HSRA – Healthcare Services Reference Architecture

Project Update

(after)

Atlanta Plenary & WGM - September 2019

HL7® International

HSRA MODEL STATUS

HSRA Status

- Against the Montreal plan we have a delay:
  - to complete the service inventory another month is required to complete the work (the original plan is that it should already finished)
- The objective now is to have a publicable model within one month, ready for the Sydney WGM
- Moreover, the objective is to launch an informative/for comment ballot in the coming cycle

HSRA MODEL RECAP

Healthcare Service Reference Architecture: recap

- The objective of the HL7 Healthcare Service Reference Architecture (HL7-HSRA) is to support the design of medium/large scale eHealth architectures based on HL7 services and standards.
- his project organizes adopted HL7 Service Functional Models, Functional Profiles and Domain Models as a basis for:
  - a formalized Enterprise Service Inventory (Normative)
  - an Architectural Patterns Catalog (Normative)
  - guidelines for enterprise Service Discovery and Orchestration (Informative)

Modeling language for HSRA

- The Modeling language used for HSRA is the OMG UAF (Unified Architecture Framework).
- UAF is a modeling language based on UML/SysML and also integrated with BPMN2 and SoaML.
- The UAF scope is to cover the representation of complex Architectures

UAF - Unified Architecture Framework

- The Unified Architecture Framework (UAF https://www.omg.org/uaf/) defines how representing an enterprise architecture that enables stakeholders to focus on specific areas of interest in the enterprise while retaining sight of the big picture.

- UAF meets the specific business, operational and systems-of-systems integration needs of commercial and industrial enterprises as well as the U.S. Department of Defense (DoD), the UK Ministry of Defence (MOD), the North Atlantic Treaty Organization (NATO) and other defense organizations.

- UAF requirements were derived from military frameworks however these requirements were combined with requirements from the business sector (because 90% of concepts and themes captured in the military frameworks are equally applicable in the commercial domains).

- UAF, as a framework, supports the needs of the commercial sector as well as the military.

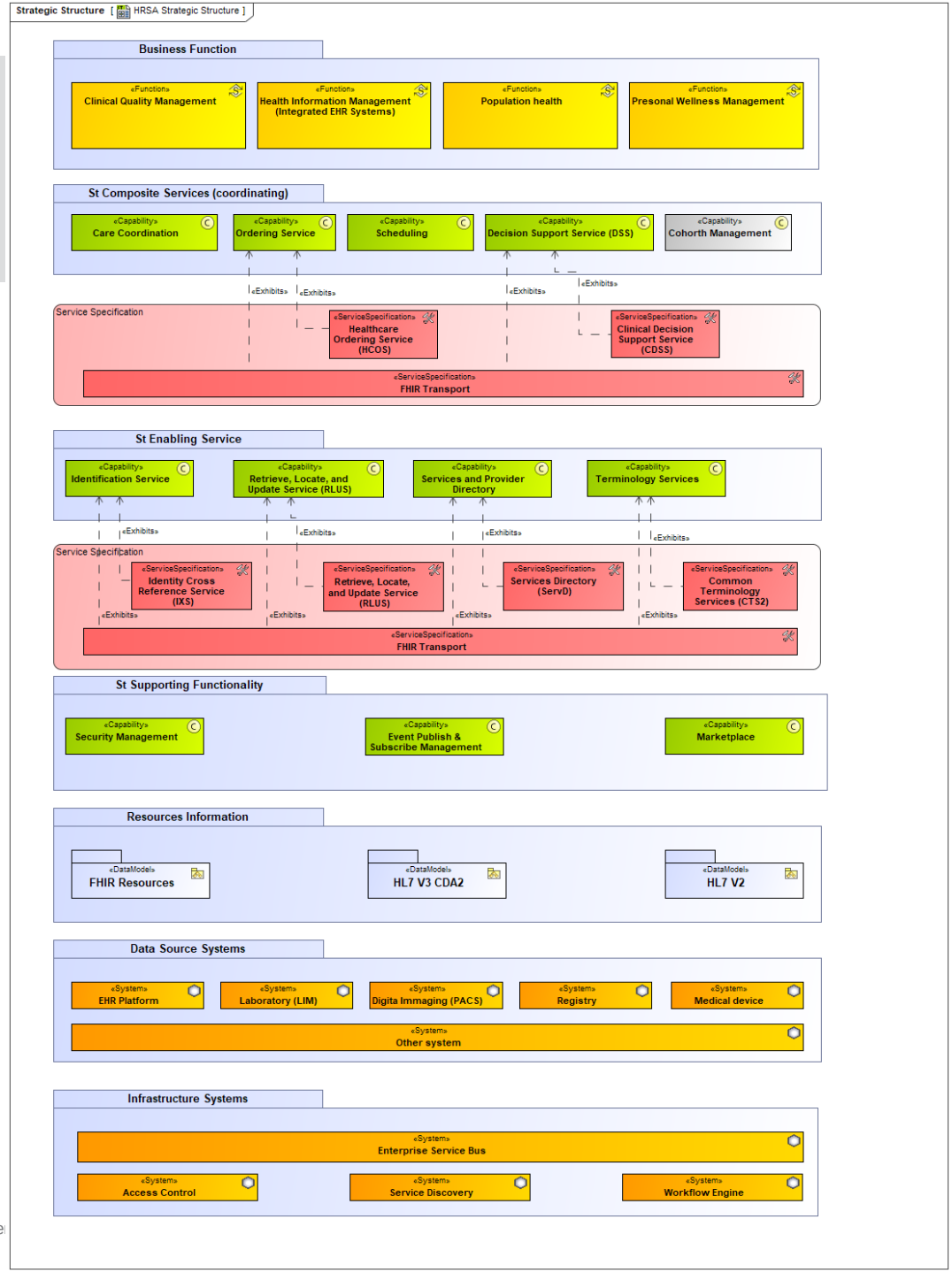
A *single artifact* approach

- We use of a specific modeling language, as UAF, to support a “single artifact” approach with the objective to support the maintainability and the navigability of HSRA
- We’ll have a single artifact (the model) that can be easily transformed in a web site with linked standard documents, or in a traditional document.
- The UAF editor used is MagicDraw. Unfortunately the HL7/Sparx EA license agreement do not include UAF plugin.

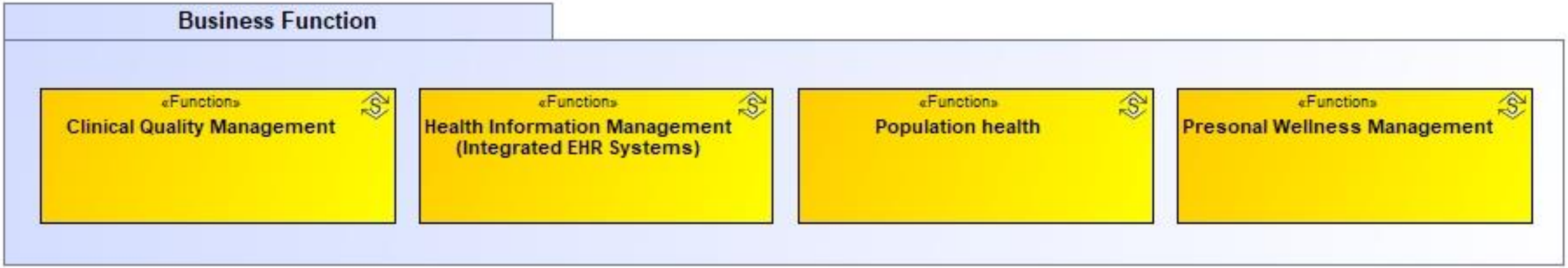
HSRA MODEL UPDATE

From Archimate to UAF

- UAF replaced Archimate also for the Reference Architecture map
- The reason is that Archimate is good language only for high level Architectures, but we have the necessity to ‘drill down’ from high level architectures to services detail.
- This is one of the reason of the UAF use.
- However, as you can see, the result substantially the same.
- The model include 8 levels:
  1. High level Business Functions
  2. Composite services (that include Service Functional Model and Service Technical Model)
  3. Enabling Services (that include Service Functional Model and Service Technical Model)
  4. Supporting Functionality
  5. Resources Information
  6. Data Source Systems
  7. Infrastructure Systems

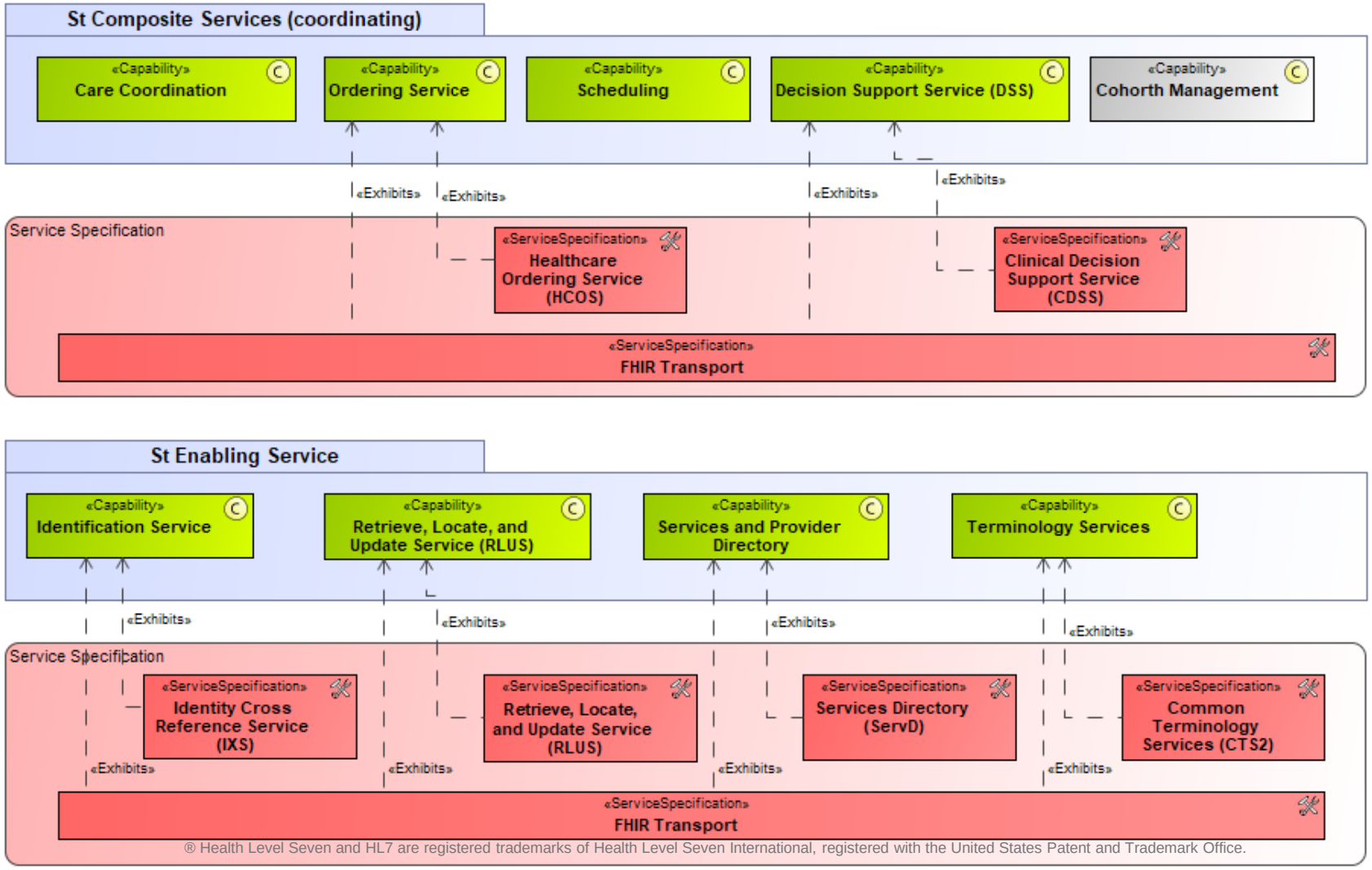


High Level Business Functions



- This niveau represent the high level business functions in scope with HSRA
- Instance of these business functions will be part of HSRA architectural patterns

Service Inventory



- This niveau represent the the core of the service inventory
- Every service functional model is mapped onto service specifications (currently soap and FHIR)

Strategic Taxonomy Table (St-Tx)

- Describe the capabilities of a standard business service (HL7 SFMs).
- The original standard documents is to the model
- A textual descripion of the capability is integrated in the model

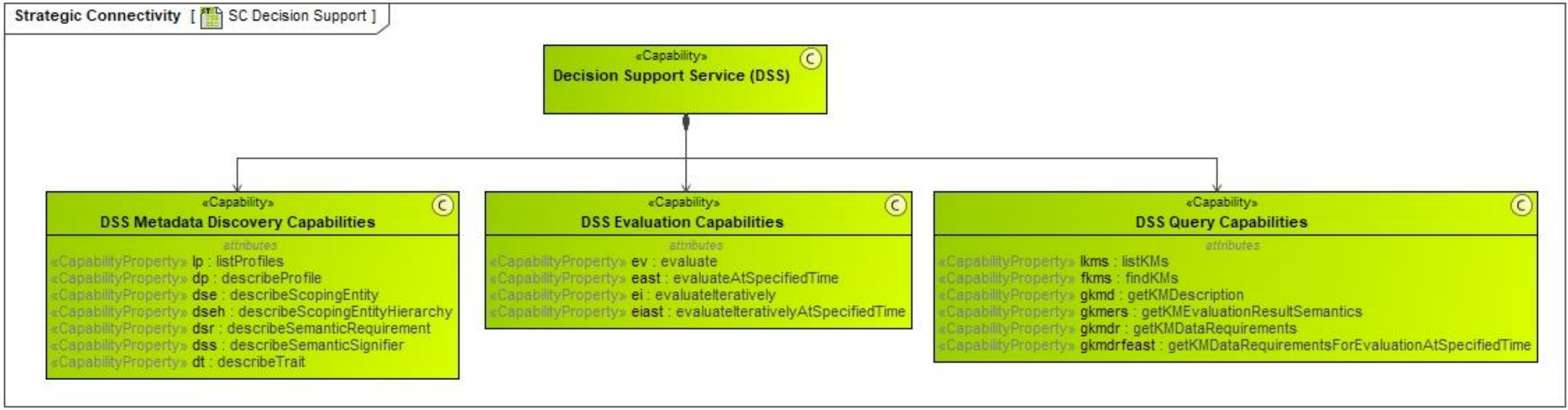
Criteria

Scope (optional): ;t Retrieve, Locate, and Update Service ... Filter:

Capability Legend: Candidate interface | Candidate operation | Candidate Service

#	Name	Definition	URI
1	Retrieve, Locate, and Update Service (RLUS)	The Retrieve, Locate, and Update Service (RLUS) Service Functional Model specification provides a set of capabilities through which information systems can access and manage information resources. RLUS realizes, at its core, a basic set of CRUD capabilities	http://www.hl7.org/implement/standards/product_brief.cfm?product_id=89
2	RLUS Basic Run-Time Capabilities	Core runtime cababilities Of RLUS	
3	RLUS Introspective Capabilities	Introspective capabilities of RLUS	
4	RLUS Administrative Capabilities	Administrative capabilities of RLUS	
5	Describe Semantic Signifier	Retrieves a description and formal model of a local	
6	Discard Resource	Removes a resource from a RLUS instance (in the underlying storage), or makes it unavailable. Also removes	
7	Get Resource	Given a set of parameters that uniquely describes a resource,	

Strategic Connectivity (St-Cn)



- The Strategic connectivity show how the capabilities are organized

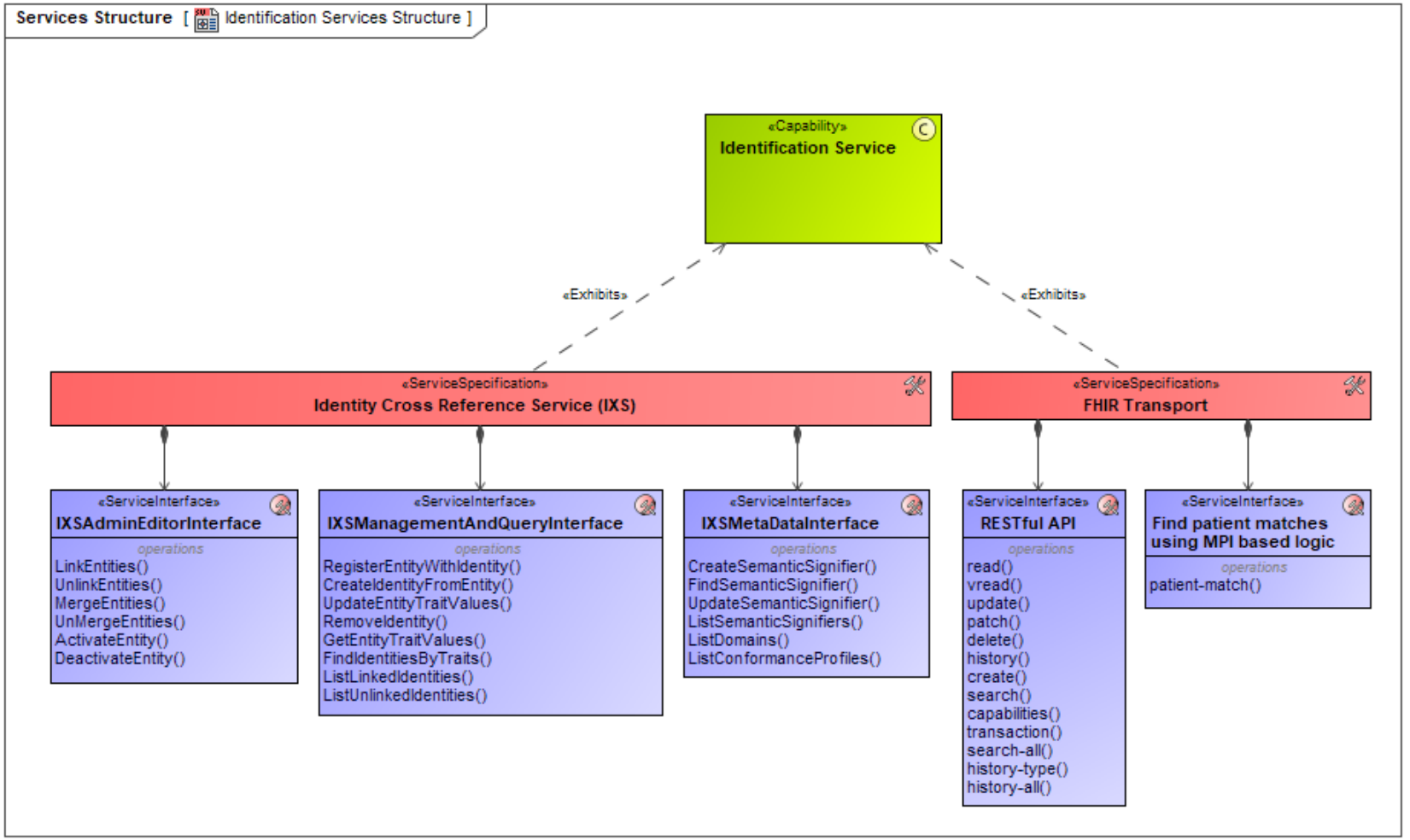
Service Taxonomy (St-Tx)

- Each sevice specification is mapped and linked with the original standard

#	Name	Definition	URI
1	Clinical Decision Support Service (CDSS)	A Decision Support Service takes in patient data as the input and provides back patient-specific assessments and recommendations. A Decision Support Service facilitates the implementation of clinical decision support capabilities in a scalable manner. The service payloads used by a Decision Support Service (e.g., Consolidated CDA or Virtual Medical Record representations of patient data) are defined through other projects within HL7. This specification is an update to the Decision Support Service Release 1 standard. Compared to Release 1 of the standard, the main update is the addition of a Representational State Transfer (REST) Web service interface to the existing SOAP Web service interface.	http://www.hl7.org/implement/standards/product_brief.cfm?product_id=12
2	Common Terminology Services (CTS2)	Structured terminologies provide a foundation for information interoperability by improving the effectiveness of information exchange. They provide a means for organizing information and serve to define the semantics of information using consistent and computable mechanisms.Terminologies are constructed to meet scope specific domain requirements. The domain specific nature of structured vocabularies often leads to variation in design patterns across the available terminology space. The ability to provide consistent representation and access to a broad set of terminologies enables multiple disparate terminology sources to be available to a community, and helps to ensure consistency across the domain space of that community. Service interfaces to structured terminologies should be flexible enough to accurately represent a wide variety of vocabularies and other lexically-based resources.The PIM specified in this document for CTS2 is intended to mediate among disparate terminology sources by providing a standard service information and computational model. The Information Model specifies the structural definition, attributes and associations of Resources common to structured terminologies such as Code Systems, Binding Domains and Value Sets. The Computational Model specifies the service descriptions and interfaces needed to access and maintain	https://www.omg.org/spec/CTS2/About-CTS2/
3	Healthcare Ordering Service (HCOS)	The Healthcare Ordering Service (HCOS) is intended to complement the existing portfolio of Service Oriented Architecture (SOA) services on the HL7 / OMG services roadmap. The HCOS provides a consistent, structured methodology for ordering a variety of services and products, including, but not limited to, pharmacy, nutrition, radiology, and laboratory items. It manages electronic interactions between an order source and those providing requested fulfillment services, specifically recognizing that the consequences of an order are not necessarily enacted by the initial recipient, but may only be realized after a complex, multi-step workflow. The Ordering Service allows providers of complex services or applications to submit appropriate, valid orders and to facilitate desirable interactions with a larger number of fulfillment services. The service helps unify disparate types of orders into a common meta- model cleanly separating essential concerns, prerequisites, and workflow. The HCOS also defines functional behaviors surrounding the querying and management of an Ordering Service Catalog. The Order Service Catalog allows organizations to collect, import, annotate, manage, and export list of items that can be subsequently displayed to consumers for a variety of different purposes. It typically holds collections of orderable items available to an organization or facility, the definition of orderables used to render and constrain order entry forms, and libraries of order set or plan of care definitions for any	TBD (emerging standard)
4	Identity Cross Reference Service (IXS)	The scope of this specification is the interfaces, Operations, and information structure required to uniquely identify various kinds of entities within disparate systems within a single enterprise and/or across a set of collaborating enterprises. These service interfaces are intended to be used within a healthcare setting, in which the security of data exchanges is both important and regulated by laws such as HIPAA in the United States.	https://www.omg.org/spec/IXS
5	FHIR Transport	FHIR is designed as an interface specification - it specifies the content of the data exchanged between healthcare applications, and how the exchange is implemented and managed. FHIR defines the following methods for exchanging data between systems: RESTful API, Messaging, Documents, Services, Database / Persistent Storage Each of these approaches can be used to exchange information, and each has its own strengths and weaknesses and applicability. Note that applications are allowed to use any other method to exchange resources; the methods described in this specification are the common methods that are used enough to justify the effort to describe or standardize their use.	http://hl7.org/fhir/exchange-module.html
6	Retrieve, Locate, and Update Service (RLUS)	The Retrieve, Locate, and Update Service (RLUS) provides a set of interfaces through which information systems can access and manage information. RLUS allows health data to be located, accessed and updated regardless of underlying data structures, security concerns, or delivery mechanisms. RLUS explicitly occupies the service space within an information processing environment. It is independent of but compatible with underlying structures, including local security implementations, data models, or delivery mechanisms. By separating and exposing those aspects of resources that facilitate inter-organization work flows in a service layer, this specification abstracts the problem of interoperability away from underlying systems. It is this abstraction and reconfiguration that allows interoperability and system durability independent of burdensome technology integration.	https://www.omg.org/spec/RLUS/About-RLUS/
7	Services Directory (ServD)	The Services Directory (ServD) specification provides an SOA model to support the discovery of, and access to, service provider, individual, and organizational information including; locations, associations, contact details, services, identifiers, and many other relevant characteristics/attributes. This information can be relevant for use by both people and/or computers. Actors are able to use this information to support secure transfer of personal and confidential information to network end point applications or shared repositories.This specification incorporates the HL7 document Service Functional Model Specification: Healthcare, Community Services and Provider Directory, Version 2.0, Dec 2009, and complements that work through the documentation of interfaces required to support service discovery and information sharing between systems.This specification has been developed to meet the needs of interoperability in healthcare and community services, although at its highest level of abstraction ServD is non-domain specific and could be used in a variety of settings where there is a need for directory-based search facility and secure transmission of sensitive documents among a large and dispersed population of service providers.Both a Platform Independent Model (PIM) and a Platform Specific Model (PSM) based on web services have been included.The mandatory conformance points for the specification have been included in the Normative Section and otherwise as listed. Individual data items in the data schema have been marked as mandatory or	https://www.omg.org/spec/ServD/About-ServD/

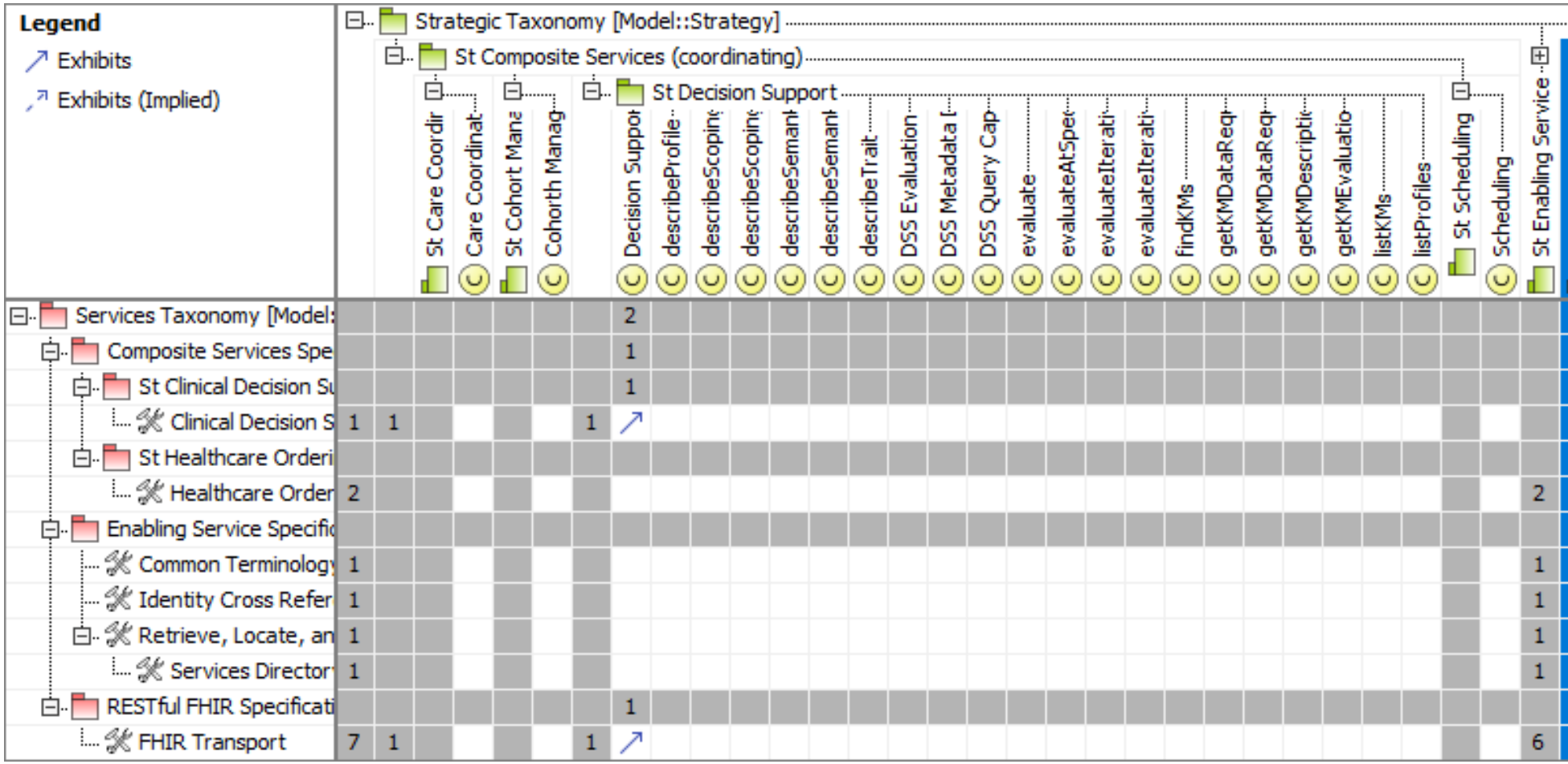
Service Structure (Sv-Sr)

- Each service capability is mapped onto service specification



Capabilities/Services mapping

- The detailed mapping among Capabilities and Services are specified with a table (Sv-Tr - Service Specifications to Capabilities Mapping).



PLAN

Plan

- Another month to complete the Services Inventory.
- To have a publicable model at least ready for the Sydney WGM
- The model should include:
  - Complete Service inventory for Soap and FHIR Interfaces
  - An example of architectural partern
- We can try a ballot (for comment Informative) in the next cycle.
- Regular revision call whithin a month (one in Australian friendly timeframe one in US friendly timeframe)

Q&A

HSRA HL7 Confluence Page
https://confluence.hl7.org/display/SOA/Health+Services+Reference+Architecture+(HL7-HSRA)