

The Object Management Group Presents...

EXPLORING INTEROPERABILITY REQUIREMENTS IN HEALTHCARE

OMG hosted an all-day meeting on Thursday, April 29, 2004, in St. Louis to explore the roles of OMG, NCPDP, HL7, X12 and HISB in the development of healthcare interoperability standards in response to requirements of representative end-user companies MedicAlert, PatientKeeper and Express Scripts.

The meeting will resume Thursday, November 4, 2004 in Washington DC. For more information, please contact Nicole Glazen Rikkinen, VP Business Development at nicole@omg.org.

This document provides:

- Overviews of presentations at the St Louis meeting
- Links to all presentation slides
- Overviews of the four adopted OMG Healthcare Specifications:
 - Person Identification Service (PIDS)
 - Resource Access Decision (RAD) Facility
 - Clinical Observations Access Service (COAS)
 - Lexicon Query Service (LQS)

OMG's email list for this activity is healthcare@omg.org. To add yourself or a contact, referral or customer to this list, please send your request to nicole@omg.org.

PRESENTATIONS

Interoperability Requirements for MedicAlert Foundation

Mr. David Harrington, CTO, MedicAlert, www.medicalert.org

<http://www.omg.org/cgi-bin/doc?health/2004-04-03>

MedicAlert Foundation is one of the world's largest nonprofit membership organizations with one mission - to protect and save lives. MedicAlert provides patients' emergency medical information to authorized medical professionals, while protecting the privacy and confidentiality of its members by never releasing information to unauthorized personnel or organizations. Over four million members rely on the MedicAlert® Service to protect them, regardless of where they may live or travel. The need for trust and peace of mind knows no borders.

MedicAlert delivers electronic health records from a 24x7 Emergency Response Center. Comprehensive services to members include storage and retrieval of information regarding their medical conditions, allergies, medications and personal identification.



Future MedicAlert EHR services include patient treatment notification, medication and member alerts, and patient referrals. Key healthcare issues in the immediate future include patient safety, quality of care, and overall cost. Significant progress has been made recently to define Electronic Health Record Standards. In order to effectively address these key issues, the healthcare community must develop comprehensive, functional, and workable interoperability between EHR implementations

A Brief History of e-Prescribing

Mr. Dale Chamberlain, CTO Express Scripts, www.express-scripts.com
<http://www.omg.org/cgi-bin/doc?health/2004-04-05>

Express Scripts, Inc. is one of the largest pharmacy benefit management (PBM) companies in North America, providing PBM services to more than 50 million members through facilities in eight states and Canada. Serving thousands of client groups, Express Scripts delivers service to managed care organizations, insurance carriers, third-party administrators, and employers and union-sponsored benefit plans.

Express Scripts' Vision:

To be the industry leader through excellent, innovative, and ethically based pharmacy services and to provide trusted, impartial, and practical counsel enabling our clients and members to navigate the rapidly changing pharmaceutical landscape.

Organizations large and small look to Express Scripts for innovative solutions — effective ways to manage costs and promote satisfaction with their pharmacy benefits. Within the industry, Express Scripts stands alone in our understanding of drug trends and commitment to client and member value. The result? Quality therapeutic care. Exceptional member services. Affordability. Unprecedented ability for plan sponsors to manage to objectives.

Studies suggest that the national savings from universal adoption of electronic prescribing could be as high as \$27 billion. Despite these potential benefits, adoption is still modest. A number of enhancements in standards and vocabularies are needed to improve quality and efficiency, and to facilitate interoperability among the various electronic systems involved in the electronic prescribing process.

Current Challenges:

- Physicians do not have readily available to patient medical records
- Insurance plan restrictions are not accessible
- Prescriptions are delivered to pharmacies via non-standardized delivery methods, presenting room for error, additional work, and disruption in pharmacy workflow
- Interpretations of physicians' directions are prone to error

Areas of Opportunity:

1. Standardize access to Prescription Drug Benefits and Restrictions.
2. Standardize interfaces based on comprehensive models of the underlying services, eliminating transaction-based interfaces and infrastructure inconsistencies.
3. In particular, standardize a model and set of transactions/interfaces for e-Prescribing.

4. Standardize security models and implementations at multiple levels – communications level, application and operation level, and data element level.
5. Join forces with NCPDP, X12, and HL7 to collaborate on mitigating gaps
6. Standardize nomenclature in healthcare, using the LQS if possible.
7. Develop uniform modeling techniques that will interoperate amongst the standards bodies
8. Develop an Electronic Patient Medical Record that can be used universally across various domains of healthcare, while enhancing the patient experience
9. Provide for a service oriented architecture that will enable all necessary functions in the prescribing process

Interoperability in Healthcare Standards: Where Does the Opportunity Reside?

Dr. Jeff Sutherland, CTO, PatientKeeper, www.patientkeeper.com

<http://www.omg.org/cgi-bin/doc?health/2004-04-09>

PatientKeeper was founded in 1996 by some of MIT's and Harvard Medical School's best and brightest to deliver a better way for clinicians to manage patient data. Our mission is to provide healthcare professionals with mobile computing solutions that help improve patient care and curb rising costs.

PatientKeeper's mobile solutions are making a demonstrable impact on the efforts of many leading hospitals to contain rising costs, improve patient care, and address staffing shortages. By extending the reach of your existing healthcare IT and generating demonstrable ROI, the adoption of PatientKeeper solutions is fast, easy, and affordable.

According to Gartner Group, "Efforts to achieve a 50% reduction in medical errors are doomed to failure unless they occur in the context of a computer-based patient record implementation". Collaborative Connectivity between Patients, Physicians, Pharmacists, Hospitals, Medicalert, Patient Keeper and Express Scripts is critical to reduce medical errors while improving compliance, improving compliance and lowering cost.

Consensus among Healthcare Standards bodies are needed to develop a standard patient record infrastructure. It is recommended that OMG leverage HL7 standards, adding essential additional information, assure scalability, performance and interoperability with NCPDP and X12 standards.

The Value of Modeling and MDA in Standardization

Dr. Jon Siegel, VP Technology Transfer, OMG, www.omg.org

<http://www.omg.org/cgi-bin/doc?health/2004-04-04>

Enterprise IT must deal with complex business and technological factors. Business factors include

- Definition of business requirements
- Complex and changing business processes
- Shifting enterprise/application boundaries
- Semantic integration with customers/suppliers/partners

Technological factors include

- Barriers to interoperability and integration



- Development and maintenance obstacles
- Evolving and unstable technology suites

Modeling is the only way to ensure that enterprise IT systems deliver the functionality that a business requires, comprehensive and stable, yet able to evolve in a controlled manner as business needs change over time. Models built in the Unified Modeling Language (UML) represent exactly what a complex, multi-platform business application can do, and record it with clarity and stability.

OMG's Model Driven Architecture (MDA) is a new way to specify and build systems, allowing end users to focus on business first. Based on UML, MDA enables interoperability and portability across programming languages, operating systems, networks, *and middleware* while lowering initial cost and maximizing ROI.

MDA delivers *both* business and technological advantages. On the business side, an enterprise can

- View, integrate, and design applications in context using architectural-level, enterprise-level, and application-level views
- Model changing business requirements and shifting enterprise boundaries
- Define the business functionality of each application as a technology-independent model
- Focus your IT investment in your core business

On the technical side, the MDA

- Builds interoperability and portability into every application
- Reduces development time for new applications
- Provides seamless integration across middleware boundaries
- Enables rapid inclusion of emerging technologies into existing systems

The Scope of X12: Approach to Interoperability

Mr. Larry Watkins, ASC X12, Executive VP, Claredi Corporation, www.x12.org
<http://www.omg.org/cgi-bin/doc?health/2004-04-06>

There is a need for Interoperability in the Healthcare industry. If standards in healthcare are not interoperable and semantics do not align, systems will map these standards differently. As a result, data will not be comparable and our country's national health goals will be compromised.

ASC X12's Vision:

ASC X12 is the U.S. standards body for the cross-industry development, maintenance, and publication of electronic data exchange standards, based on, but not limited to, X12 EDI, XML, and UN/EDIFACT formats. As the preferred standards body for defining requirements of electronic business document content, ASC X12 also serves as a key player in international forums by contributing to the universal core component work and message design architecture.

ASC X12's Mission:

- The ANSI Accredited Standards Committee (ASC) X12 brings together business and technical e-business professionals in an open, cross-industry setting
- Develop and maintain electronic data exchange standards, based on X12 EDI, XML, and UN/EDIFACT formats

- Collaborate with industry organizations to build best of breed standards for the global market

These key ASC X12 initiatives create new and improved forms of data sharing, enhance business processes, reduce costs and expand organizations' reach, any size and anywhere.

National Council for Prescription Drug Programs: The Scope of NCPDP

Ms Lynne Gilbertson, Director Standards Development, NCPDP, www.ncdp.org

<http://www.omg.org/cgi-bin/doc?health/2004-04-08>

Harmonization and interoperability between standards development organizations needs defined business needs/objectives, as well as industry participation, to begin the work of mapping data elements, code values, and nomenclature.

NCPDP's Mission:

To create and promote data interchange standards for the pharmacy services sector of the health care industry, and to provide information and resources that educate the industry and support the diverse needs of our members.

NCPDP, located in Scottsdale, AZ, is a not-for-profit ANSI-accredited Standards Development Organization consisting of over 1350 members who represent chain and independent pharmacies, pharmacists, consulting companies and database management organizations, federal and state agencies, health insurers, health maintenance organizations, mail service pharmacy companies, pharmaceutical manufacturers, pharmaceutical services administration organizations, prescription service organizations, pharmacy benefit management companies, professional and trade associations, telecommunication and systems vendors, wholesale drug distributors, and other parties interested in electronic standardization within the pharmacy services sector of the health care industry.

NCPDP began as a small group of ad hoc committee members and has grown into a powerful presence within the pharmaceutical industry's standard-setting environment. The not-for-profit organization holds several Educational Forums each year for their members and non-members affiliated with the industry. These Forums, as well as the Joint Technical Work Group Meetings, are designed to promote teamwork in solving today's industry issues in an effective and timely manner. NCPDP is setting tomorrow's pharmacy standards today.

HL7 and Version 3: Opportunities for Collaboration

Mr. Woody Beeler, Beeler Consulting LLC, HL7, www.hl7.org

<http://www.omg.org/cgi-bin/doc?health/2004-04-01>

Health Level Seven is one of several ANSI-accredited Standards Developing Organizations (SDOs) operating in the healthcare arena. Most SDOs produce standards (sometimes called specifications or protocols) for a particular healthcare domain such as pharmacy, medical devices, imaging or insurance (claims processing) transactions. Health Level Seven's domain is clinical and administrative data.

HL7's Mission:

Provide a comprehensive framework and related standards for the exchange, integration, sharing and retrieval of electronic health information that supports clinical practice and the management,



delivery and evaluation of health services. Specifically, to create flexible, cost effective standards, guidelines, and methodologies to enable healthcare information system interoperability and sharing of electronic health records.

Headquartered in Ann Arbor, MI, Health Level Seven is like most of the other SDOs in that it is a not-for-profit volunteer organization. Its members-- providers, vendors, payers, consultants, government groups and others who have an interest in the development and advancement of clinical and administrative standards for healthcare—develop the standards. Like all ANSI-accredited SDOs, Health Level Seven adheres to a strict and well-defined set of operating procedures that ensures consensus, openness and balance of interest.

The US Standards System in Healthcare

Mr. Robert Owens, Chair, HISB. www.ansi.org
<http://www.omg.org/cgi-bin/doc?health/2004-04-02>

The American National Standards Institute's Healthcare Informatics Standards Board (ANSI HISB) provides an open, public forum for the voluntary coordination of healthcare informatics standards among all United States standard developing organizations. Every major developer of healthcare informatics standards in the United States participates in ANSI HISB. The ANSI HISB has 27 voting members and more than 100 participants, including ANSI-accredited and other standards developing organizations, professional societies, trade associations, private companies, federal agencies and others

The mission of the ANSI HISB is to provide an environment that facilitates, coordinates and harmonizes national and international healthcare informatics standards.

COMPLETED OMG SPECIFICATIONS

OMG's Healthcare Domain Task Force adopted four specifications between 1996 and 2001. Based on CORBA, each reflects a sound architecture and could easily be reverse-engineered into the MDA. The four specifications are:

- The Person Identification Service (PIDS), which defines a set of interfaces to an interchangeable set of services that provide a best match or ordered list of best matches to possibly incomplete or conflicting data about a person. This allows users to switch software and algorithms as new methods come to market, without disrupting their main applications. This standard is not restricted to healthcare and can be used to identify individuals in virtually every domain; the techniques it defines extend beyond person identification as well.
- The Resource Access Decision (RAD) Facility, which provides fine-grained access decisions to security-aware data and applications, and administration for the policies that define the decisions. This supports access restrictions required by HIPAA in the USA and similar regulations in other countries – for example, only medical personnel may be allowed to view information revealing that a patient has AIDS, while accounting staff are allowed access to name and address information in the same database keyed on the same patient ID number.

- The Clinical Observations Access Service (COAS) , which standardizes access to clinical observations in multiple formats including numerical data stored by instruments or entered from observation; images; and transcribed notes.
- The Lexicon Query Service (LQS) , which standardizes a set of read-only interfaces able to access medical terminology system definitions ranging from sets of codes to complex, hierarchical classification and categorization schemes. It can be used to implement an interface to any of the major medical coding schemes.

We thank you for your consideration and look forward to your feedback. To learn more about the benefits of participation and OMG membership, please contact Nicole Glazen Rikkinen, Vice President of Business Development at 781-444-0404 or nicole@omg.org.

About The OMG, www.omg.org

With well-established standards covering software from design and development, through deployment and maintenance, and extending to evolution to future platforms, the Object Management Group (OMG) supports a full-lifecycle approach to enterprise integration which maximizes ROI, the key to successful IT. OMG's standards cover multiple operating systems, programming languages, middleware and networking infrastructures, and software development environments. OMG's Modeling standards, the basis for the MDA, include the Unified Modeling Language (UML) and Common Warehouse Metamodel (CWM). CORBA, the Common Object Request Broker Architecture, is OMG's standard open platform with hundreds of millions of deployments running today.