



HL7 and Service-oriented Architecture (SOA) Ambassador Briefing

February 2010

Topics

- Understanding Service-oriented Architecture (SOA)
- The case for Healthcare SOA Standards
- Introducing HSSP
- Status of Standards Work
- Summary



First, A Few Terms...

- DSTU = Draft Standard for Trial Use
- HL7 = Health Level Seven
- HSSP = Healthcare Services Specification Project
- OMG = Object Management Group
- OHT = Open Health Tools
- SOA = Service-oriented Architecture



Understanding SOA



A Twenty-Second Interoperability Quiz...

Are you interoperable...

- ... if you and your business partners “speak” different languages
- ... if gender = “01” means “male” in your business and “female” for your business partner?
- ...if the primary context for information sharing is e-mail or fax?
- ...if electronic data is exchanged via CD-ROM, or DVD-ROM?
- ...if you use XML?
- ...if you use Web Services?



The 20 Second Agility Quiz

How well does your organization's IT adapt to...

- ... address the new business rules that resulted from a legislated policy?
- ... deployment changes resulting from adding a data center?
- ... integrating clinical information with a new business partner?
- ... integrating with “the new <place clinical specialty here> system”
- ... emerging public interest in personal health records?



Wouldn't it be nice if...

- ...your organization could use any MPI you chose without re-integrating?
- ...you could painlessly integrate data from new clinical systems into a patient's health summary / cover sheet?
- ...heterogeneous systems could be accessed consistently from your installed application base?
- ...standards supported your ability to redeploy or distribute hardware and software without breaking things?



SOA ≠ Web Services

	SOA	Web Services
Is a technology platform?	No	Yes
Is a transport protocol?	No	Yes
Primary ownership is business-line owned?	Yes	No
Affects workflow and business processes?	Yes	No
Is an enabler for business and IT transformation?	Yes	Yes
Is an industry standard?	No	Yes



How *is* SOA different from messaging?

- A common practice in healthcare, just not yet in healthcare IT
- Many key products use them but do not expose interfaces
- Ensures functional consistency across applications
- Accepted industry best practice
- Furthers authoritative sources of data
- Minimizes duplication across applications, provides reuse
- Messages can be either payloads in or infrastructure beneath services
- Service-oriented architecture provides the framework for automation of common services
- Still, SOA has to be done well. It is cheaper and easier than ever to create badly designed applications and spaghetti integration



Interoperability Realized



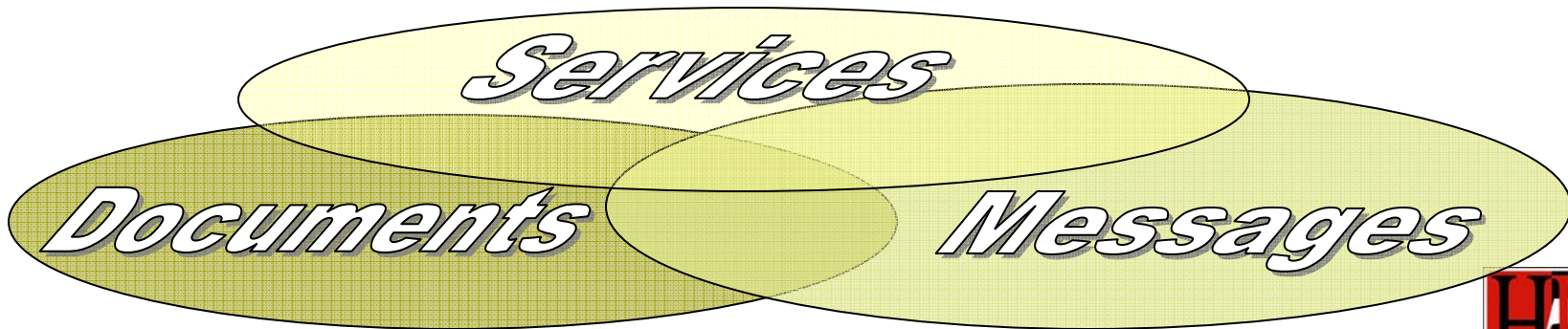
Context



Requirements



Constraints



Why SOA Healthcare Standards?

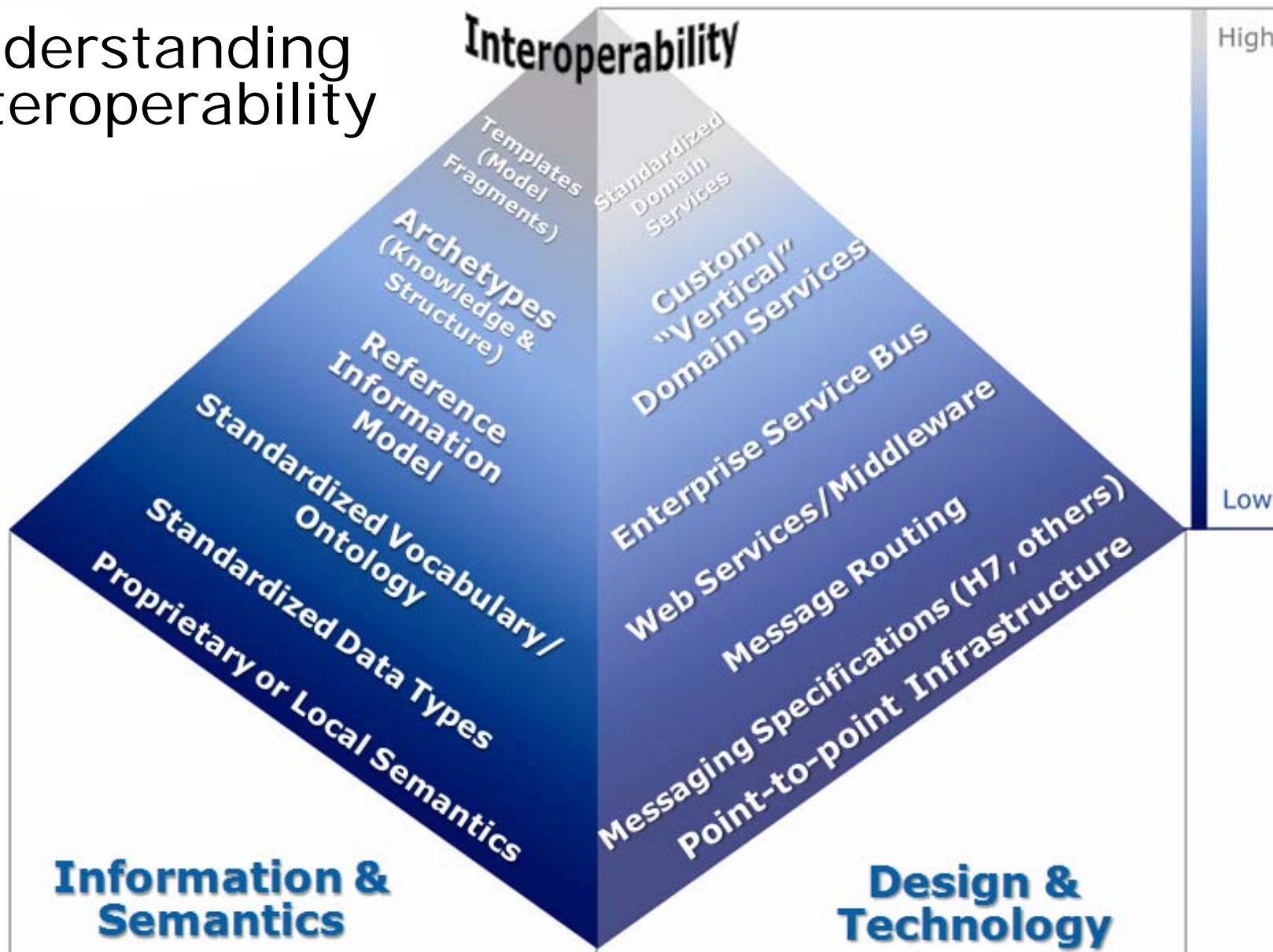


Why develop healthcare SOA standards?

- Healthcare organizations are being driven to interoperate
- “Messaging” is not the ideal approach for *every* interoperability challenge
- SOA has demonstrated viability and benefits for many organizations and in many vertical-markets



Understanding Interoperability



Introducing HSSP



The Healthcare Services Specification Project (HSSP)

- An effort to create common “service interface specifications” tractable within Health IT
- A joint standards development project involving Health Level 7 (HL7) and the Object Management Group (OMG)
- Its objectives are:
 - To create useful, usable healthcare standards that address functions, semantics and technologies
 - To complement existing work and leverage existing standards
 - To focus on *practical* needs and *not perfection*
 - To capitalize on industry talent through open community participation



What is the Healthcare Service Specification Project?

- A joint standards development activity occurring in multiple organizations, including Health Level 7 (HL7), the Object Management Group (OMG), IHE, Open Health Tools, and others
- An effort to create common “service interface specifications” tractable within Health IT
- Its objectives are:
 - To create useful, usable healthcare standards that address business functions, semantics and technologies
 - To complement existing work and leverage existing standards
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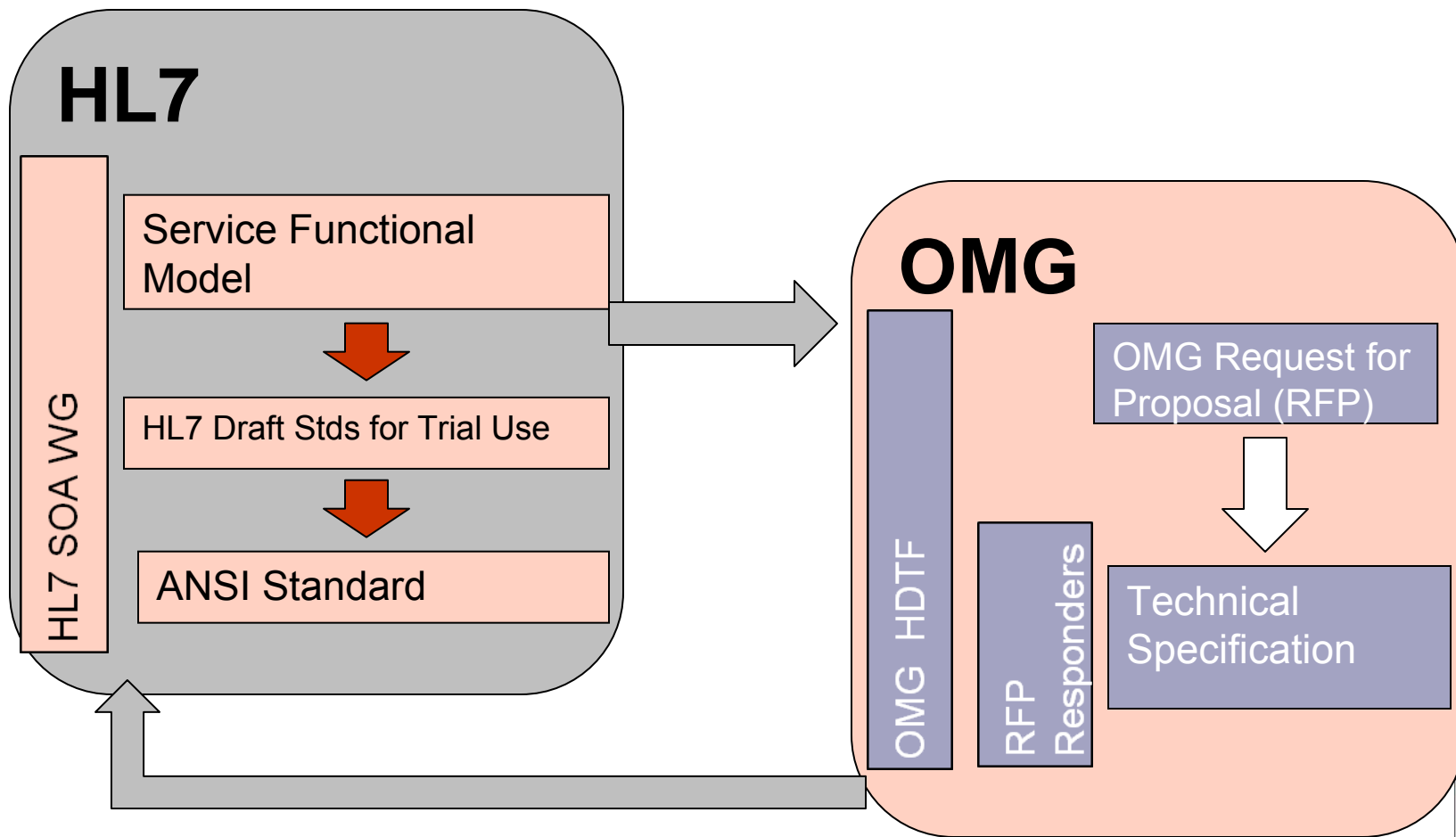


The Benefits of HSSP Standards...

- Define industry standard behaviors for healthcare-oriented service functions
- Eliminate “different flavors” of web services from occurring in different organizations
- Rapid-pace stds development: ~18-24 months
- Methodology embracing cross-group standards development



Cross-Organizational Standards Development



Asset Inventory

Asset	Purpose	Functional Spec-DSTU	Technical Spec	Functional Spec-Norm	Implementation Availability
Entity Identification Service (EIS)	To manage identities and identifying traits (e.g., MPI)	Complete	Complete	Complete	Commercially Available
Retrieve Locate Update Service (RLUS)	To manage location and retrieval of healthcare content	Complete	Complete	Expected 9/2010	Commercially Available
Decision Support Service (DSS)	To analyze patient data and assess against knowledge rules.	Complete	Complete	Expected 9/2010	In development
Common Terminology Service (CTS II)	Defines behavior for managing/maintaining terminologies	Complete	Expected 12/2010	Expected 5/2011	In development
[Healthcare] Access Control Service (PASS Access Control)	Manages security policy as pertaining to access to health information	Complete	In process	TBD	TBD
Human Svcs Directory (HSD)	To find providers & services in allocated areas, e.g., referrals.	N/A	In process	Complete	TBD
[Healthcare] Audit Service (PASS Audit)	Security-oriented service to manage audit record	In process	TBD	TBD	TBD

Entity Cross-Reference Service (IXS)

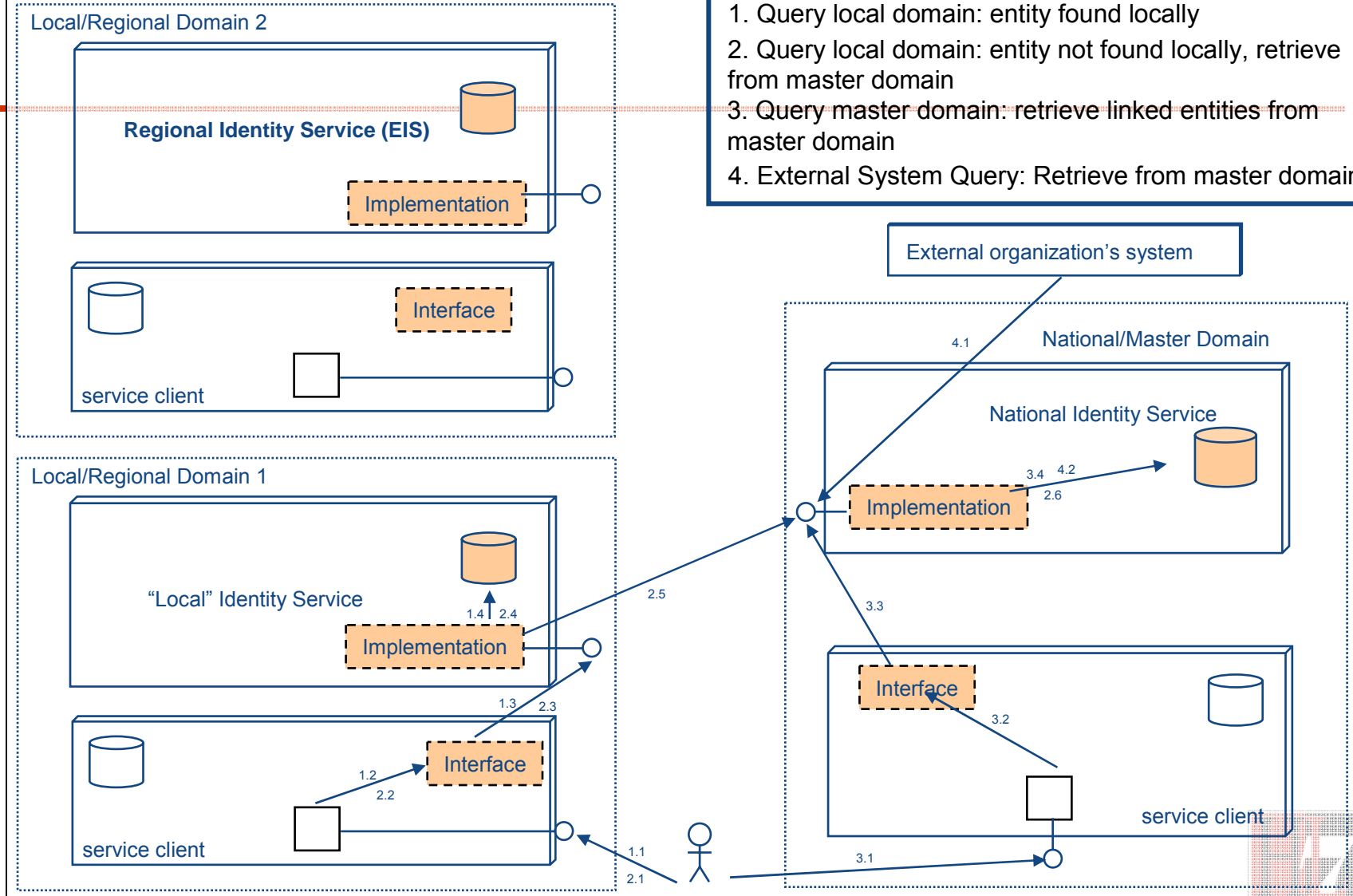
- provides a business level (or conceptual specification) of a set of capabilities that should be provided by an MPI-type capability)
- copes with different entity types (people, patients, providers, devices etc) and multiple domains (national, regional, inter and intra organization) of use.
- provides a flexible approach to metadata that allows dynamic definition of a set of traits that can be used to identify entities
- Formerly known as the Entity Identification Service



SOA In Action... An Identity Management Example

Scenarios

1. Query local domain: entity found locally
2. Query local domain: entity not found locally, retrieve from master domain
3. Query master domain: retrieve linked entities from master domain
4. External System Query: Retrieve from master domain



INTERNATIONAL

Common Terminology Service II (CTS II)

- information and functional model for relationships and use of terminology
 - how data elements are constrained to ranges of possible codes
 - how selection lists are built and queried
 - how terminological information is validated
- interactions between terminology providers and consumers
 - submit requests for corrections and extensions
 - identification, distributions, integration of revisions to content into running systems.
- mapping between terminologies and data models
- queries for logic-based terminologies about subsumption and inferred relationships



Decision Support Service (DSS)

- uses patient data to draw conclusions regarding patients
- “guardian” of one or more modules of medical knowledge
- each DSS knowledge module is capable of utilizing coded patient data to arrive at machine-interpretable conclusions regarding the patient, examples
 - Medication ID, age, gender, weight, serum creatinine level -> Recommended maximum and minimum doses given patient's estimated renal function
 - age, gender, past health maintenance procedures -> list of health maintenance procedures due or almost due
- DSS semantic profiles for immunization forecasting



Retrieve Locate and Update Service (RLUS)

- expose healthcare assets and resources within an organization that are needed to meet business or medical needs
- interfaces to locate, retrieve, and update resources among and between healthcare organizations
- not intended to replace existing systems or implementations - transparent means of locating and accessing health data
 - regardless of underlying data structures, security concerns, or delivery mechanisms
- semantic profiles (e.g. HL7 message information models, CEN 13606 archetypes) define the payload



Privacy Access and Security Services (PASS) – Access Control

- Effort to bring consistency to access control (security) enforcement within a SOA architecture for health settings
- Service is policy-driven and context-aware
- Access decision service capability with extensions for the healthcare environment
- Service capabilities for secure collection of healthcare-specific access decision information



Privacy Access and Security Services (PASS) – Audit

- Service capability to provide for the generation of Healthcare Audit Event Records
- Provides for the secure submission of Audit Records for processing and storage
- Provides a service capability to support healthcare disclosure Audit Reporting



Healthcare and Community Services Provider Directory (HCSPD)

- Intended to fill a void that exists when it comes to the discovery and scheduling of [healthcare] services
- Defines key functionality such as ***Relate a Resource to a Location, Establish a Service Location, and Relate a Provider to a Provider Organization.***
- SOA service to assist in the management and discovery of health and human services functions within or across Enterprises
- Can be used to “discover a provider”, “find a provider in plan”, “find a service capability with capacity”, etc.
- Its usage is not limited to direct care functions (e.g., can support community-based needs, such as “meals on wheels”)



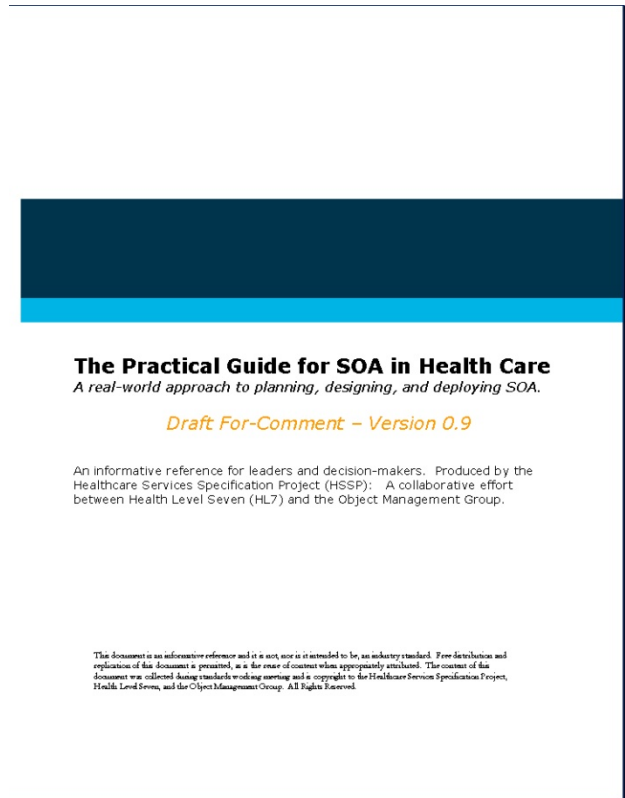
SOA and Enterprise Architecture in HL7

- HL7 has produced a Services-Aware Enterprise Architecture Framework (SAEAF) which embraces services, messages and documents
- Includes SOA-based behavioral framework and conformance framework for HL7 standards (including HL7 v2 and v3 messages, CDA documents and services)
- Utilizes SOA and Model-Driven Architecture principles for explicit expression of policy, governance and traceability
- Service standards rely on SOA WG and HSSP work
- Framework development in progress, will influence future development of standards within HL7
- Several HSSP efforts are SAEAF "alpha" projects



“Practical Guide for SOA in Healthcare”

- Targeted to help those interested in SOA to do SOA
- *Is one* approach for SOA-enabling healthcare organizations
- Brings together practical experience with recommended best-practices
- Is not (nor is it intended to be) an industry standard
- Is not (nor is it intended to be) officially sanctioned by HL7
- Alignment with the HL7 SAEAF is underway



Available at <http://hssp.wikispaces.com/PracticalGuide>



Find out more about HL7 on our website...

Visit www.hl7.org for...

- ...all of our published specifications
- ...details about upcoming educational forums
- ...current work-in-progress and ballot information
- ...international affiliates
- ...membership information

Visit www.healthinterop.org for...

- ...all of the details, work in progress, and specifications that are part of the HSSP collaboration...



SOA in Health Care 2010:

Improving health through technology: The role of SOA on the path to meaningful use

Washington, DC July 12-14, 2010



- **Three-day event featuring lessons-learned, best-practices, and experience sharing**
- ***Call for Abstracts* is currently open through 15 April**
- **Representation from provider, payer, and public health communities**
- **Esteemed planning panel includes:**
 - **Rob Kolodner, MD**
Chief Health Informatics Officer,
Open Health Tools
Former National Coordinator for Health IT
 - **Donna Agnew**
CIO
Presbyterian Healthcare Services
 - **Michael Cummins, MD**
Director of Medical Informatics
Marshfield Clinic
 - **John Quinn**
CTO
Health Level Seven
 - **Ron Schmeltzer**
Senior Analyst
ZapThink
 - **Richard Soley**
Executive Director
SOA Consortium



For More Information....

■ Contact us!

- ken.rubin@eds.com (co-chair, ambassador)
- galen.mulrooney@va.gov (co-chair)
- djorgenson@inpriva.com (co-chair)
- Ann.Wrightson@wales.nhs.uk (co-chair)

■ Events...

- SOA in Healthcare, Washington DC, July 2010
visit <http://www.omg.org/soa-in-healthcare>

■ Visit our project wiki....

- <http://wiki.hl7.org> (look for Service oriented architecture)
- <http://healthinterop.org>



Summary

“How do you know that the [web-] services you’re building are not just the next generation of stovepipes?”

Janet Martino, LTC, USAF (Retired) to a panel of Healthcare IT Leaders



