

Healthcare Services Specification (HSS) Project: The Impetus for Collaboration between HL7 and OMG

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Background of the Effort

In late January and early February 2005, a significant project will be initiated focused on defining standards for the functions and interfaces in support of open healthcare architectural services. Particularly unique to this effort is the approach being taken, where the standards are being addressed in multiple components with two different standards organizations collaborating to produce standards that inter-relate across the organizations.

This paper is intended to describe both the business rationale and the approach being proposed for this important work, and asserts that the collaboration being proposed is fundamental to the success of this effort. Further, it provides guidance to the reader to assist you in decision-making about whether to get involved in the effort, which portions of the work will be done in which standards group, and recommendations on where to best engage to meet your needs.

Context

Interoperability across healthcare organizations and systems is being driven by a multitude of factors: the need to improve the quality of care, mergers and acquisitions among healthcare providers, government driven initiatives, improved care management, and a host of other factors. Among the most compelling is the drive to achieve an automated electronic health record.

There is a spectrum of alternatives for integrating health information, yet the healthcare industry has and continues to rely upon point-to-point and routed messaging as the predominant integration approach. Newer approaches, such as service-oriented architectures (SOA), have gained attention within the information technology community and are extending in both popularity and market penetration. The benefits of SOA – a collection of services that coordinate activities and data – are manifested in integrating disparate sources and systems into a unified fabric.

Further propelling this interest within the United States is the establishing of the Office of the National Coordinator for Health Information Technology (ONCHIT), adding US interests to the fray of what is a flurry of recent international interest represented by budgeted projects in this space. National or large scale regional initiatives in this vein are currently underway in many countries, including Australia (<http://www.healthconnect.gov.au/>), Canada (<http://www.infoway-inforoute.ca/home.php?lang=en>), and Finland (<http://www.uku.fi/tike/his/serapi/english.html>), among many others.

The degree of activity in this space illustrates both the interest in and the need for standards in this space. From the view of the healthcare business, we must identify a workable, tractable approach for integrating and interoperating among owners and stewards of health information, and messaging alone is not the answer.

From a technology view, significant benefits are realizable by identifying and establishing service offerings within a service-oriented architecture. By precisely identifying the business functions and behavior being performed by services, grouping them into levels of testable functionality and conformance, and specifying implementation constraints of these functions in multiple technologies affords the industry the opportunity for standards-based interoperable solutions. This work is predicated on the availability of a robust semantic model describing precisely the information payload across organizations.

Why HL7 and OMG?

HL7 has distinguished itself within the standards community as a leader in the area of semantic interoperability. Though efforts such as the HL7 Development Framework, HL7 has established an infrastructure for standards development relying upon, at its core, a semantic model and terminology in addition to the ability to specify technology-specific bindings.

In addition to this work, the HL7 Electronic Health Record Technical Committee (EHR TC) has produced a Draft Standard for Trial Use (DSTU) functional model capable of attributing functional needs into settings of care. It is precisely this type of work that can provide a solid semantic and functional foundation to the Healthcare Services Specification work being addressed here.

Moreover, Further, HL7 has been immensely successful in bringing together a significant community of expertise from across the globe focused on these issues. With affiliates in over 25 countries, HL7 has become a truly international forum and is representative of a unified view of the domain space.

The Object Management Group is a industry vendor consortium comprised of approximately 500 member organizations working in over twenty vertical and technical domains with a predominant interest in modeling, object-computing, and service oriented architecture. In particular, two OMG specifications and processes have significant relevance and benefit to this project: the Unified Modeling Language (UML) and the Model-Driven Architecture (MDA). UML is the pre-eminent notation used for software design and specification in the world and has become the ubiquitous standard. MDA is a concept that defines and institutes clear distinctions among levels of engineering and design, separating the process into three levels with increasing levels of specificity, platform, and technological concerns.

Further, the OMG Healthcare Domain Task Force (HDTF) did some pioneering work in the healthcare services architecture space some years ago so there is both precedent and familiarity with this knowledge space. This work was married to the CORBA infrastructure and absent of a semantic model, so refreshing those specifications is of interest to HDTF and is consistent with the objectives of this effort.

Project Approach In a Nutshell: The Power of Collaboration

Key to success for any industry initiative is securing involvement from the right players in an environment opportune for success. By involving Health Level Seven, the Object Management Group, and a stakeholder community committed to the effort, this project is well positioned to achieve success in this problem space where other groups have not been able to do so.

HL7 Brings Domain Experience and Functional Semantics. The HL7 community, its member organizations, an open process, and a sponsoring committee focused on achieving an interoperable electronic health record establish HL7 is a natural organization to sponsor the functional aspects of this effort. HL7 has existing relationships with multiple other organizations that have been doing EHR work: CEN and ISO in particular. Dual-memberships between HL7 and these groups are common, and HL7 has emerged as a hotbed for discussing and resolving issues.

For the Healthcare Services Specification (HSS) project, HL7 will be the lead-agent for identifying the service candidates for specification, elaboration of the business functional needs, selection and prioritization of candidate services, the allocation of functions to services, and the development of conformance criteria for the services specified. In effect, all of the platform- and technology- independent work will occur within HL7, as well as the validation and conformance criteria providing assurance that service implementations meet their specified capability.

OMG Brings Architecture and Platform Technology Strength. OMG's Model-Driven Architecture is an approach that formally elaborates how computationally-independent specifications are refined resulting in platform and technology specific representations and implementations. Further, a key OMG strength is its process, which promotes rapid standards adoption and marketplace product support (since submitters are required to produce implementations of the standards they specify).

For HSS, an unprecedented relationship is emerging between the OMG and HL7 that ultimately promotes the interests of the broader healthcare community. OMG members will engage in the HL7 activities, bringing architectural and distributed systems expertise that will positively impact the selection of services and allocation of functions within the HL7 specifications. Conversely, the OMG specification work will be predicated upon the HL7 semantics and functional allocations ensuring alignment and conformance with the OMG specifications. Through the OMG process, platform- and technology-specific implementations will be developed leveraging the technical strength and depth of the OMG community in a process facilitating speed-to-market and technical excellence.

The Sum of its Parts. In effect, this is neither an HL7 project nor an OMG effort. Instead, it is a unified effort spanning two standards groups leveraging the strengths of each to the advantage of the other. To the healthcare community, the benefit is a set of standards addressing the functional landscape from business need through technology platform specification, along with conformance assertions and a means to ensure vendor compliance. To vendors, it provides a means to compete based upon delivery excellence and not consumer lock-in, facilitating open competition.

How do I get Involved?

The success of an ambitious effort such as this one requires the involvement of interested, committed individuals and organizations. Many organizations have already committed to this activity formally via “Letters of Commitment.” Many others have committed less formally but no less valuably by directly engaging in the process and contributing.

Your involvement and participation are crucial in developing specifications that are robust, accurate, and most importantly useful. The following table is intended to provide some clarity to assist you in your decision-making on how to best engage in this effort to the maximum value of all involved. This moment in time presents a unique opportunity to industry, as the pathway to change is being clearly set, but the direction of that path is not yet determined. Together, let's ensure that the path taken is the right one.

| Engagement Approach/Strategy | Providers | Payers | Vendors | Regulatory | Integrators |
|--|-----------|--------|---------|------------|-------------|
| Engage in HL7 to identify, document, and establish requirements, functional priorities, etc. | X | X | X | | X |
| Engage within HL7 to establish conformance criteria and profiles | X | X | | X | X |
| Engage in OMG to develop/influence platform specific bindings for the platform independent services specifications | X | X | X | | X |
| Engage in OMG process to facilitate rapid time-to-market technology and platform standards | | | X | | X |
| Compete based upon ability to support or excel at standards conformance | | | X | | |
| Promote use of open standards via policy or procurement | X | X | | X | |
| Recognize, promote, and reward based upon business value of open products | X | X | X | X | X |

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The opinions expressed in this paper are those of the author and do not necessarily reflect the views of EDS, the Veterans Health Administration, Health Level Seven, or the Object Management Group.