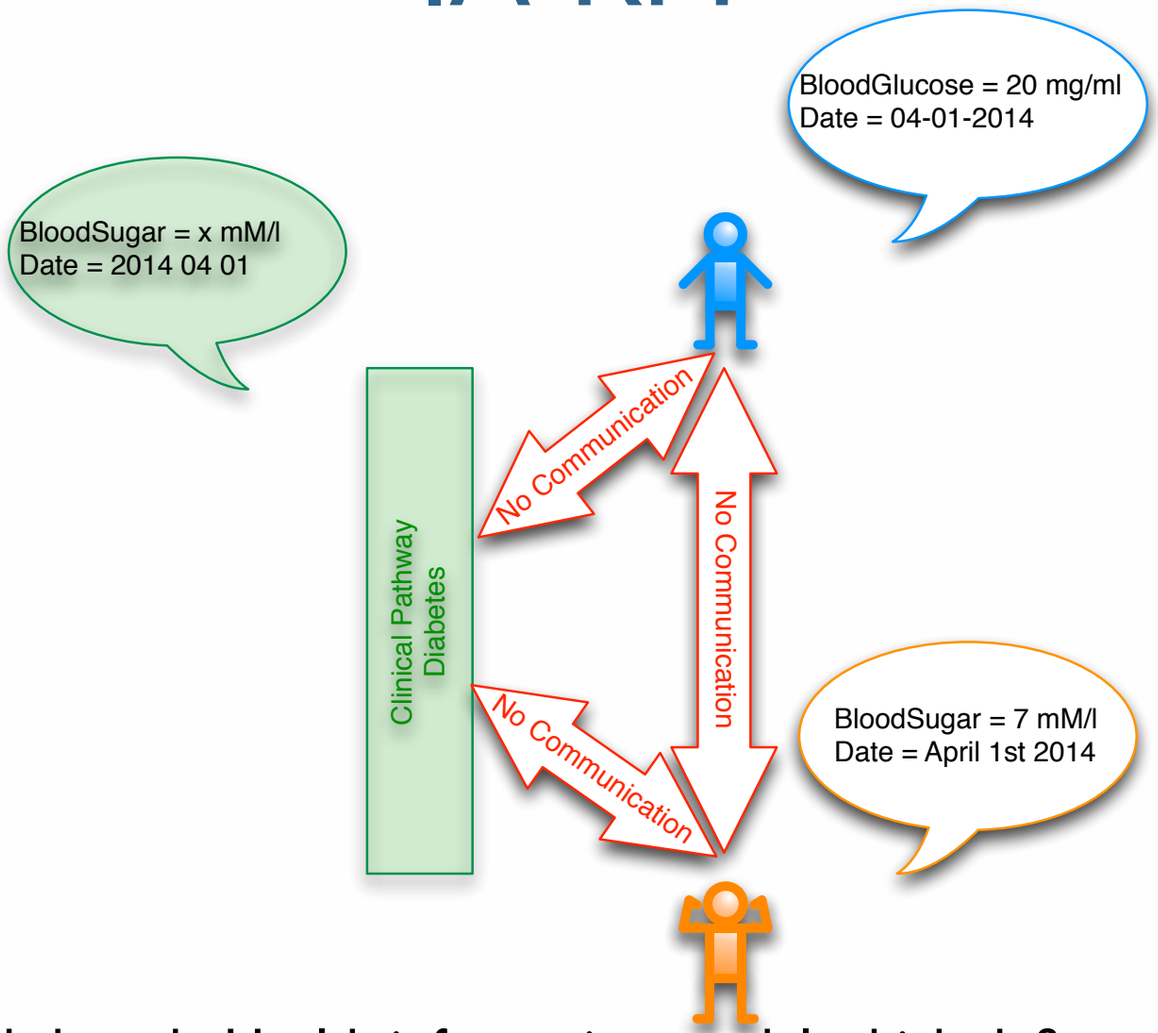


IA-RM

- The Information Architecture Reference Model (IA-RM) describes how collaborating actors and their IT-systems must exchange data

- Actors need to adapt to all the standards defined in the IA-RM

IA-RM

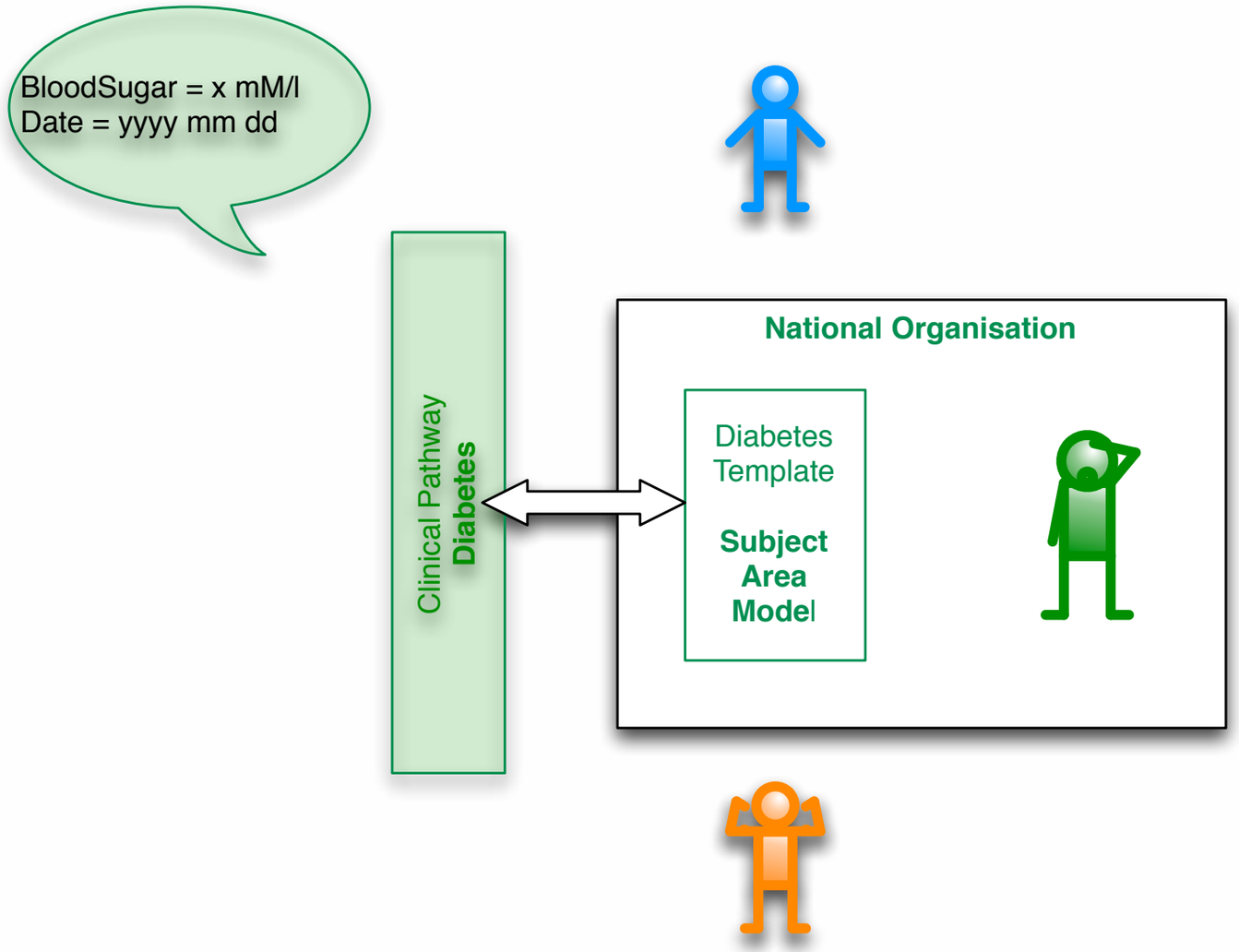


IA-RM

- Standards based eHealth information model which defines the representation of the concepts, relationships, constraints, rules, and interactions for the HSE's eHealth data.
  It also provides the means to actively control and manage these elements across a multitude of national systems.

- When applied. It enables multiple parties to exchange management information about their data sets and their managed data elements.
  It provides an assured, organised, stable and sharable structure of information data for national clinical programmes and records including the enablement of a national EHR.

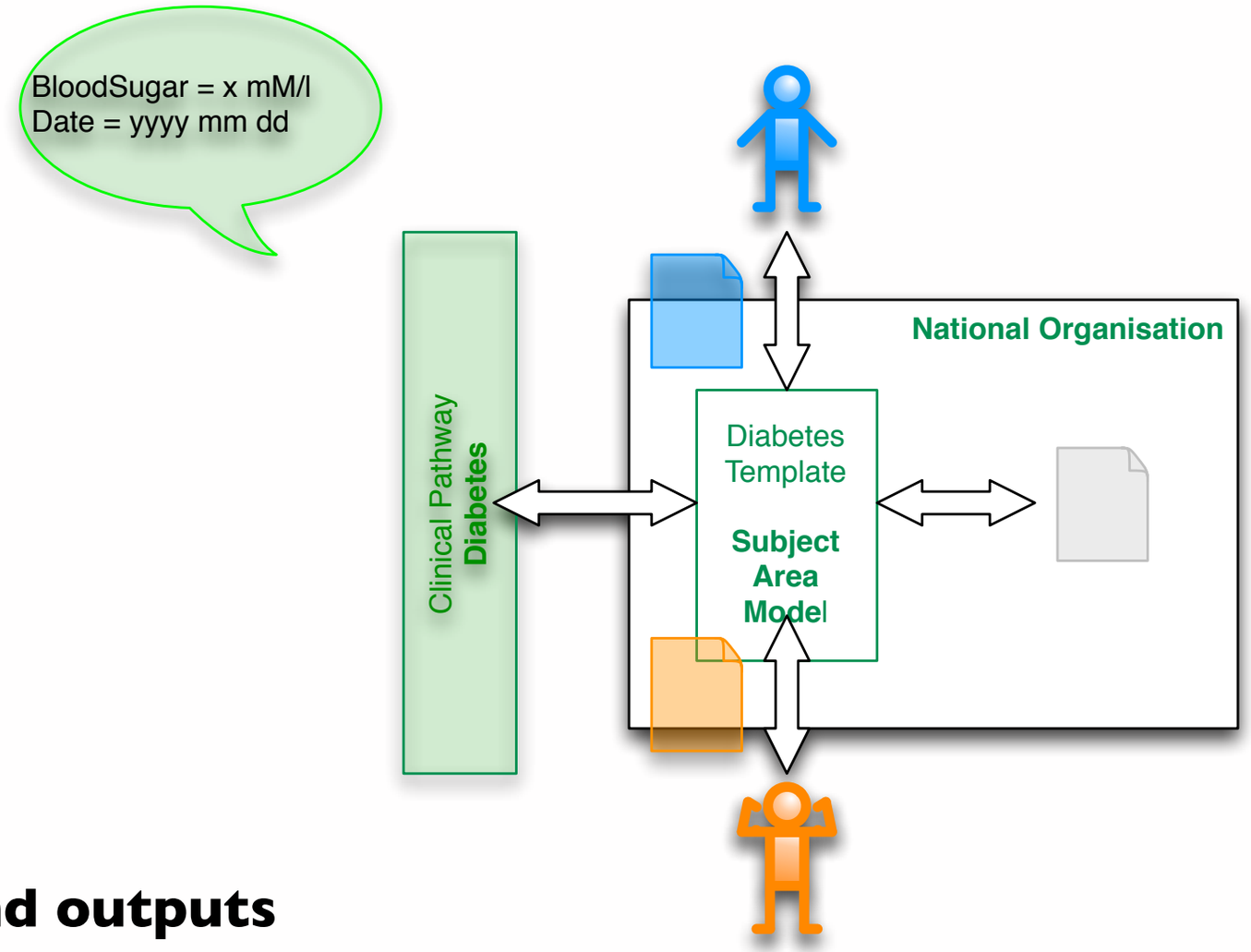
IA-RM



National Organisation

- One National Organisation must be responsible for the IA-RM and its collection of Subject Area Models (SAM's)
- SAM's contain the details that the IT-systems of Actors must adopt

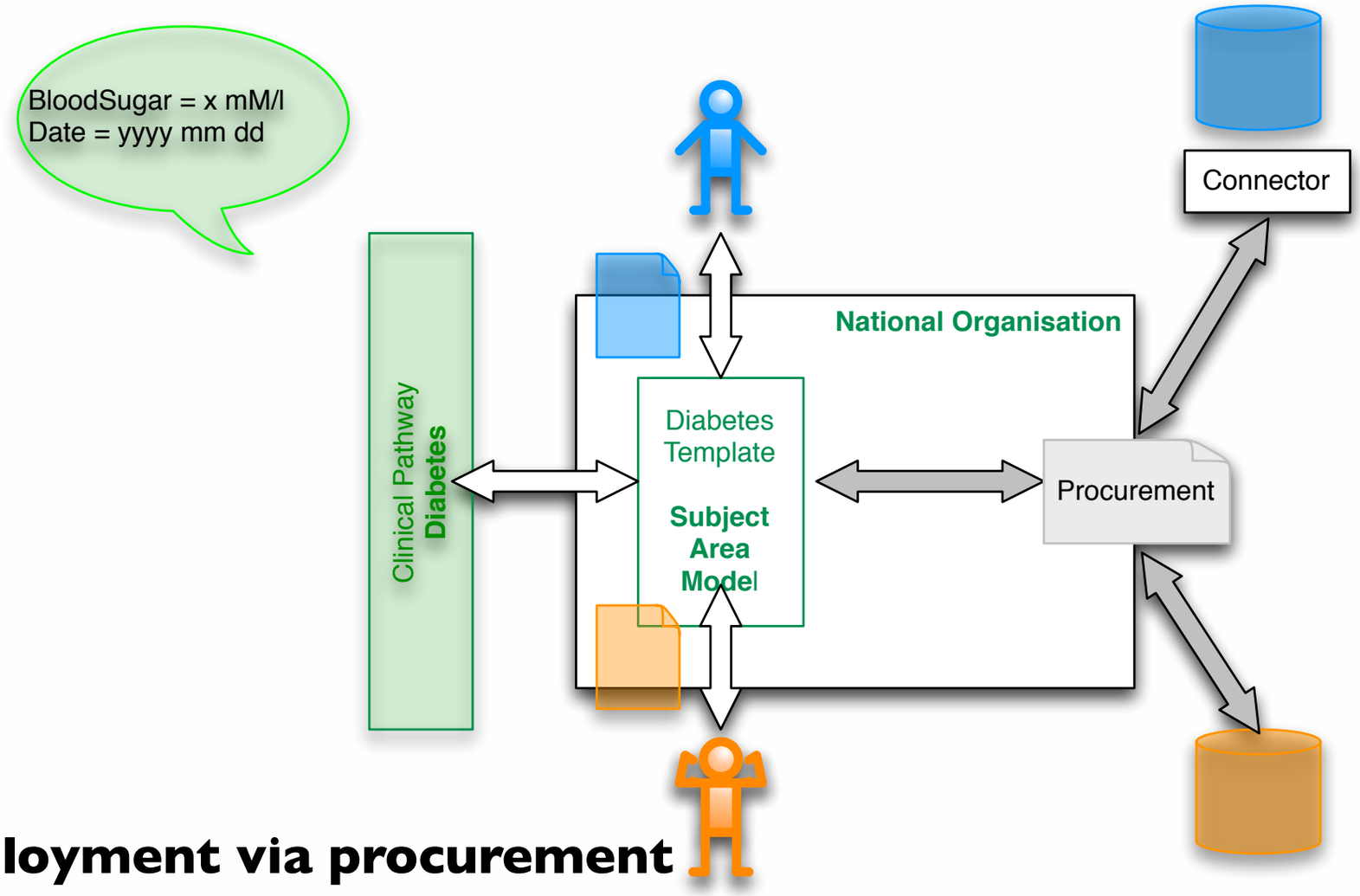
IA-RM



SAM and outputs

- The SAM's are used to generate outputs that are readable by Humans
- Validation of the SAM's by Actors is essential
- The technical artefacts are generated, also, and help IT-vendors to deploy the SAM's uniformly

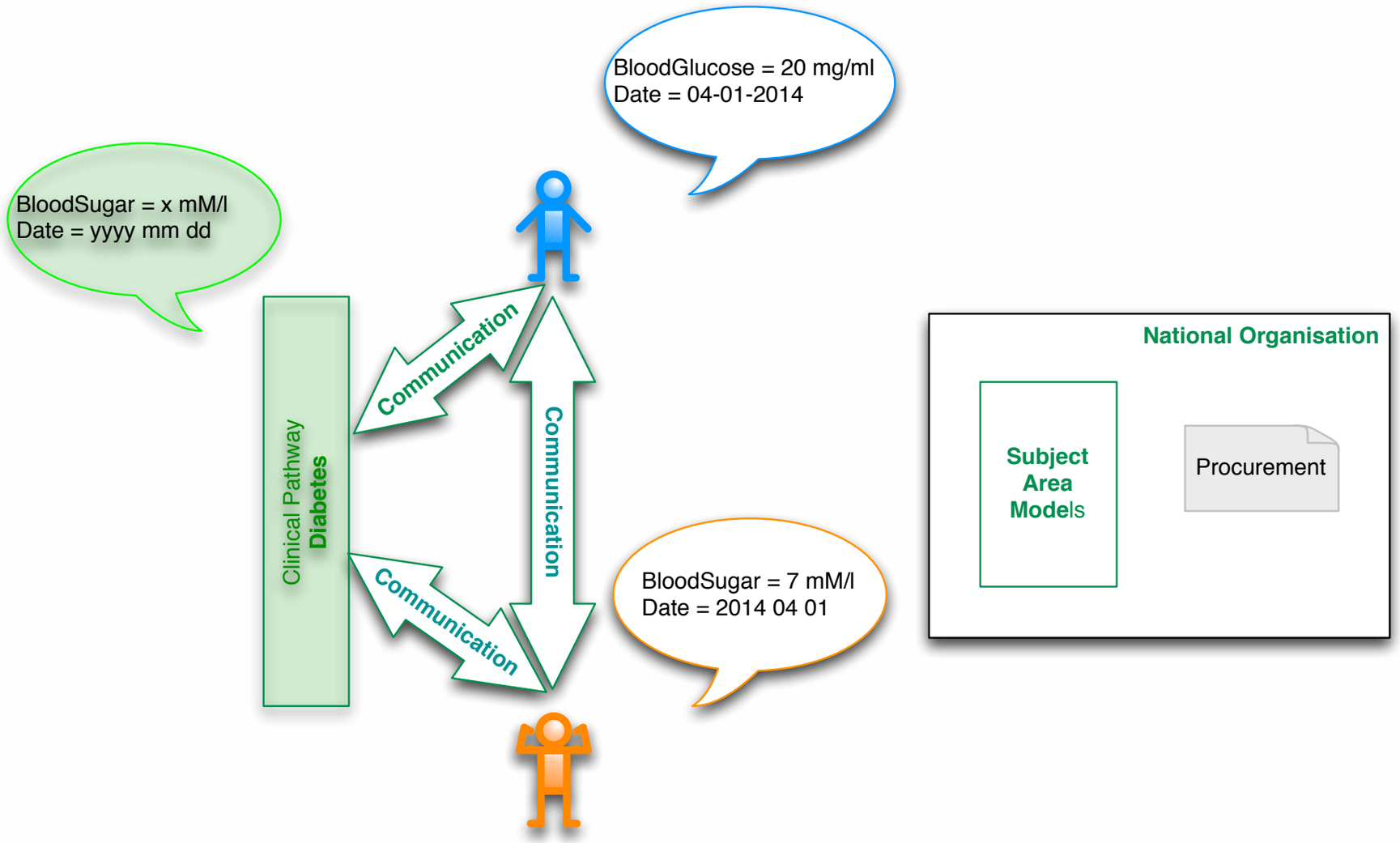
IA-RM



Deployment via procurement

- Procurement is the most efficient way to deploy the IA-RM and SAM's
- Either existing IT-Systems use the SAM's (and outputs)
  to create Connectors
  in order to be able to claim compliance with the standards
- or create new IT-systems that can claim compliance with the standards

IA-RM



Deployment in healthcare

- Healthcare Actors, using compliant systems, can exchange agreed health data
- Their IT-systems are semantically interoperable

IA-RM

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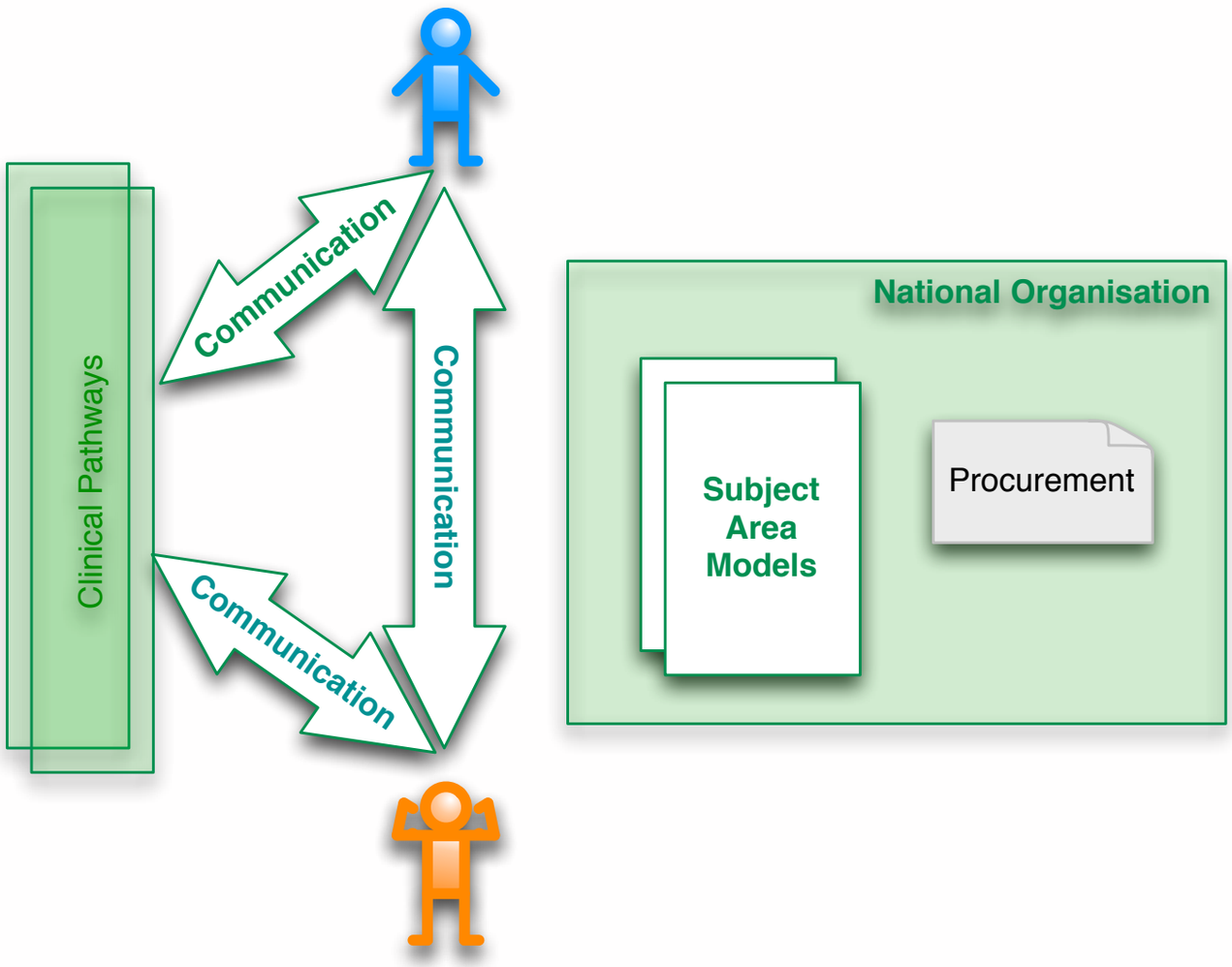

Health Informaticians
Knowledge / Experience
- Structures
- Coding systems
- Healthcare

Tooling / services
- SAM editor
- Document Manager
- Integration tools
- Terminology service
- Licenses

Governance
- Relevant Base Standards list
- Production
- Validation of SAM's
- Publication
- Maintenance
- Support
- Validation of compliance testing
- International co-operation

International cross border exchange
- National Contact Point

- **The National Organisation has well defined responsibilities**
- **The new eHealth organisation will need the IA-RM to carry out its functions**

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Subject Area Models

From Clinical Pathways to Collaboration

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Subject Area Models
from Clinical Pathways to Collaboration

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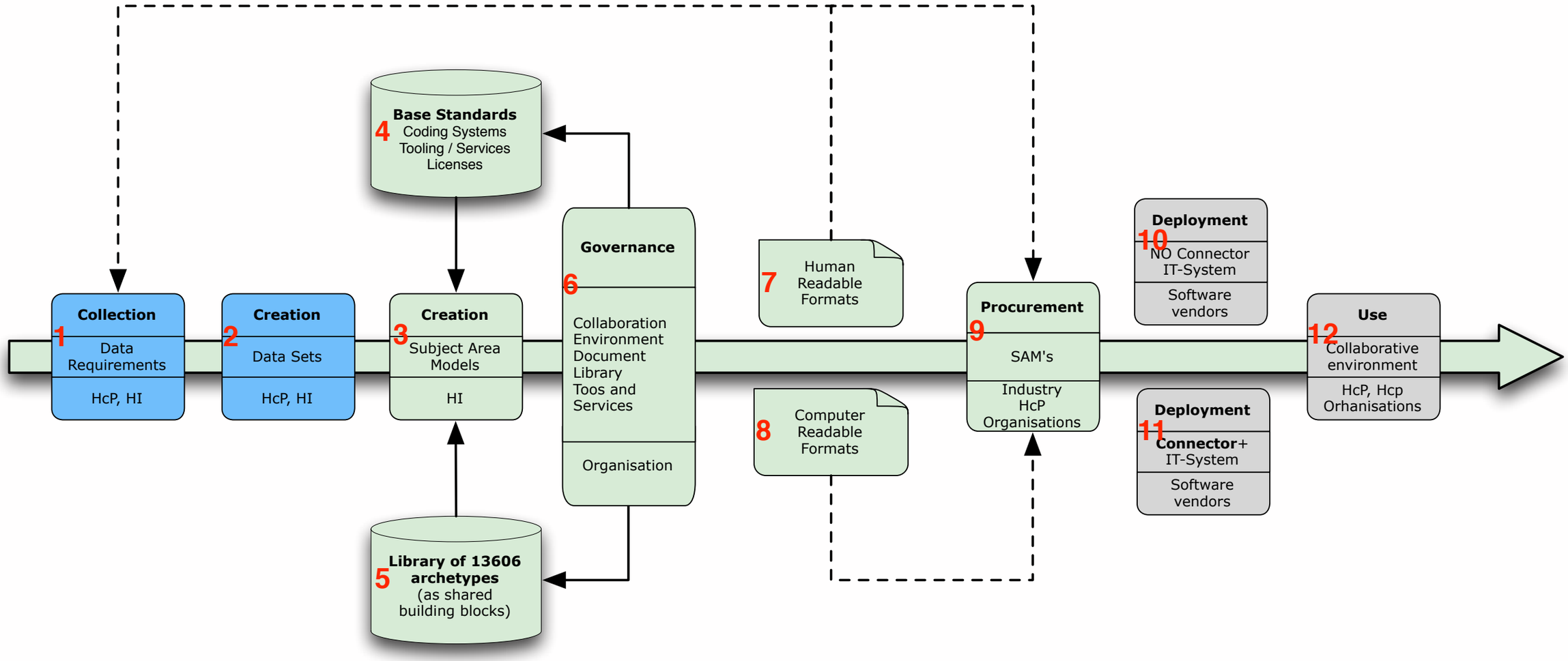

Subject Area Models

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1 - Data requirements

- When Healthcare Providers co-operate they need to agree on the data requirements
- Health Informaticians support Healthcare Providers with the data gathering.
- Healthcare Professional Organisations will play a role

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2 - Data Set

- After consensus the Data Set is created based on the acquired data requirements
- Healthcare Providers and their Organisations are facilitated by the Health Informatician

Subject Area Models

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3 - SAM

- Health Informaticians define the Subject Area Models (SAM'S)
- These are CEN ISO 13606 Templates,
  built using CEN ISO 13606 Archetypes
- The SAM's express more details than ISO 11179 Data Dictionaries allow

Subject Area Models

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4 - RESOURCES

- SAM's are based on the CEN ISO EHR Communication Standard
- and many supporting relevant adopted standards
- including licensed Coding Systems such as: SNOMED-CT, ICD-x, LOINC, etc.
- Technically the SAM's are CEN ISO 13606 Templates

Subject Area Models

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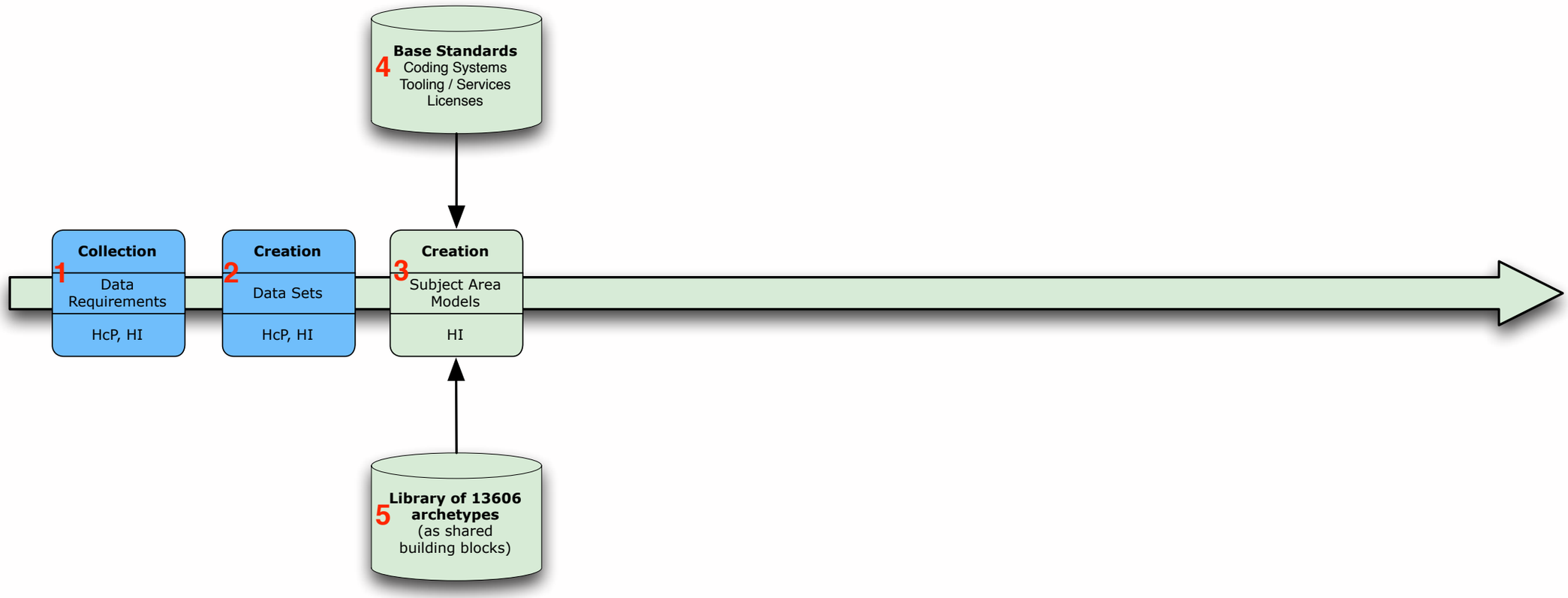

5 - Library of Archetypes as building blocks

- SAM's (13606 Templates) are build using predefined archetypes as shared building blocks
- SAM's will carry relevant codes from the Coding Systems selected
- SAM's represent fully the content of Data Sets

Subject Area Models

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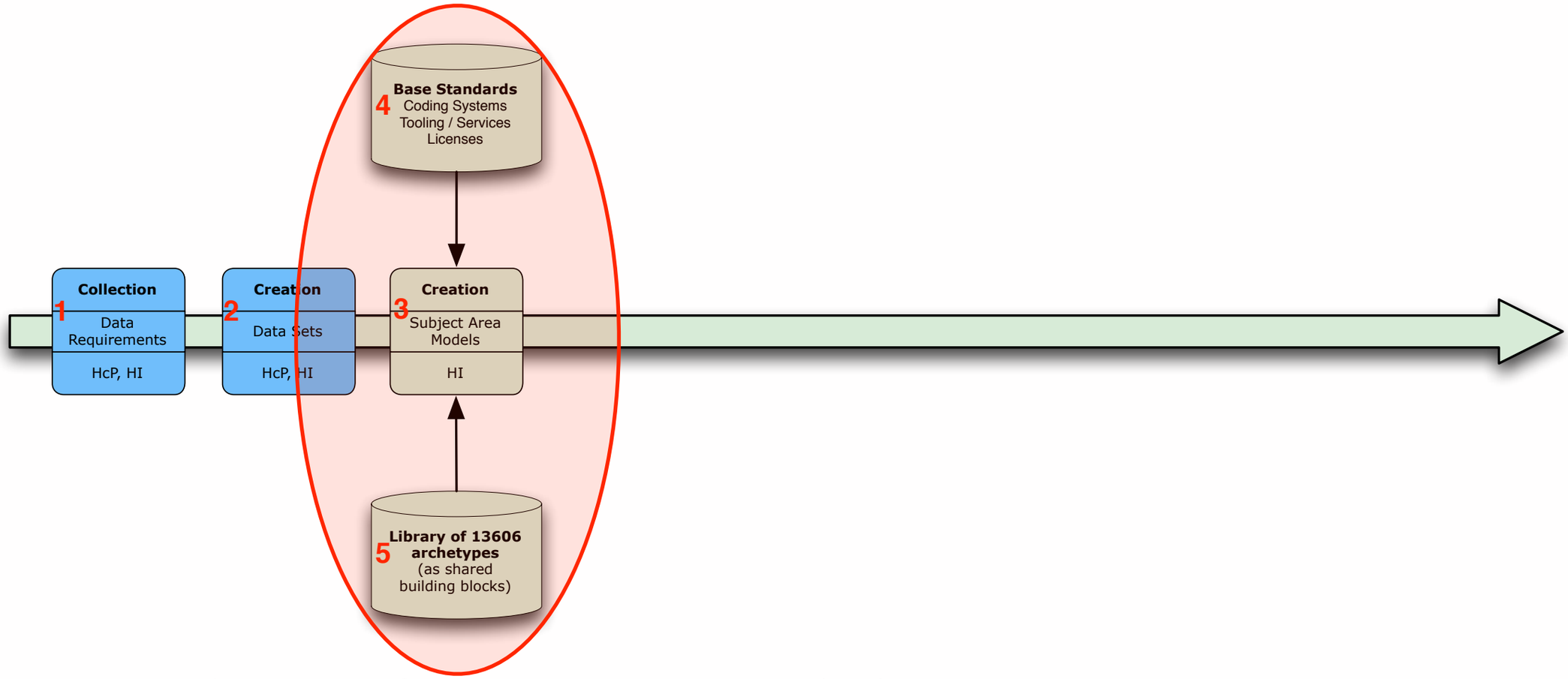

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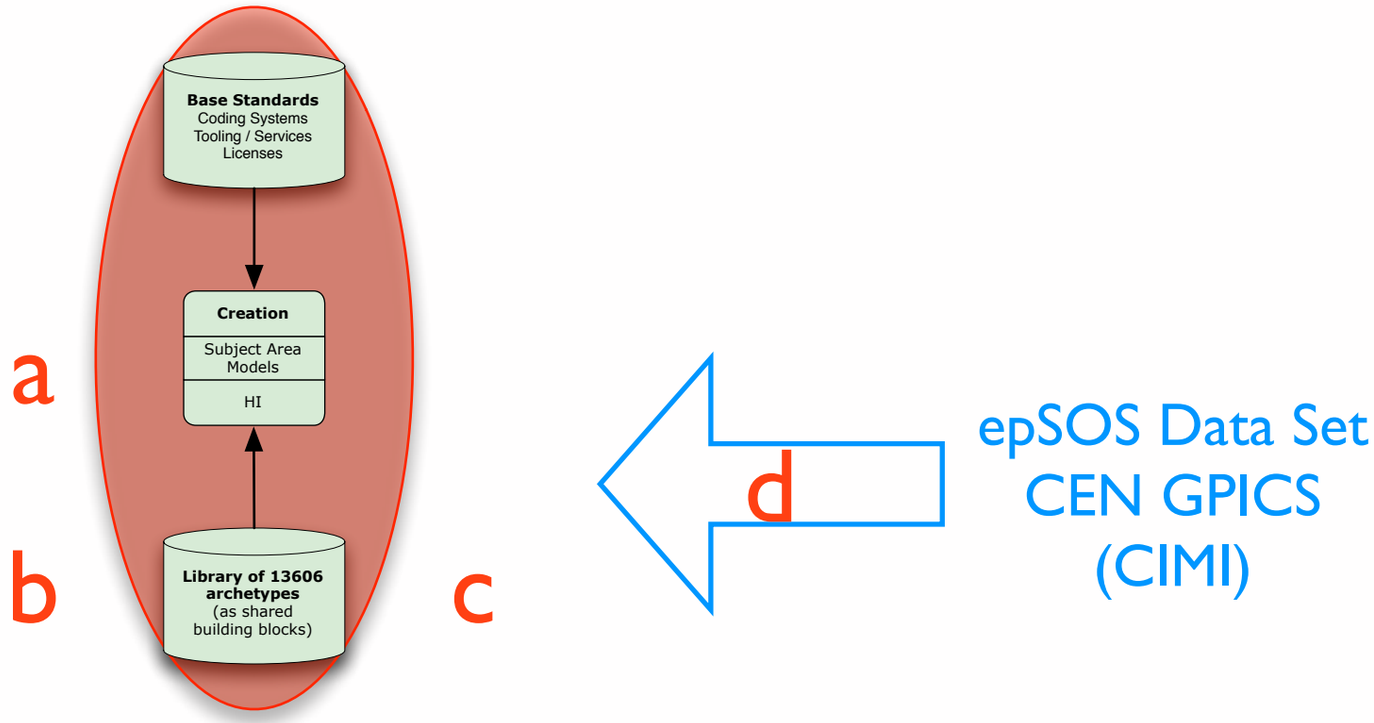
SAM construction



Subject Area Models

a. **Subject Area Models are En13606 Templates**
created with an Archetype Editor

b. **Templates are build using a Library of Archetypes**

c. **Library of Archetypes consists of shared patterns/clinical models**
(e.g. 'Demographics', 'Lab test', 'Diagnosis', 'Complaint', etc.)

d. **Many Data Sets and Archetypes exist already**
(epSOS data set, GPICS, eventually CIMI project)

SAM construction

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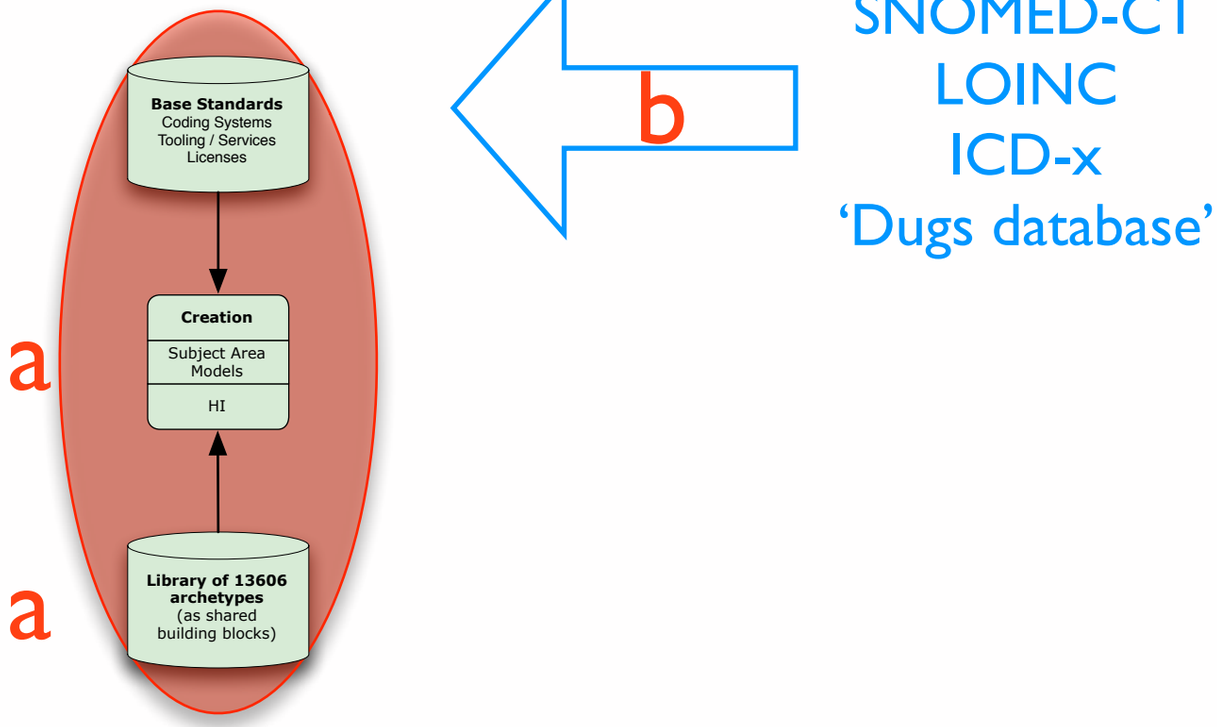

Subject Area Models and Codes

a. **Archetypes and Templates carry codes**
supplied by a Terminology Server

b. **SNOMED-CT, LOINC, ICD-x, 'Drugs database'**
(using licenses)

SAM construction

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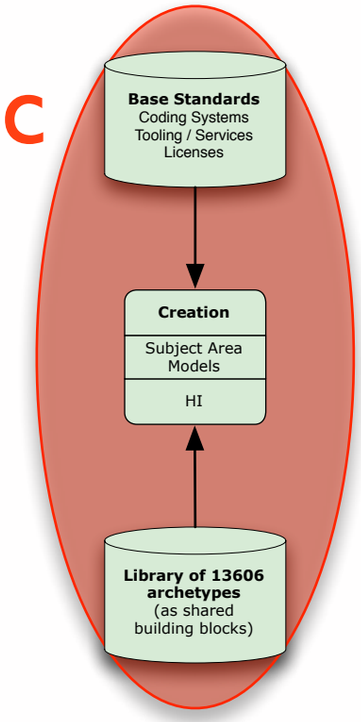
a, b, c



Tooling

a. **Archetype Editor** to build Templates and Archetypes, and define data elements, attach codes

b. **Document Management System** to manage documents / files: Archetypes and Templates, to manage the building blocks plus all other associated materials (guides, etc.)

c. **Terminology Server** to populate the SAM's, Templates, Archetypes with codes

Subject Area Models

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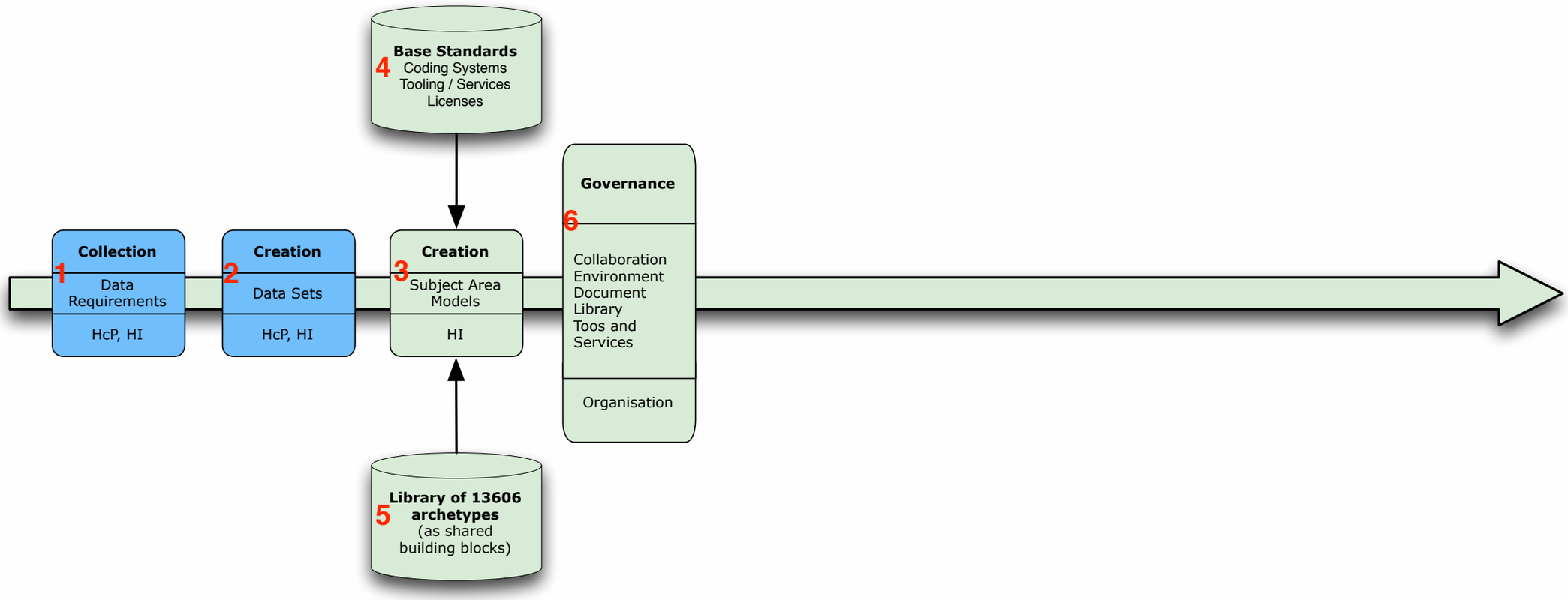

6 - Governance

- An Organisation will govern the process, the tools, services, archetype-, and code set-repositories.
- Observe that one of the services must be a Testing/Validation service to evaluate IT-systems that claim compliance with the published SAM's.

Subject Area Models

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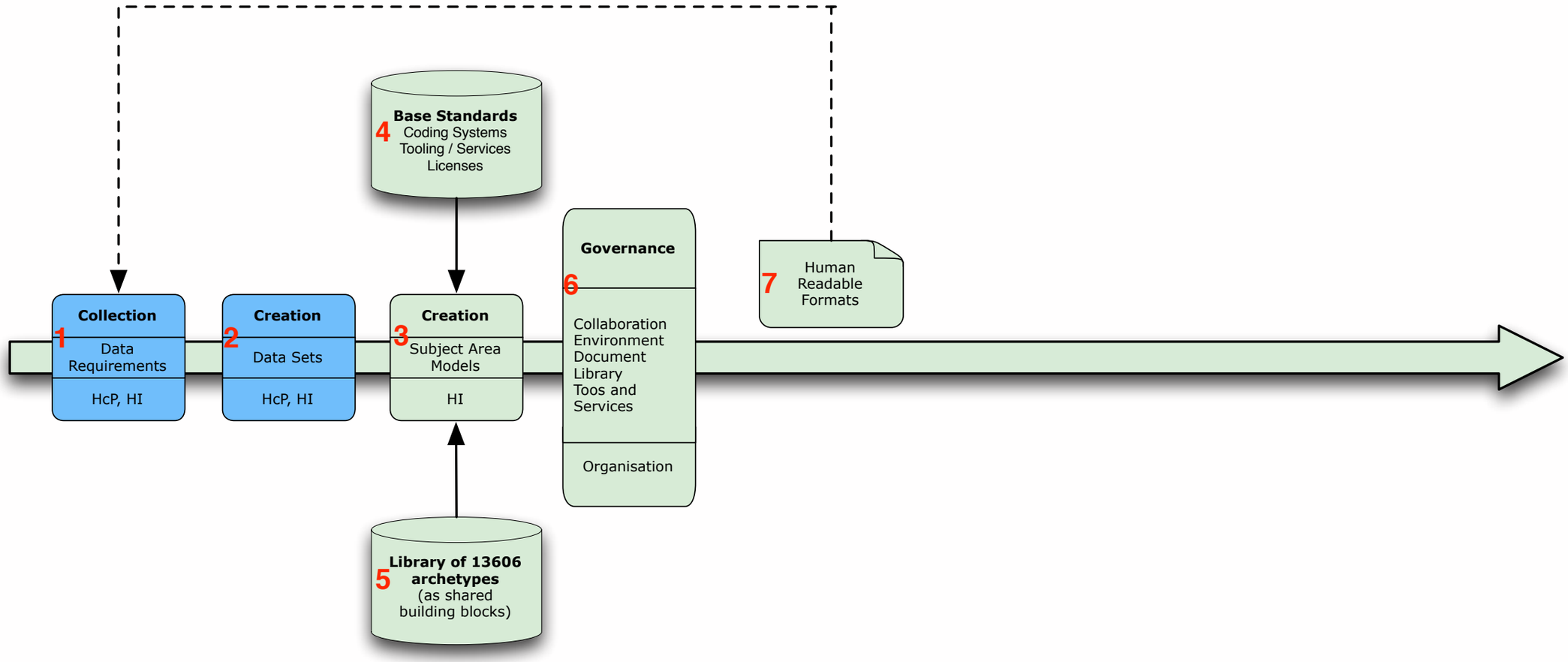

7 - Validation: SAM human readable output

- The SAM editor tool produces human readable output (Spreadsheet, graphs, etc.)
- This output is used by the Health Informatician and the Healthcare Providers and their organisations for the validation of the SAM's produced
- All SAM's an their output will have to be managed in A Document Management System

Subject Area Models

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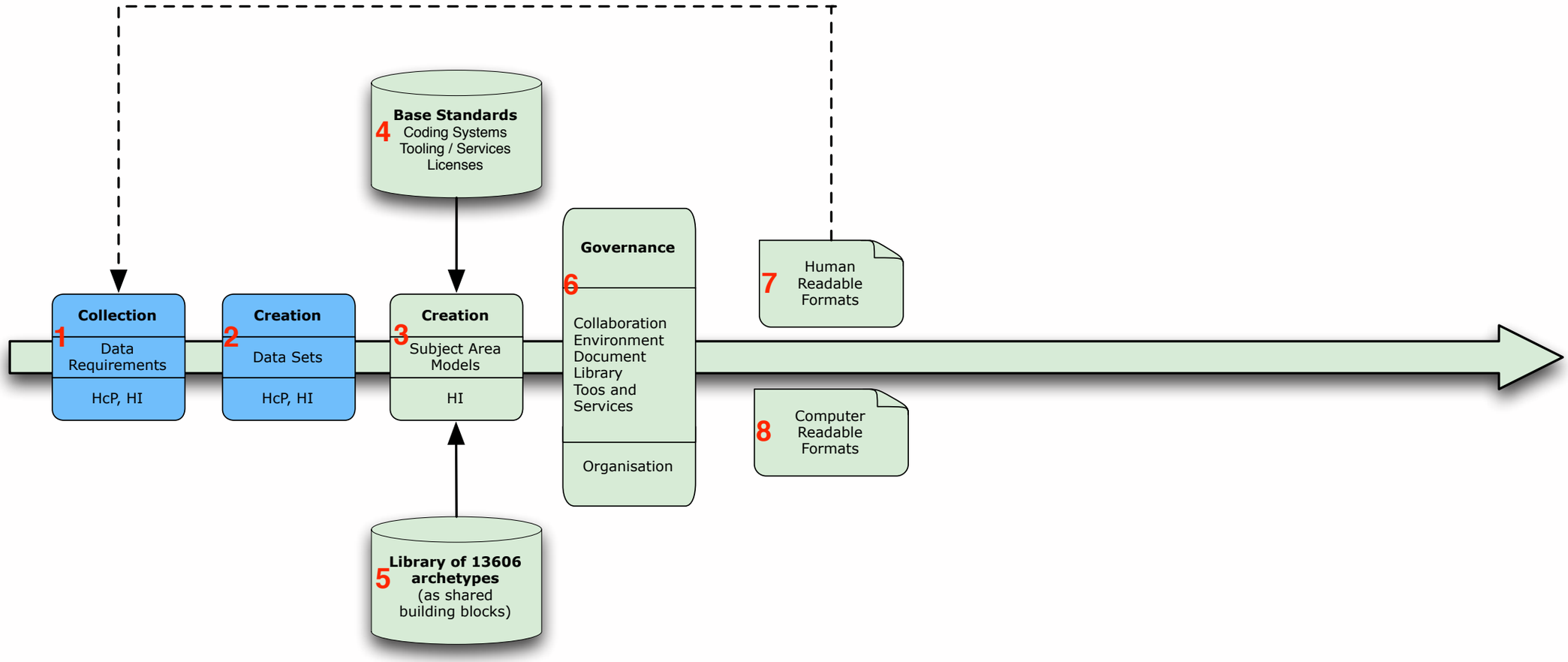

8 - SAM computer procesable output

- Next to human readable output computer processable documents are produced that support the IT-industry with the deployment.
- All SAM's an their output will have to be managed in a Document Management System

Subject Area Models

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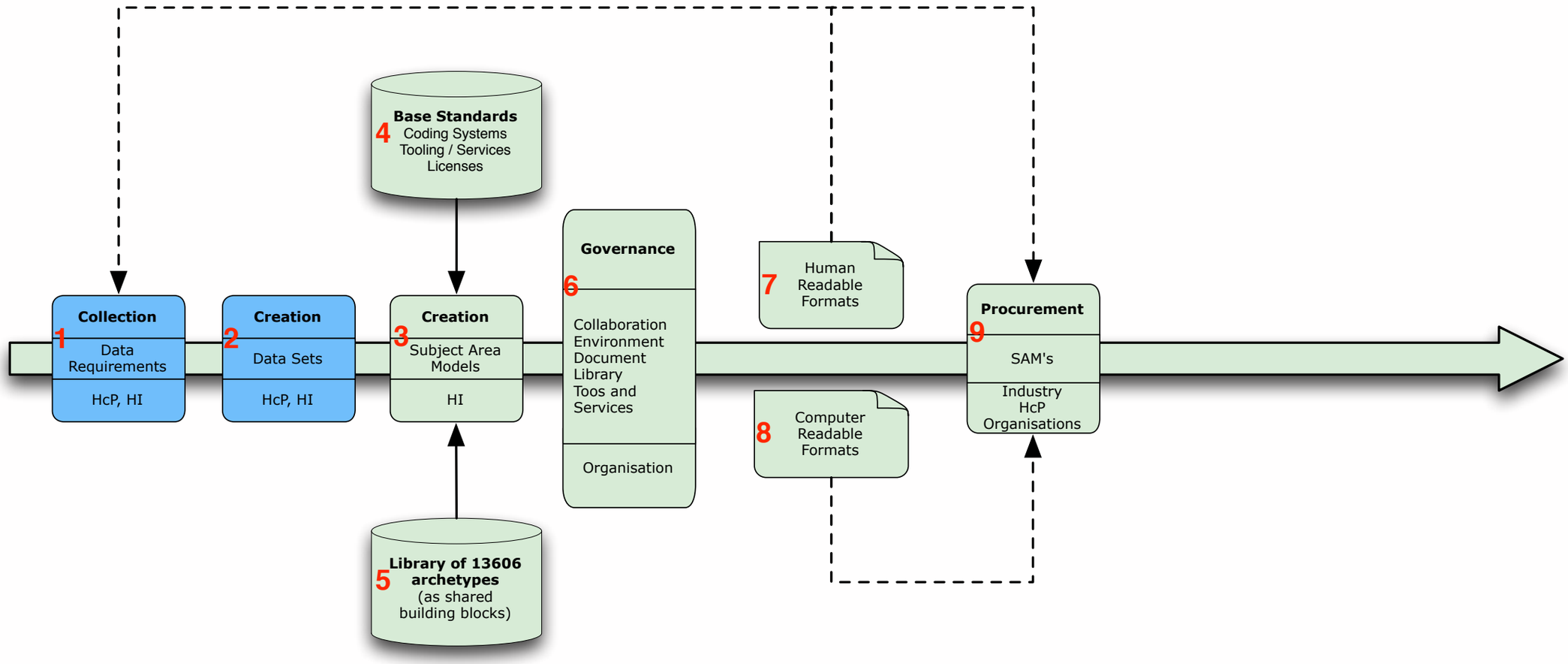

9- Procurement

- All published and validated SAM's and their outputs can play a role in the procurement process for new IT-systems or exchange capabilities.

Subject Area Models

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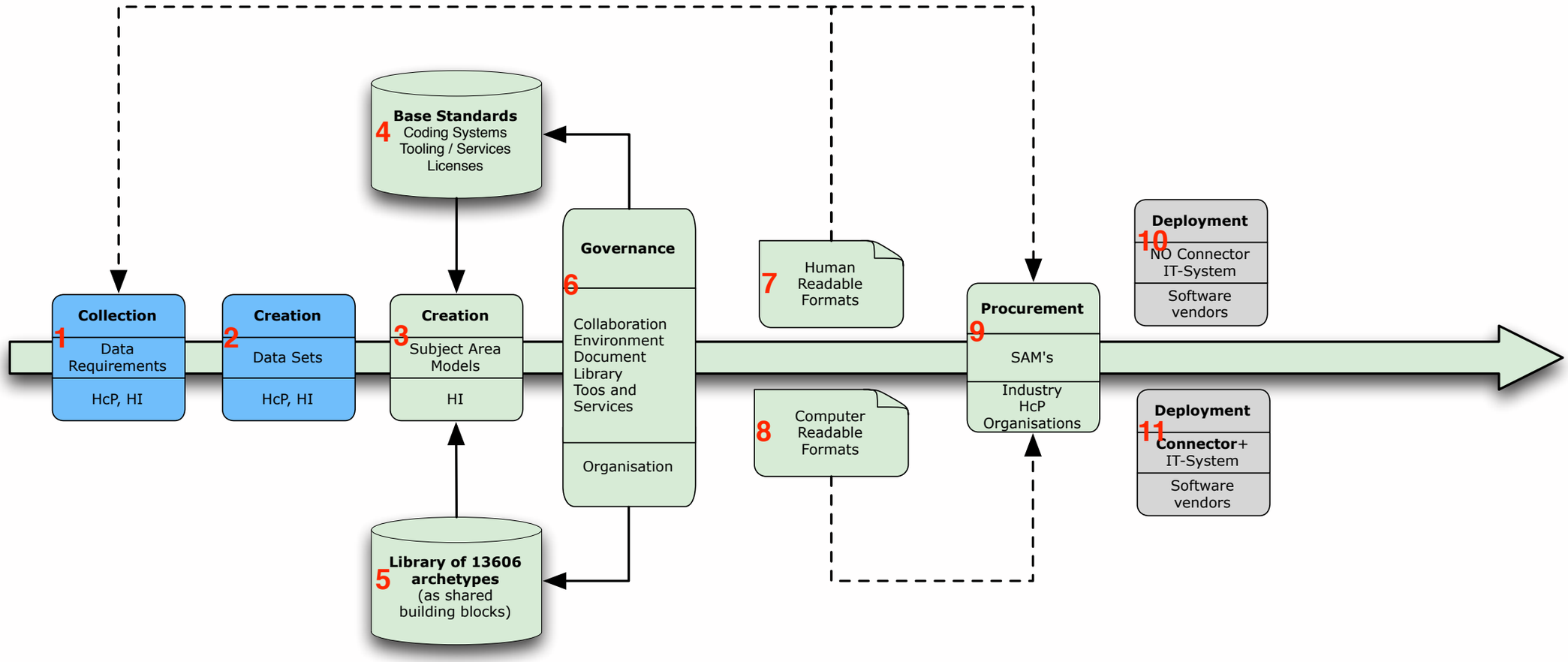

10/11 - Deployment

- The SAM's provide the maximally detailed requirements as expressed by the Healthcare Providers and their organisations based on open International standards
- The IT-industry can use these SAM's to build new systems
- Or exchange solutions (EHR-Extracts, HL7v2, HL7v3 CDA, …)

Subject Area Models

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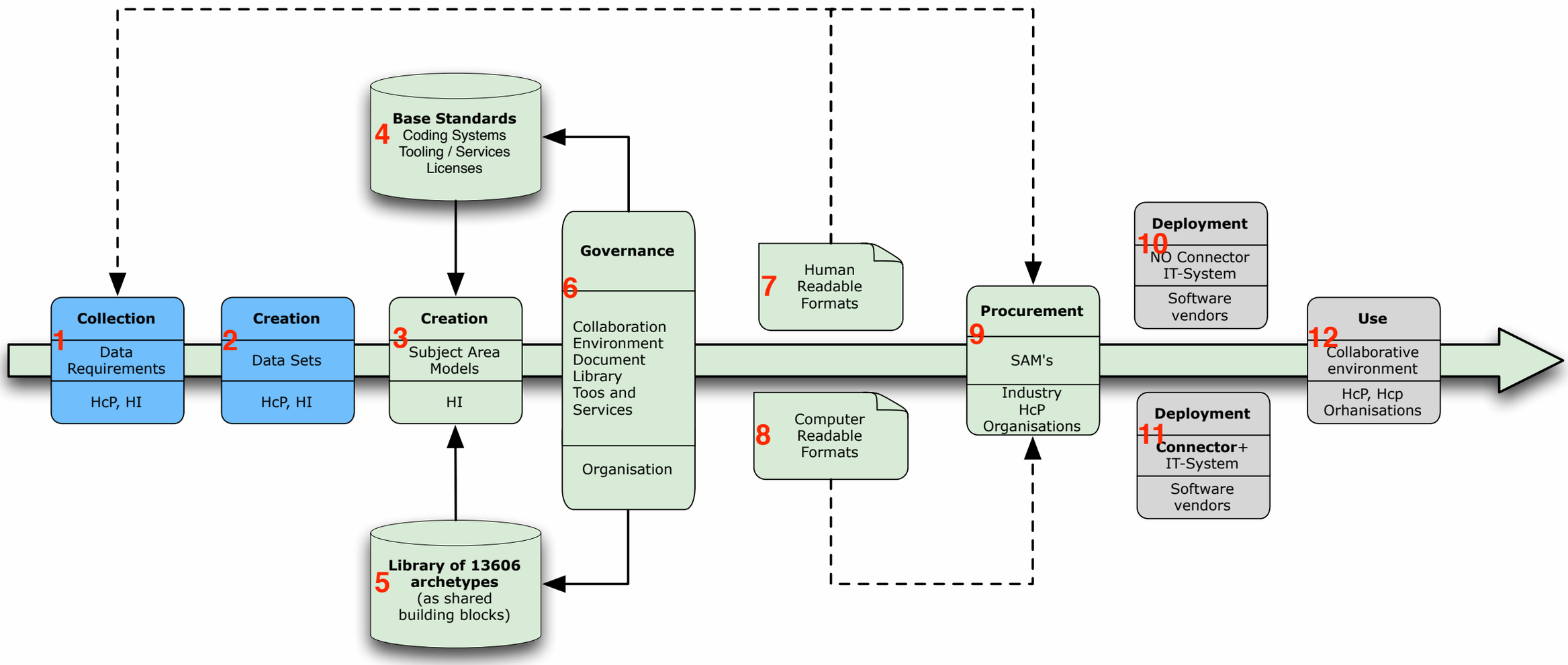

12- Collaborating Healthcare Providers

- IT-systems that deploy the SAM's need to be tested for conformance
- Before these systems are allowed to support collaborating Healthcare Providers

Short term
Next steps

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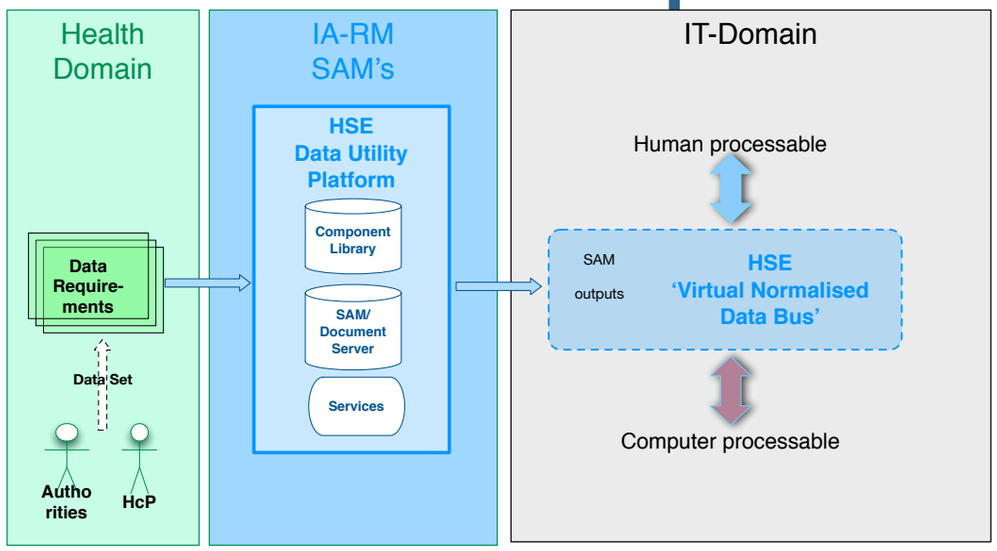

Challenges that can be addressed by IA RM and SAM's and proposed Data Utility Platform:

- uniform Demographics deployment
- e-Prescribing
- Diabetes clinical path way
- MedLis
- Re-Use for clinical research and management reporting
- Data governance and patient safety

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Current situation:
Big deficits

- The Standards based Information Model proposal is based on international best practice
- It provides a means to overcome the current fragmented data landscape of vertical data silos
- As the HSE's information-sharing needs evolve, it provides the means to integrate legacy and new systems whilst supporting accurate identification of multiple entities, including patients, providers and users.

Quality Assured
&
Integrated Data

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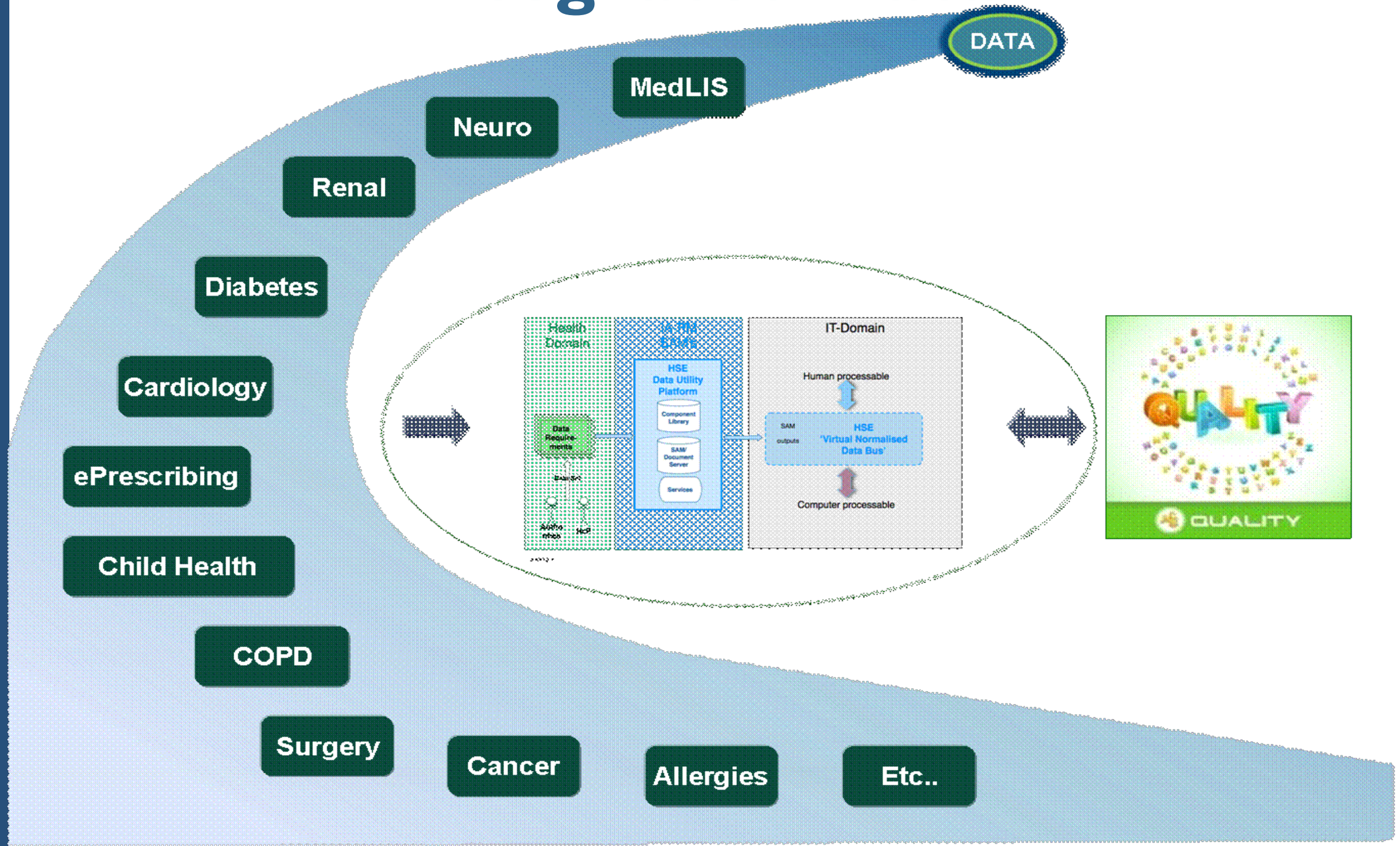

Enables Development of the National Contact Point (NCP) and EHR

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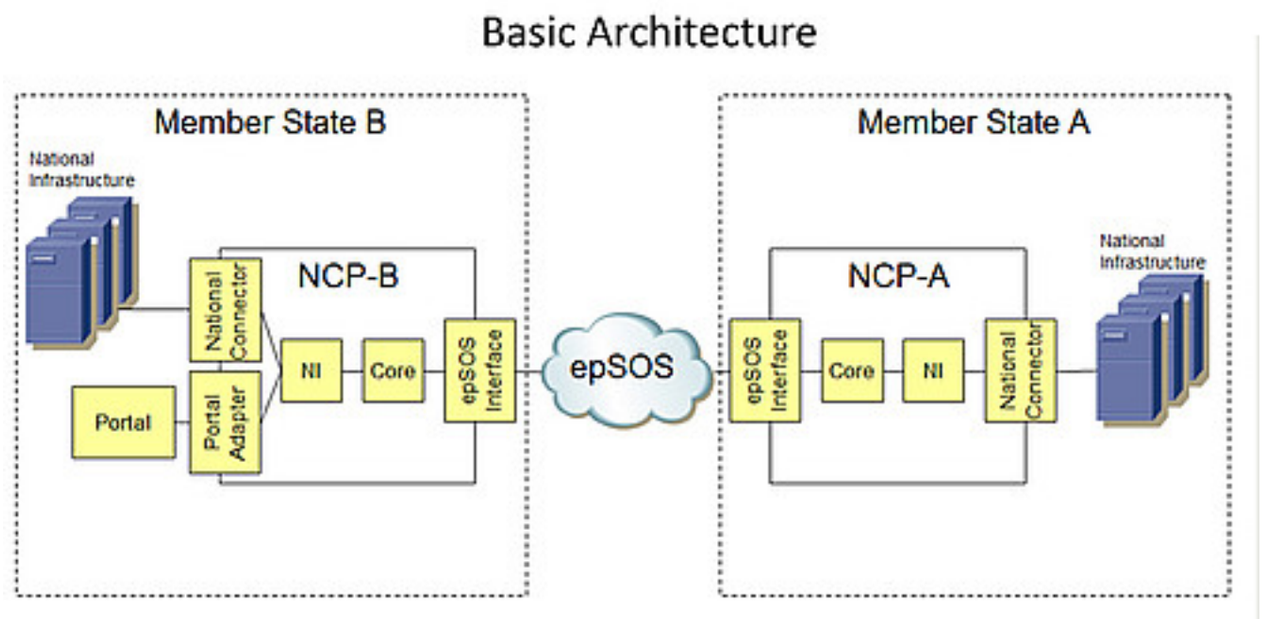

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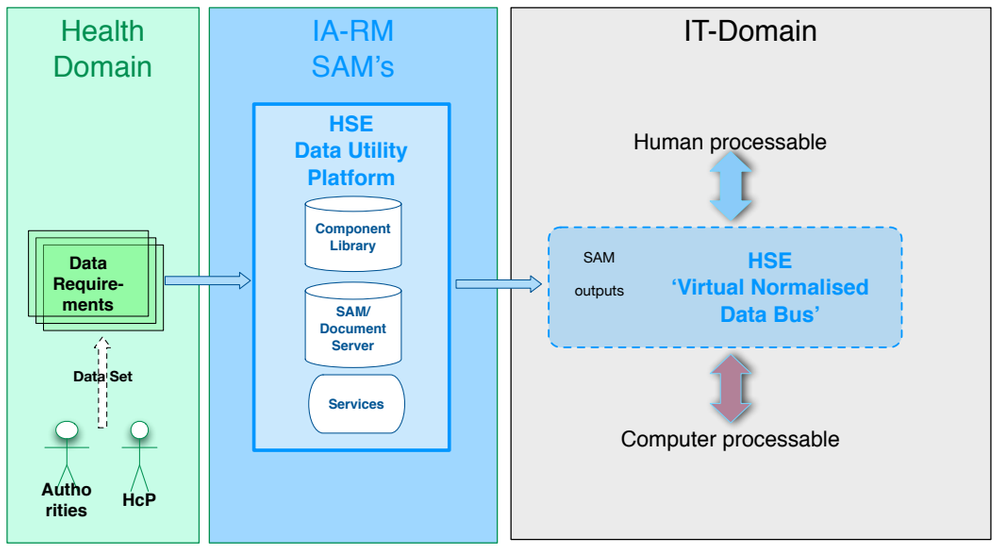
IA-RM and SAM's Deployment



eHealth Organisation needs:

- Tooling
- Professional services

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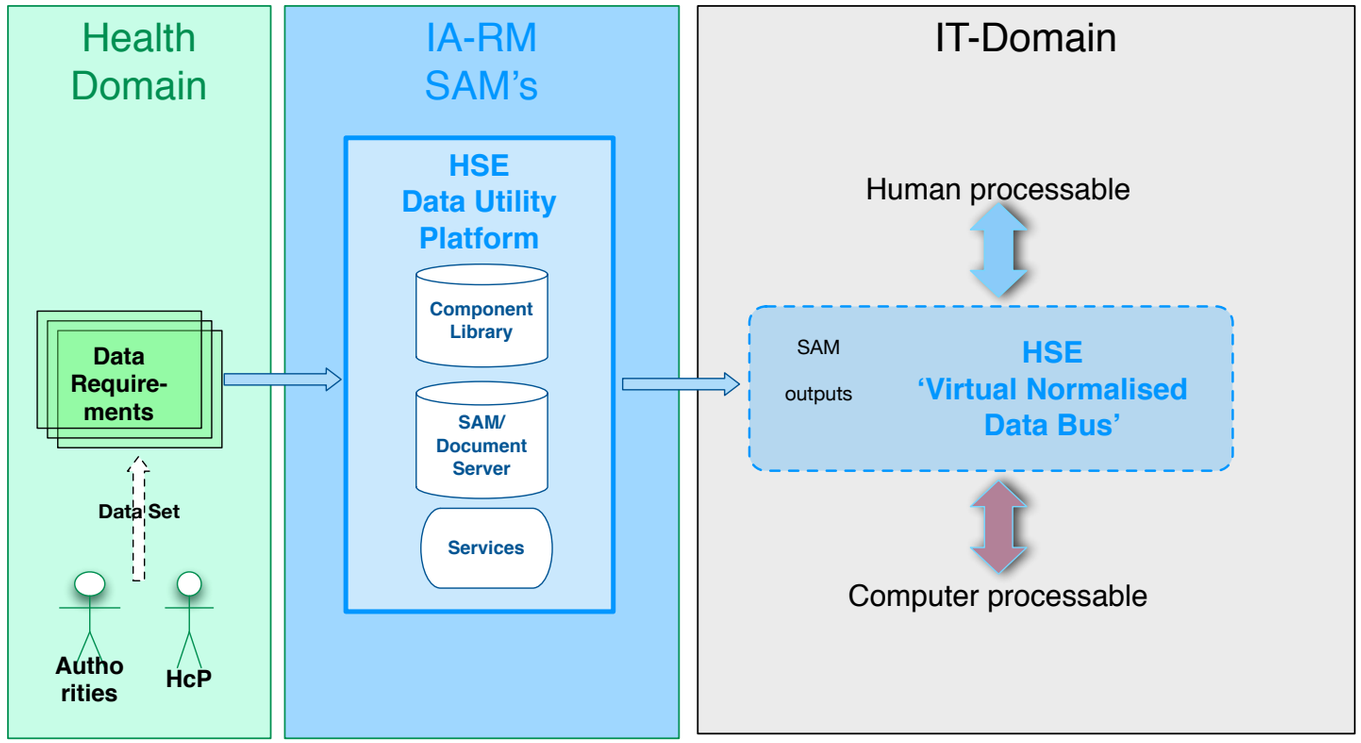
IA-RM and SAM's Deployment



eHealth Organisation cost Possibilities:

- Inside HSE Network: Software licenses, maintenance, professional services
- Inside HSE Network: Outsourced - Services

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Deployment
Next steps

Consider tooling

- SAM editor
- Document Manager
- Terminology Server
- EN13606 conformant database: Clinical Registries
- EN13606 conformant database: Test environment
- Connector(s)
- Professional services