HL7 INTERNATIONAL®

NEWS

MAY 2012

UNLOCKING THE POWER OF HEALTH INFORMATION

HL7 Pilot Program Provides Key Intellectual Property Free of Charge

HL7 recently announced a pilot program to provide some of its key intellectual property free of charge. "HL7 is keeping its promise to lower the barriers to adoption of electronic health records by making portions of our valuable intellectual property freely available to our stakeholders," said Charles Jaffe, MD, PhD, CEO of HL7. "We believe that care givers, academic centers and vendors will greatly benefit from this significant enhancement for access to valuable HL7 material."

In the pilot project, HL7 will enable no-cost licensing of its domain analysis models (DAMs) and functional profiles. This offer, a first for HL7, was announced at the 2012 HIMSS Annual Conference and Exhibition, one of the largest health information technology conferences in the United States.

The DAM is a set of requirements that explore and analyze the business of a particular clinical "domain." Domain analysis is the first step in creating HL7 standards for a specific care or research environment. The domain analysis process produces documentation describing the stakeholders, activities, interactions, and information for a particular domain and serves as the source of requirements used in the design of HL7 standards.

Stand-alone DAMs will be made available at no cost during the one-year pilot, including:

- HL7 Version 3 DAM: Cardiology; Acute Coronary Syndrome
- HL7 Version 3 DAM: Clinical Trials Registration and Results
- HL7 Version 3 DAM: Analysis Model: Vital Records

Functional profiles for the HL7 Electronic Health Record System Functional Model (EHR-S FM) will also be available as part of the pilot program. The HL7 EHR-S FM was the industry's first standard approved by the American National Standards Institute (ANSI) to specify the functional requirements for an electronic health record system. HL7's functional profiles outline the important features and functions of an EHR system, including criteria to support functions such as medication history, clinical decision support, and privacy and security. Profiles that are available to support specific uses across the continuum of care include:

- Child health
- Behavioral health
- Long-term care
- Clinical research
- Records management and evidentiary support

"HL7 standards are the most widely used in the industry," said Don Mon, PhD, chair, HL7 Board of Directors. "These standards will be especially useful to physicians, nurses and other health care professionals, as well as health information management/technology (HIM/HIT) professionals. Making these standards available at no cost will further our mission to enhance the exchange, integration, sharing, and retrieval of electronic health information around the world."

The HL7 DAMs and functional profiles can be accessed at the HL7 online store or through the HL7.org home page. Users must complete a click-through license registration process to participate.

In This Issue...

Adoption of HL7 CDA®

to Connect Clinical Trial Data, EHRs: Technology to Support Patient Care, Speed Process from "Bench to Bedside"

HL7 recently announced a collaborative effort with the National Cancer Institute (NCI) to use the HL7 Clinical Document Architecture (CDA®) in a unique way that solves the problem of connecting clinical trial data to patients' electronic health records (EHRs).

"This is a significant advance in HIT connectivity because it brings clinical trial data directly to patients' personal physicians, which means we can improve patient care by speeding the process of moving medical advances from bench to bedside," said Bob Dolin, MD, FACP, vice chair of the HL7 Board of Directors and co-editor of the CDA. "Studies have shown that right now it can take seven years or more for new research advances to be put into clinical practice. We can make that process much quicker by improving physician access to clinical trial data, and by expressing clinical trial data using meaningful use EHR standards."

The new project demonstrates that clinical trial data can be packaged using the same HL7 standards that are incorporated into EHRs that meet the Stage 1 meaningful use criteria of the US Office of the National Coordinator (ONC) to bring clinical trial data directly to the point of care and facilitate data analysis. Physicians will have a more complete picture of the care provided to their patients during clinical trials, and the project will also help facilitate data analysis that may speed the availability of new treatments to patients.

According to John Speakman, chief program officer for the NCI's Center for Biomedical Informatics and Information Technology, the program will lower the barriers for systems to interoperate in the service of biomedical research and, ultimately, precision medicine. To reach these goals, the use of HHS-endorsed industry standards such as HL7 CDA must be part of the picture, he said.

The HL7 CDA addresses universal requirements for the exchange and management of structured clinical documents. It supports the exchange of clinical documents between those involved in the care of patients and allows for the re-use of clinical data for public health reporting, quality monitoring, patient safety and clinical trials.

The program will be launched as a pilot program later this year.

HL7 NEWS

is the official publication of: Health Level Seven International
3300 Washtenaw Avenue, Suite 227, Ann Arbor, MI • 48104-4261 USA
Phone: +1 (734) 677-7777 • Fax: +1 (734) 677-6622 • www.HL7.org

Mark McDougall, *Publisher* • Andrea Ribick, *Managing Editor* • Karen Van Hentenryck, *Technical Editor*

Meaningful Use Stage 2 Standards

Proposed Rule Selects Additional HL7 Standards

Keith Boone

Austin Kreisler

By Keith Boone, Director, HL7 Board of Directors; and Standards Architect, GE Healthcare; and Austin Kreisler, Chair, HL7 Technical Steering Committee and Technical Fellow, SAIC

The Meaningful Use Stage 2 Standards and Certification Rule was published in the Federal Register March 7, 2012. The long awaited changes to the Meaningful Use regulations now include three additional HL7 standards and implementation guides, including the IHE Health Story CDA® Consolidation Implementation Guide Draft Standard for Trial Use (DSTU), the HL7 2.5.1 S&I Framework Lab Results Interface Informative Document, and the HL7 Context Aware Knowledge Retrieval (InfoButton) standard. The US Health IT (HIT) Standards Committee also recommended that only one standard be used for Electronic Laboratory, Immunizations, and Syndromic Surveillance reporting to Public Health. Under Stage 1, the HL7 Version 2.3.1 and 2.5.1 standards were available for those purposes, but now only HL7 Version 2.5.1 is being proposed. They also selected HL7 2.5.1 implementation guides for each of those purposes, although no guide was selected for Syndromic Surveillance from ambulatory environments (that work is currently in progress in the International Society for Disease Surveillance (ISDS)).

IHE Health Story CDA Consolidation Implementation Guide

The IHE Health Story Consolidation Draft Standard for Trial Use was developed jointly by members of HL7, IHE, Health Story and the ONC Standards and Interoperability Framework team. The new guide includes nine document templates:

- Continuity of Care Document (Version 1.1)
- Consultation Note
- Diagnostic Imaging Report
- Discharge Summary
- History and Physical (H&P) Note
- Operative Note
- Procedure Note
- Progress Note
- Unstructured Document

Under the Meaningful Use regulation, a clinical summary must include patient demographics, provider information, date and location of the visit, reason for the visit, problem, medication and allergy lists, procedures performed, immunizations or medications administered during the visit, vital signs, test results and pending tests, care plan, referrals, and smoking status.

The availability of new document types under Meaningful Use means that providers can use the appropriate type of document to record information about the visit, and supply that record to the patient as a clinical summary. This was one of the key goals of the IHE Health Story Consolidation project.

Lab Results Interface

The HL7 2.5.1 Lab Results Interface Implementation Guide is the result of collaborative efforts between HL7 and the Health and Human Services Standards and Interoperability Framework Laboratory Results Interface Initiative. This guide addresses the challenges of reporting lab results to ambulatory providers, harmonizes previous HL7 efforts on laboratory reporting, and addresses regulatory requirements under the Clinical Laboratory Improvement Act (CLIA). It provides clear conformance requirements for implementing laboratory results interfaces in the ambulatory setting. The new guide generated hundreds of ballot comments in its initial round of balloting, has been substantially revised based on reconciliation of those comments, and will go through an additional round of balloting in the near future with the goal of achieving draft standard status later this summer.

InfoButton

While most of what appeared in Meaningful Use Stage 2 was quite predictable, as ONC closely followed the HIT Standards Committee Recommendations, there was one surprise in the rule for some readers. The HL7 Context Aware Knowledge Retrieval Standard, otherwise known as InfoButton, was selected as part of the required set of standards to support Clinical Decision support for two separate cases. It is required to be supported by EHRs to enable clinician access to reference information on problems, medications, allergies, lab results and other structured content of the medical record, and also enables access to patient-specific education materials.

Update from Headquarters

By Mark McDougall, Executive Director, HL7

Mark McDougall

January Meeting

More than 400 attendees participated in our January Working Group Meeting held in San Antonio, Texas, January 15-20, 2012. Over 40 HL7 work groups met in San Antonio, of which 29 work groups conducted co-chair elections for 42 positions. Attendees also took advantage of 30 tutorials that week.

Board Changes

The New Year brought a change at the helm of the HL7 Board of Directors. We welcomed Don Mon, PhD to the start of his two-year term as board chair. We also recognized the many contributions of outgoing board chair, Bob Dolin, MD. It has been a treat to work with Bob during his term as chair and we thank him for his brilliance and ongoing calmness which he consistently brought to any situation we faced. Bob will continue to serve on the board as the vice chair.

Bob Dolin, MD

Bill Braithwaite MD, PhD

Hans Buitendijk

Dennis Giokas

We also recognized three outgoing board members who served terms on the HL7 Board of Directors: Bill Braithwaite, MD, PhD; Hans Buitendijk; and Dennis Giokas. All three contributed heavily to important and valuable roles for the HL7 organization throughout their many years of service to HL7. Sincere thanks also goes to Bill and Hans for their years of service on the HL7 Finance Committee.

James Ferguson

Edward Tripp

Diego Kaminker

As previously announced, we are pleased to welcome three new Directors on the HL7 Board of Directors: James Ferguson of Kaiser Permanente, Edward Tripp with Edward S. Tripp and Associates, and Diego Kaminker from HL7 Argentina. Following terms as the affiliate director on the board, Michael van Campen of Gordon Point Informatics was also elected to serve as the treasurer of the board. We look forward to working with all of these individuals along with the entire 2012 HL7 Board of Directors that are listed on page 38. On behalf of the entire HL7 organization, I thank each member of the board for their ongoing leadership and contributions to HL7.

Meeting Sponsors

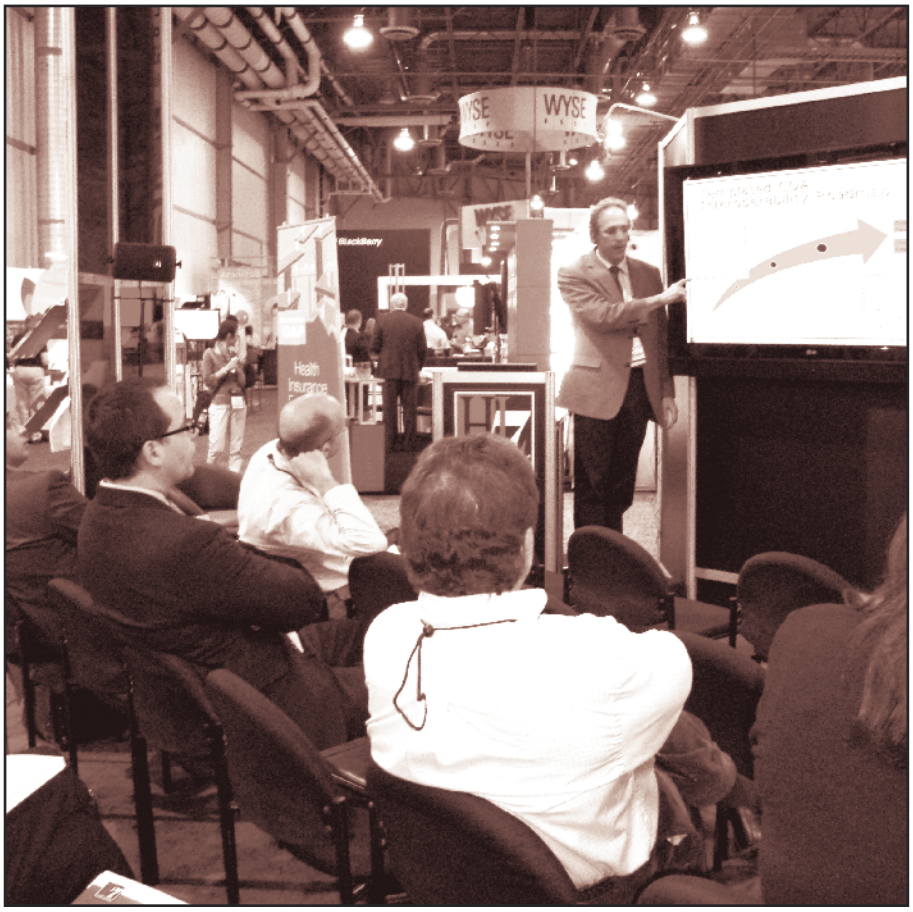
I am also pleased to recognize the following organizations that sponsored key components of our recent January Working Group Meeting in San Antonio:

- LINKMED
- iNTERFACEWARE
- Gordon Point Informatics
- Beeler Consulting LLC
- SPARX

The additional sponsorship support provided by these organizations heavily contributes to HL7's meeting budget and is much appreciated.

HIMSS

For over 20 years, HL7 has exhibited each year at the annual conference of the Healthcare Information and Management Systems Society (HIMSS). This year's HIMSS conference convened in Las Vegas, Nevada dur-



HL7 Vice Chair, Bob Dolin, MD, gives a presentation at the HL7 Booth at HIMSS12

ing the week of February 20, 2012. HIMSS12 reportedly attracted over 37,000 people.

HL7's Director of Communications, Andrea Ribick, oversaw the production of 27 thirty minute presentations on HL7 standards and relevant topics. Many of the presentations attracted crowds that filled the theater area and were standing room only. I also wish to express our sincere thanks to the many individuals who volunteered to staff our booth and/or make presentations in our booth, including:

Calvin Beebe
Woody Beeler, PhD
Alan Brookstone, MD
Jim Case, MD
Bob Dolin, MD
John Gutai
Freida Hall
Chuck Jaffe, MD, PhD
Mark Janczewski
Thom Kuhn
Ken McCaslin
Don Mon, PhD
Galen Mulrooney
John Quinn
Ken Rubin
Scott Robertson, PharmD
Dave Shaver
Jim St. Clair
Sandy Stuart
Michael van Campen
Grant Wood

Benefactors and Supporters

We are thrilled to have attracted the all time highest number of HL7 benefactors and supporters, who are listed on page 27. Their support of HL7 is very much needed and sincerely appreciated. We are pleased to recognize our benefactors in all of our HL7 newsletters, on the HL7 website, in our HL7 press releases, and at all of our HL7 working group meetings. A special thank you is extended to the list of firms that represent our 2012 HL7 benefactors and supporters.

Organizational Member Firms

As listed on pages 27-29, HL7 is proud to report that the number of HL7 organizational member companies is at an all time high of 758 companies. We sincerely appreciate their ongoing support of HL7 via their organizational membership dues.

In Closing

As I write this article, two of my favorite events are occurring this weekend: St. Patrick's Day and the annual basketball tournament in the US that involves teams from 64 universities participating in "the dance" or "March Madness." May you and your loved ones be blessed with a winning season and plenty of fun dancing.

Liora Alschuler

Health Story Demo at HIMSS12 Showcased Benefits of Consolidated CDA®

By Liora Alschuler, HL7 Health Story Project Liaison; Health Story Project Executive Committee Member; Co-Editor of the HL7 CDA; and CEO, Lantana Consulting Group

HL7 associate organization, the Health Story Project, demonstrated use of the HL7 Implementation Guide for CDA Release 2: IHE Health Story Consolidation, Release 1 – US Realm for the first time at the HIMSS12 Interoperability Showcase with a use case provided by the American College of Physicians. The demonstration highlighted how 12 vendors used Consolidated CDA to maximize information available throughout a transition of care using all available channels—from unstructured, scanned documents to dictated notes enriched with abstractor, computer-assisted and NLP coding—while maintaining the patient story.

On the last day of the showcase, the national coordinator for HIT, Farzad Mostashari, MD, challenged participants to demonstrate readiness for integration by securely exchanging information with an unrelated partner on the floor within one hour. The Health Story Project participated in the challenge and was successful in exchanging a clinical document within the deadline with two separate demonstration partners. A History & Physical was sent by way of the Verizon Medical Data Exchange to the STEM Transition of Care Pilot and to EHR vendor, OnBase, using Consolidated CDA. The exchange reveals the effectiveness of Consolidated CDA for exchange of health data at a moment's notice.

The mission of the Health Story Project is to unlock the valuable data in clinical notes and make possible an unrestricted flow of this narrative-source data into EMR and other systems for use within healthcare enterprises and health information exchanges. Over the previous four years Health Story supported development of eight HL7 implementation guides for common clinical documents as well as last year's effort with HL7, IHE and the ONC Standards & Interoperability Framework to consolidate them into one implementation guide along with the HL7 Continuity of Care Document standard. Consolidated CDA offers a national foundation for exchange of information collected in clinical documents and is a huge step forward for health information interoperability in the US.

Health Story members featured in the HIMSS12 demonstration included: Apixio, Canon U.S.A, ChartLogic, Fujitsu, Inofile, Lantana Consulting Group, M*Modal, Nuance, Optum and Verizon. Health Story is discussing plans with its members for the HIMSS13 demonstration. Interested vendors should contact Joy Kuhl at joy@optimalaccords.com. Visit www.healthstory.com for more information about the project, and http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258 for more information about Consolidated CDA.

Susan Lucci, AHIMA Liaison to Health Story and Linda Brady, Acting CEO, AHDI and CDIA

Implementations of the HL7 Context-Aware Knowledge Retrieval ("Infobutton") Standard

By Guilherme Del Fiol, MD, PhD, Co-Chair, HL7 Clinical Decision Support Work Group and Department of Biomedical Informatics, University of Utah; and Howard Strasberg, MD, MS, Co-Chair, HL7 Clinical Decision Support Work Group and Wolters Kluwer Health

Guilherme Del Fiol MD, PhD

The high frequency of clinicians' patient care information needs that go unanswered is a well-known problem. Estimates vary from 0.2 to 3 information needs per patient seen and about half of these needs are not met.[1] Online health knowledge resources have answers to most of these questions, but important barriers limit their use at the point of care.[2] An increasingly popular approach to help clinicians and patients meet their information needs is to enable context-specific access to knowledge resources within EHR and PHR systems via Infobuttons.[3] Based on the clinical context in an EHR/PHR (e.g., patient data, task, user attributes, care setting attributes), Infobuttons anticipate clinicians' and patients' information needs and provide automated links to relevant knowledge resources. For example, from a problem list of a 73 year old female, an Infobutton may provide access to specific inpatient treatment guidelines of community acquired pneumonia in this age group. In addition, the same Infobutton could provide access to patient education material on community acquired pneumonia to be given to the patient upon the patient's discharge. Studies have shown that clinicians who accessed Infobuttons were able to meet their information needs in 86% of the Infobutton sessions, reporting enhancement of patient care decisions in 62% of these sessions.[4]

To enable scalable and effective integration between EHR/PHR systems and knowledge resources, the HL7 Clinical Decision Support (CDS) Work Group developed the Context-Aware Knowledge Retrieval ("Infobutton") standard. The Infobutton standard consists of a set of specifications that include a normative specification and two implementation guides. The normative specification (http://www.hl7.org/implement/standards/product_brief.cfm?product_id=208) has been recently included in the draft EHR Meaningful Use Stage 2 Standards and Certification Criteria. This specification defines a shared context information model to be implemented by EHR/PHR systems and knowledge resources. The first implementation guide, URL-Based Implementations of the Context-Aware Information Retrieval Domain (http://www.hl7.org/implement/standards/product_brief.cfm?product_id=22), specifies Infobutton implementations using simple URLs. The second implementation guide is a draft standard for trial use (DSTU) called Context-Aware Knowledge Retrieval, Service-Oriented Architecture (SOA). The SOA implementation guide specifies SOAP and RESTful Infobutton implementations. In addition, this document specifies a standard knowledge response payload based on the IETF Atom Standard.

To assess the perceived adoption, benefits, challenges, and lessons learned of implementers of the HL7 Infobutton Standard, we interviewed representatives of 17 organizations that implemented the standard, including EHR vendors, healthcare organizations, and knowledge publishers. An article presenting the results of this study has been published in a special issue of the *Journal of Biomedical Informatics* dedicated to standards in practice.[5] The analysis identified 20 recurrent themes. Overall, interviewees underscored the benefits, simplicity, and flexibility of the Infobutton Standard. On the other hand, participants requested easier access to standard specifications and guidance to novice implementers who are not familiar with HL7. Participants also requested easier access to HL7 terminology assets that are used in the Infobutton Standard. Implementers expect that the Infobutton Standard will be widely or at least fairly well adopted. However, uptake will depend especially on the adoption by EHR systems, which should be significantly accelerated by the requirement to implement the Infobutton Standard defined in the EHR Meaningful Use Stage 2 Standards and Certification Criteria. Widespread adoption of the Infobutton standard has the potential to bring contextually relevant clinical decision support content into the healthcare provider workflow as well as to educate patients about their health care and treatment options, enabling patient engagement and patient-centered care.

1. Smith R. What clinical information do doctors need? Bmj. 1996;313(7064):1062-8. Epub 1996/10/26.
2. Ely JW, Osheroff JA, Chambliss ML, Ebell MH, Rosenbaum ME. Answering physicians' clinical questions: obstacles and potential solutions. Journal of the American Medical Informatics Association : JAMIA. 2005;12(2):217-24. Epub 2004/11/25.
3. Cimino JJ, Elhanan G, Zeng Q. Supporting infobuttons with terminological knowledge. Proceedings : a conference of the American Medical Informatics Association / AMIA Annual Fall Symposium AMIA Fall Symposium. 1997:528-32. Epub 1997/01/01.
4. Del Fiol G, Haug PJ, Cimino JJ, Narus SP, Norlin C, Mitchell JA. Effectiveness of topic-specific infobuttons: a randomized controlled trial. Journal of the American Medical Informatics Association : JAMIA. 2008;15(6):752-9. Epub 2008/08/30.
5. Del Fiol G, Huser V, Strasberg HR, Maviglia SM, Curtis C, Cimino JJ. Implementations of the HL7 Context-Aware Knowledge Retrieval ("Infobutton") Standard: Challenges, strengths, limitations, and uptake. Journal of biomedical informatics. 2012. Epub 2012/01/10.

Clinical Genomics
Determined to Stay Ahead of Game-Changing Technologies


Mollie Ullman-Cullere


Amnon Shabo, PhD


Grant Wood


Bob Milius

By Mollie Ullman-Cullere, Co-Chair, HL7 Clinical Genomics Work Group and Senior BioMedical Informaticist, Dana-Farber Cancer Institute, Partners HealthCare System, Inc; Amnon Shabo, PhD, Co-Chair, HL7 Clinical Genomics Work Group and Head of the Healthcare and Life Sciences Standards Program, IBM; Grant Wood, HL7 Clinical Genomics Publishing Facilitator and Senior IT Strategist, Intermountain Healthcare; and Bob Milius, Senior Data Analyst, Bioinformatics Research, National Marrow Donor Program

The world of clinical genomics has changed rapidly since the genetics-themed plenary session held in Boston in October of 2010. Speakers discussed family health history and genetic data flowing into the electronic health record. They talked about the ever expanding research with newly available and significantly larger genomic data sets. Yet with the healthcare industry talking about personalized medicine, data models and transmission standards have been slow in adoption and implementation.

The earth-shattering news now is that research from the National Human Genome Research Institute shows sequencing costs dropping like a rock falling from the sky. In fact, they are outstripping the exponential curves of Moore's Law. Whole genome sequencing has fallen at a record-setting rate of $100 million 10 years ago to just $1,000 today. The first radically steep drop appeared in 2008 with the introduction of next generation sequencing technologies.

We should be able to perform ever larger studies to correlate genes with medical histories due to the falling sequencing prices. Disruptive technologies have set the stage for an accelerated revolution in both research and clinical genetics.

Next Generation Sequencing Impacting Clinical Care

Research publications, news stories, and scientific conferences are already focusing on the use of whole genome or exome sequencing in the clinic. As an example, triple negative breast tumors, which make up nearly 20 percent of breast cancers, do not respond to treatment with targeted therapies such as Herceptin. To investigate new options for these patients, clinical trials of whole-genome sequencing for this disease began in 2010. Based on mutations uncovered by sequencing, physicians ordered treatment protocols for either existing drugs, or new agents being evaluated in pharma-sponsored clinical trials.

A major challenge in whole genome sequencing is the interpretation of the genetic data for use in diagnostic and treatment decisions. Many vendors are developing software that will help clinicians interpret and understand genetic data for clinical application. Collaborations between vendors, academic research, and healthcare providers are beginning to identify best practices for diagnostic development and gene discovery as a model for genome sequencing in a clinical setting.

Clinical Genomics Roadmap

Previous work done by the Clinical Genomics (CG) Work Group helps support these new technologies. The Pedigree (family health history) Model passed normative ballot in 2007, and the CCD® was extended to support transmission of family history summations. Yet efforts are still required to gain wider adoption of the standard. Hope increased dramatically when capturing family history using coded data was announced as part of Meaningful Use Stage 2 proposed standards.

Two Version 2 implementation guides which extend the 2.5.1 Laboratory Reporting Guide to support structured/codified reporting of cytogenetic and genetic variation test results passed informative ballot in January and will be published this spring. As the second release of the genetic variation guide, this included support for additional use cases based on early adopter feedback and improved structuring of interpretation and links to public knowledgebases. Work is continuing on gene expression profiling and a CDA® implementation guide for genetic test reports. An OMICS domain analysis model (DAM) will be created and aligned with a life science DAM and the BRIDG model.

Moving Forward with Projects and Pilots

Recently, the CG Work Group has launched several new projects: reaffirming family health history, expanding it with a release 2, clinical sequencing, and an implementation guide for CDA genetic test results, as well as participation in release 2 of the specimen CMET.

Last year the work group began a project reaching out to stakeholders involved in next generation sequencing technologies. The issues to be addressed are: (1) what are the compelling initial use cases for full sequencing, (2) what are the requirements for scaling out from research use to robust clinical applications, (3) who are the likely early adopters and how will we engage them in the standards process, and (4) what are the likely systems architectures that will evolve in order to accommodate genetic sequences.

The CG Work Group is also exploring the use of HL7 standards for messaging and structured documents to address the challenge for recording and reporting HLA typing results. The matching of stem cell donor (bone marrow, peripheral blood or umbilical cord blood) to a recipient is determined by comparing their tissue types, and is known as Human Leucocyte Antigen (HLA) types. The CDA implementation guide for genetic testing reports (CDA GTR) will be further constrained and specialized for use in HLA typing reports. A pilot is being developed to exchange HLA typing results within HL7 messages and documents between two clinical groups (Hadassah Medical Organization and Northwestern University) and the National Marrow Donor Program (NMDP). This pilot includes developing use cases and storyboards, which will be used to guide structured document design and model refinement, as well as exchanging data using HL7 containers and payloads.

HL7 Multi-Workgroup Collaboration Critical for Success

The CG Work Group actively collaborates with a number of other HL7 work groups, including Orders and Observations (O&O), Anatomic Pathology (AP), Clinical Decision Support (CDS), Image Integration (II), Regulated Clinical Research Information Management (RCRIM), Clinical Interoperability (CIC), and Marketing. Two new projects began this spring: CG is working with II, CDS, AP, and Lab on O&O's specimen CMET release 2 and clinical sequencing will look to Lab, O&O, AP, and SD for messaging components within the overall clinical sequencing workflow. CG and CDS have a long-term collaborative effort around family history and the pedigree model. CG is working with CIC on overall strategy for development of the OMICS DAM, examining strategy which supports cross organization collaboration of aligned DAMs which support a wide variety of stakeholders from research to clinical trial to clinical environments.

Happening faster than anyone predicted, we will have an understanding of our genomes such that getting everyone sequenced will make both medical and economic sense. We need to keep in mind, however, that falling prices are simply the first step. Clinical interpretations are still coming slowly – for now any way. And the Clinical Genomics Work Group will continue its efforts to stay ahead of the curve.

News from the PMO and Project Services Work Group


Dave Hamill


Freida Hall


Rick Haddorff

By Dave Hamill, Director, HL7 Project Management Office; Rick Haddorff and Freida Hall, Co-Chairs, Project Services Work Group

SAIF Pilot Coordination Project

Project Services is leading this project, which is sponsored by the Technical Steering Committee. The primary deliverable of the SAIF Pilot Coordination project will be to create concrete examples of artifacts that can be used in a future version of an HL7 SAIF implementation guide.

SAIF Pilot Coordination will assist in the documentation of processes encountered throughout the development of projects under the SAIF AP (Architecture Program) umbrella that require input from more than one work group.

The team has used RASCI charts to capture the roles and responsibilities of groups in these efforts. The first use of this tool was to capture the interactions between groups as a modeling tool was selected for use in the Orders and Observations Composite Order project. The team has also used Project Insight to help model the dependencies between the SAIF pilot projects' activities.

Additionally, the team has begun to use a concept mapping tool to present the dependencies diagrammatically. This is the work we will be focusing on in the next several months.

Overall, the Project will document coordination conducted by over 12 HL7 work groups as they proceed through over 9 projects under the SAIF AP umbrella. From this coordination, suggested contributions to SAIF Governance documents will be created as well as modifications to the HL7 Project Life Cycle for Product Development (PLCPD).

Project Services is happy to be working on this effort to help move HL7 toward the adoption of the SAIF architecture. We appreciate and welcome the contributions from all those involved in the SAIF AP projects.

Guidance for Steering Division Co-Chairs: Using PBS Metrics to Evaluate WG Capacity to Undertake New Efforts

Project Services has created a new document offering suggestions and guidance for steering division co-chairs on using the PBS (Projects Ballots and Standards) Metrics to evaluate work group capacity when they are undertaking new projects.

In addition to referencing the PBS Reports link located on the work group's HL7.org page and the PBS Metrics Excel report located in GForge, the document contains a list of potential issues and questions which steering division co-chairs can pose to the work groups.

The document is located at www.HL7.org > Resources > Tools & Resources > Project Tracking Tools (http://www.hl7.org/documentcenter/public/wg/projectServices/PBSMetricGuidanceforSDCoChairsFinal.doc).

Come Join Us for the Project Management Roundtable

Every working group meeting, Project Services hosts an informal gathering at lunchtime on Wednesday called the Project Management Roundtable. Look for the tent card with "Project Managers" on it in the general session/lunch ballroom.

The forum is open. Please come forward with any project questions, concern or idea. We'd love to have you join us!

Webinar Recording: HL7 Project Management Tool Overview for HL7 Project Facilitators

In case you didn't know, the HL7 PMO recorded a webinar that provides an overview of the various HL7 Project Management tools. To view the 38 minute webinar recording, go to www.HL7.org > Resources > Webinar Recordings.

This session, targeted for co-chairs and those leading HL7 projects (i.e. project facilitators), demonstrates HL7 project tools including Project Insight (HL7's primary project repository), the HL7 Searchable Project Database, GForge, as well as review HL7 project processes and methodologies.

If you would like the PMO to present this webinar at one of your Steering Division or Work Group conference calls, please contact Dave Hamill at pmo@HL7.org to schedule a day and time.

HL7 Project Tracking Tools

All of HL7's project tools, including the Searchable Project Database, GForge and Project Insight, are available on www.HL7.org via Participate > Tools & Resources > Project Tracking Tools.

Carlos Tellería Orriols

Interoperability throughout a Corporate Integration Platform Using HL7 Standards

By Carlos Tellería Orriols, Integration Manager, SALUD

The Public Healthcare Provider of the Aragón Autonomous Community of Spain (SALUD) is responsible for the healthcare delivery to 1.34 million inhabitants in the Aragón region in northern Spain. With an annual budget of 1.8 billion in 2012, SALUD covers a geographical area of 47,719 km.

SALUD, through its hospitals, primary health centers and other specialty facilities, offers a comprehensive portfolio of services to citizens, including:

- Primary care
- Acute care
- Chronically dependent care (skilled nursing)
- Mental health
- Emergency
- Public health
- Pharmaceutical benefits, orthoprosthetic, dietary products and health transport

The public health system is divided into eight geographical sectors, each of of which has a reference hospital. The health district is the basic territorial framework for primary health care, having direct access to the population and with the ability to provide ongoing support, and includes:

- 124 Primary care centers
- 990 Primary care physicians
- 167 Pediatric physicians
- 933 Primary care nurses

In December 2006, the interoperability project began as the basis for the IT strategy for the public health system. Orion Health Rhapsody was chosen for this purpose, mainly for its simple, efficient, robust manner, independent of vendor-specific technology.

In June 2007, the first interfaces went into production, and Rhapsody has operated continuously since then. Today, Rhapsody provides the basis for integration between the different information systems of the Department of Health of Aragón. There are currently nine instances of Rhapsody in production, one for each territorial sector of Aragón, as well as the central node.

The HL7 Version 2.5 standard was adopted at the beginning of the project for every message passing through the integration engine. An implementation guide for Aragón is currently being compiled and is expected to be published this year.

The deployment of Rhapsody in Aragón is being led by the Center for Integrated Management of Corporate Projects (CGIPC) of SALUD. The development and maintenance team is composed entirely of C2C Consulting TSIS consultants.

Case I: Patient Unique Identification at Corporate Level

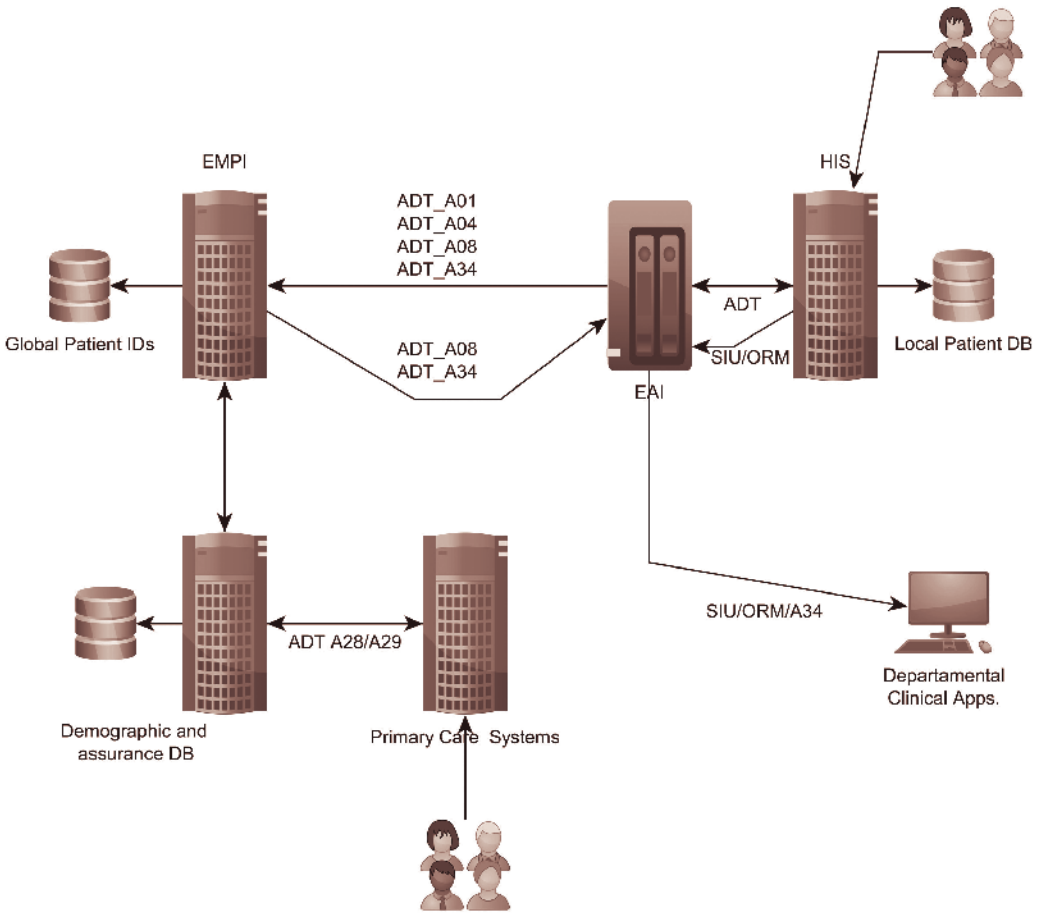
At Aragón Health Service, a unique identifier has been defined for every patient (CIA, Autonomic Identification Code), in such a way that they are uniquely identified across all facilities and devices inside the health system. This code is automatically created and managed by an Enterprise Master Patient Index (EMPI) system. The normal operation of the system comprises two circuits, related to the patient's entry points to the health system: primary care and emergency services at hospitals.

Clinical systems are permanently synchronized with the demographic database and EMPI for primary care since

continued on page 12

Interoperability, *continued from page 12*

patients have been previously granted their healthcare assurance. When a new patient is created in the assurance database, a notification is sent to an EMPI Web Service, which creates a unique ID (CIA) for that patient and then returns the information to the demographic database. This database broadcasts an ADT A28 message to all primary care systems.



Case 1: EMPI at Aragon Health Service

The circuit is more complex with the hospital emergency system. A patient may not exist in the EMPI system, but it is mandatory to provide assistance to him or her in a secure way. In normal conditions, when a patient arrives at emergency, HIS sends an ADT message to EMPI, which identifies that patient and returns his or her unique ID (CIA), creating it if necessary. Thereafter, HIS keeps that identifier and includes it in every message sent to third party systems, such as RIS or laboratory.

If a communication problem occurs when a patient hasn't yet been assigned his or her unique CIA, the EAI bus, responsible for communications among systems, detects a SIU or ORM message lacking a CIA and tries to look for it in the EMPI. If this operation is not possible, EAI assigns a temporary unique ID to the patient with the format "PROV" + Local History Number, and adds a PID.3 element to the message with this ID. Once communications are restored, and with the permanent CIA already created in EMPI, EAI broadcasts a merge message A34 to all involved systems in which the temporary CIA is replaced by a permanent one. This operation allows for the restoration of identifiers and guarantees that the patient's healthcare and correct identification are provided at all times.

Case II: Simultaneous management of laboratory orders and appointments with HL7 messages

SALUD has an electronic health record tool for primary healthcare that allows the generation and sending of laboratory orders, but it does not support appointment management for analytic tests. Admission staff at the specialty facilities usually performs this action.

SALUD has also developed a custom solution (LabRM,

Laboratory Request Manager) for managing both lab orders and patients' appointments for analytic tests. This solution is multi-lab and multi-requester, and connectivity is defined with a set of HL7 messages for managing orders as well as appointments.

Aiming to facilitate patient appointments, and also with the goal of reducing pressure on admission personnel, a route has been developed between primary care systems and LabRM. Beginning with the order request, the route is as follows:

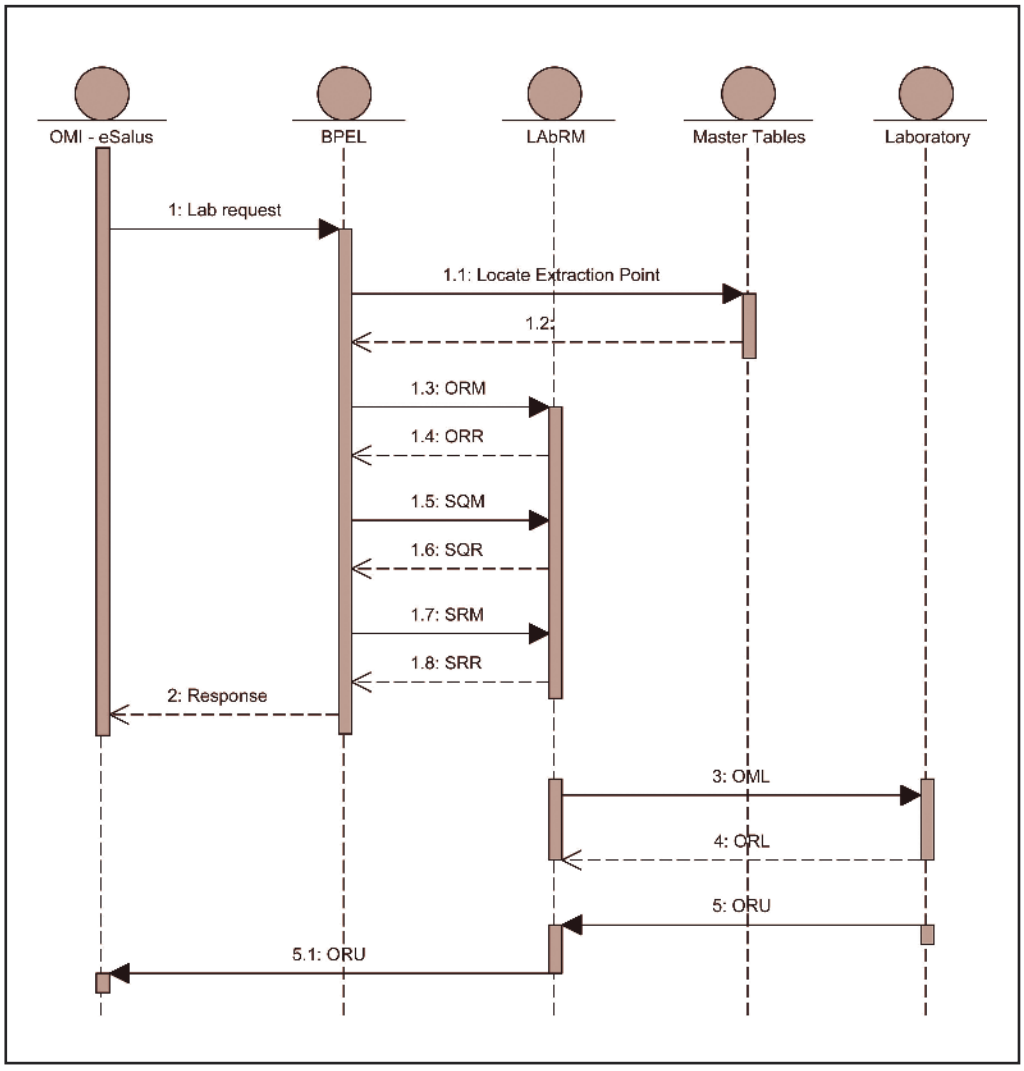
- Registers laboratory orders
- Selects the correct extraction point and schedule depending on order type requested
- Assigns appointments finding first available gap on that schedule
- Links appointment to order
- Returns the appointment details to the clinical application

Thus, patients leave their consultation with both the appointment and the lab order simultaneously.

LabRM is also responsible for sending requests to laboratory, and managing results as well as forwarding them to clinical systems. These transactions are delivered using standard OML/ORL and ORU/ACK schemes.

All the logic inside the processes for selecting schedules, finding schedule gaps, trying to fix an appointment (recursively if needed), and composing a message that joins order and appointment details, has been developed over OpenESB BPEL engine.

All integration routes and traffic management have been implemented with the Orion Health Rhapsody Engine. IT staff at SALUD, in collaboration with C2C consultants, developed the system.



Case II: SALUD's LabRM system

News from the PBS Metrics Team

By HL7 International Staff Members Dave Hamill, Director, Project Management Office; Lynn Laakso, TSC Project Manager; Don Lloyd, PhD, Director of Technical Publications; and Karen Van Hentenryck, Associate Executive Director

Dave Hamill

Lynn Laakso

Don Lloyd, PhD

Karen Van Hentenryck

PBS Metrics (Projects, Ballots and Standards) Report

The PBS Metrics Team would like to thank all the work group co-chairs, project facilitators and everyone else that had a hand in cleaning up their 'infractions' (i.e. red items). The team continues to enhance reporting, visibility and resources to make it as easy as possible for work groups to address problem areas. On HL7.org, via Resources > Work Groups, you can now find forms, templates and process documentation to help you address PBS infractions.

PBS Metrics Work for 2012

The PBS Metrics Team will focus on making the PBS information easier to access and more visible. A link to the PBS Metrics Excel report will be added to every work group's webpage on www.HL7.org as well as the HL7 Searchable Project Database. 'Interim' reports will be published between working group meetings (WGMs) to provide more timely information. Co-chairs will be provided their Project Insight login credentials prior to WGMs so project clean up will be easier. PBS Team members will assist in creating educational material on HL7 balloting, and the Searchable Project Database will be modified to indicate if the project has a PBS Metrics infraction.

PBS Metrics Reports and Dashboard

The PBS Metrics reporting and dashboards are easily accessible via the Reports link on your work group's HL7.org page. This link directs you to GForge, where the report resides within the TSC's File area (http://gforge.hl7.org/gf/project/tsc/frs/?action=FrsReleaseBrowse&frs_package_id=169).

As a reminder, the PBS reporting and dashboards reflect the following criteria for each work group:

1. Idle Ballots - Items that haven't balloted in a year, and are still "open" (haven't successfully completed their ballot)
2. No Recon Package - Items that have not had a reconciliation package posted
3. Non-Advancing Ballots - Items that have gone through 3 or more ballots
4. Expired DSTUs - Expired DSTUs that have not proceeded to normative or some other ballot level
5. Unpublished CMETs - CMETs that are finished (passed by numbers and Recon is complete) but unpublished (waiting for the CMET clean-up work to be completed by Andy Stechishin and Dave Hamill)
6. Unpublished Ballots - Items that are finished (passed by numbers and reconciliation is complete) but unpublished (not in Normative Edition or on HL7 Standards page)
7. Projects in Project Insight that are behind more than 120 Days
8. Projects in Project Insight with an 'Unknown' status
9. Work groups that do not have any 3-Year Plan Items in Project Insight

The PBS Metrics Report was created to support the HL7 strategic initiative to "streamline the HL7 standards development process." It is intended to be a tool to assist work groups with managing ballots in addition to cleaning up projects and old data. By reviewing the reports, work groups can identify potential issues before they get out of hand as well as move items through balloting to a final document or standard state.

If you have any questions or comments, please direct them to any PBS Metrics team member: Dave Hamill (dhamill@HL7.org), Lynn Laakso (lynn@HL7.org), Don Lloyd (dlloyd@HL7.org) and Karen Van Hentenryck (karenvan@HL7.org).

LCAM: Local Clinical Alarm Manager for COPD's Chronic Patients from the Balearic Islands

By A. Conde Geli, M. Pons Crespí, M. N. Melià Aguiló, J. C. Amer Oliver, F. Tous Llull, Integration Competency Center (http://cci.ibit.org), Department of Health, Fundació iBit

Abstract

The present article defines the Local Clinical Alarm Manager (LCAM), an interoperability project of several information systems related to the monitoring and early diagnosis of Chronic Obstructive Pulmonary Disease (COPD), which applies algorithms which reflect the reference clinical practice guides. The project's scope is defined within the Balearic Islands' health and sanitary environment.

LCAM is generic and configurable, and allows professionals to monitor one or several chronic diseases. The architecture is based on a Services Oriented Architecture (SOA) model, and the synchronization with the local clinical application is carried out using the HL7 Clinical Context Object Workgroup (CCOW) standard protocol.

Introduction

Chronic diseases are the epidemics of the twenty-first century, especially in countries with a population with a high aging rate. COPD is a cause of high morbidity, mortality and disability in Spain. It is estimated that between 9% and 10% of the adult population over 40 years of age suffer from COPD, and that over 70% of them remain undiagnosed. Chronic diseases entail costly and complex processes, and represent a big percentage of the sanitary costs.

The information system (IS) that supports the Chronic Diseases Alarm Manager will be referred to as LCAM in this article.

The IS consists of a client part, installed in each professional's personal computer, as well as a server part, which acts as an integration core with the different sanitary information systems. The client part is fed by the sanitary application which the professional is using at the time—generally any application which uses HL7 CCOW as an integrated communication protocol. CCOW informs the client part of the LCAM about the context patient—the patient about whom the clinical professional is querying the sanitary application—and about which specific chronic diseases the professional is interested in monitoring. Once this information has been collected, LCAM's integration engine informs the client if it is necessary to display alarms which may interest the clinical professional related to the patient who is been queried at the time.

Project Aim

- Assistance improvement: support for the clinical professional upon the monitoring and treatment of the chronic disease COPD
- Minimization of COPD infra-diagnosis, easing an early diagnosis of people within EPOC risk

Designing a Prototype Solution for COPD

The prototype design had to include a previous synchronization step between the patient that is being queried by the clinical professional and LCAM. This synchronization process is carried out by implementing CCOW with LCAM within its client part and the clinical application used by the clinical professional. The clinical application instigates context changes, cascading any change to the rest of applications which share the protocol (in this case LCAM) every time a new patient query is carried out. Once the clinical professional has carried out the patient query the application, a cascade will be carried out within the new context, and LCAM will gather information about whether the patient is or is not at risk, or if COPD has been diagnosed.

An absolute priority at the technical level, and in order to enable a progressive addition of other chronic diseases, was to obtain a solution already adapted for re-usability, flexibility and scalability in the future.

Interoperating Information

In order to enable the information's interoperability, a means of transport was needed, together with a synchronization standard between the desktop applications. The HL7 CCOW and Version 3 standards were chosen.

Future

In order to increase the functionalities of LCAM, the actions that need to be carried out for this interoperability project are as follows:

- Monitoring and early diagnosis of vascular risk/diabetes mellitus
- Monitoring of the specific care-giving programs

Conclusions

The client LCAM has been set up in fifteen health centers and three hospitals within the Balearic Islands. In clinical literature, the most accepted proposal consists of combining the presence of the main risk factor (smoking habit), the age criteria (as age increases, the

continued on page 17

Andalusia Health Services:
A New SOA and HL7 Strategy

José Román Fernández Engo

By José Román Fernández Engo, Charge of Strategy for Interoperability, IT Department, SAS-Andalusia Health Services

The Servicio Andaluz de Salud (SAS – Andalusia Health Services) is the public organization providing health services in the Autonomous Community of Andalusia, Spain. SAS serves a population of 8 million people distributed in a 33,694.4 sq mile territory through a network of approximately 85,000 health professionals working in 29 hospitals and 1,500 PHC centers.

Background

During the last decade, SAS has centered its IT efforts on providing a centralized information system for general practitioners and pediatricians. This system covers the whole PHC (primary healthcare) level, including the patient electronic PHC record, an electronic prescription tool integrated with private pharmacy offices; and a laboratory orders tool accessible from public PHC premises throughout the entire territory. The project is named Diraya, which is the Arabic word for knowledge.

However, public hospitals have remained mostly isolated IT environments characterized by locally developed or third party solutions, with specific integrations at a local level and a discrete number of point to point integrations with SAS corporate information systems.

SOA Governance and HL7 Messaging

The SAS strategic IT plan foresaw providing corporate solutions to tertiary care while respecting the particularities of IT ecosystems within the different clinical departments in each hospital as well as allowing for seamless information exchange within the organization itself among all levels of care: with other public health organizations, external providers, other regional health information systems, the Spanish Health Ministry and European health authorities with the utmost security and reliability. The plan focuses on reducing IT and business costs, promoting IT reusability and ordered growth, and providing a solid organization-wide basis for better clinical and management decision making.

To turn the plan into a reality, five years ago, the Subdirección de Tecnologías de la Información (SAS IT Department), with the help of Red.es, undertook two complementary lines: building a comprehensive catalogue of corporate services throughout the organization to fulfill the needs within hospitals and among different levels of care for clinical and management purposes, and using an international and reliable standard for information exchange among health information systems.

The main objectives of the HL7 SOA strategy are:

- Adoption of a strategy and an information policy and integration defined and stable over time
- Establishing a governance model that allows both the consolidation and dissemination of these policies and the rules, master data, etc.
- Definition, modeling and consolidation of organizational processes; and the definition and implementation of sustainable life cycle models for all necessary services whether or not technological
- The widespread application of rules and standards (HL7 2.x, CDA, CIE9, etc.) for process modeling and establishing responsibility for the information of the organization
- The implementation of the services that establish and unify the interpretation of the information in the organization
- The adoption of a syntax based communication standard common to all systems, the force of law derived from the modeling business
- Hardware architecture for information management and communications based technology standards, which ensure the exchange of information on the physical level

The SOA Governance group of the SAS IT Department is responsible for the Interoperability Technical Office (OTI) and is supported by and partnered with Accenture, who has broad experience in health business process and IT systems. The role of the OTI is to define communication interfaces between clinical applications and to define and standardize SOA services. It also coordinates developments made by the various players of the Andalusian Public Health System (SSPA) for the construction of DIRAYA. The OTI's functions include the following:

- Implement the governance model defined by SOA governance group
- Coordinate modeling process
- Set rules and standards, use and dissemination policies and procedures
- Establish and manage the service catalog
- Define master data of the organization and its responsibilities
- Trace the path of convergence of systems to the new model, project to project, as part of a global macro-project, ensuring coexistence with the existing systems
- Integrate the actors participating in the SSPA information management through a corporate or departmental policy dissemination of standards,

Andalusia Health Services, *continued from previous page*

training activities and a certification program of developments aimed at interoperability

Main Results

Today, eight public hospitals are fully operational in the DAE project. A tight deployment schedule is under way to extend it to the other 22 hospitals. Organization-wide logistics and IT management systems are also being progressively integrated into the SOA and HL7 messaging strategy. Since the implementation of the strategy in September 2009, important results have been achieved. The scope of these results more than justifies the investment, both economically and in terms of effort, from the Directorate of IT in internalization, dissemination and training. The results are summarized below:

MANAGEMENT

- SOA and HL7 strategy from OTI in DAE has produced a savings of 86% in development and implementation costs expected with a maximum reuse rate obtained with the SAS SOA Services Catalogue

DEVELOPMENT

- Provides documentation or reference to a lot of control in their evolution
- Unifies support, simplifying the training of both technological and project management, etc.
- Simplification and reuse of developments for these units "atomic" from the standpoint of business functionality and not its technological configuration
- Decouples applications, allowing the independent evolution of business areas based on functional needs
- Scalability and Sustainability

KNOWLEDGE MANAGEMENT

- Internalizes the knowledge of the business by improving internal control projects and reversing the knowledge in the organization, thus avoiding dependence on external agents
- Avoids data inconsistencies by having role models of the information that reflect that data
- Ensures interoperability of the organization both internally and externally

To illustrate these results, the following table shows some counters:

Description	Count	Impact
Business areas covered	11	Human Resources, Laboratory, Master Patient, Treasury, Logistics, Reports, Appointments, Images, Demographics, Census, Cross Services.
Business Services	97	From both top-down and bottom-up approaches, assuring convergence with existing projects.
Hospitals and organizations using Service Catalogue	27	18 new hospitals expected before the end of the year.
Information Systems using corporate services	57	Publishing the corporate interfaces and following SAS White Paper for Interoperability, unify semantic and decouple the systems map in the whole organization. Important savings expected in the future.
Providers behind IS	22	Huge effort of coordination and project planning, risk management and supporting.
HL7 version	V2.5	Implementing the standard, taking advantage of HL7 v2.x messaging's event orientation, for a EDA approach (Event Driven Architecture).
Corporate Projects adopting the strategy	20	Thrusting the whole strategy towards a fast growth and tight deployment schedule.
Messages processed	16,632,588	Mainly distributed in DAE, Logistics, Laboratory.

LCAM, *continued from page 15*

disease's prevalence increases), and the use of a highly consistent test such as spirometry. This is what LCAM considers, therefore improving the patient's assistance quality, together with the clinical professional's assistance, for three clear reasons:

1. Monitoring and early diagnosis, by computerizing the clinical practical guides, together with medicine based scientific evidence in order to improve the assistance quality for one of the twenty-first century epidemics for developed countries: chronic diseases
2. Solving the current problem of the lack of communication between the different assistance levels, generating an alarm at any level, thus alerting the clinical professionals about an early diagnosis or informing the clinical professional that the patient is already under treatment
3. Communicating between the different assistance levels by using communication protocols and standards, trying to mitigate the report, diagnosis and/or treatments duplicity

References

Estrategia en EPOC del Sistema Nacional de Salud. Sanidad 2009 Ministerio de Sanidad y Política Social.

Sobradillo V, Miravitlles M, Gabriel R, Jiménez-Ruiz CA, Villasante C, Masa JF, et al. Geographical variations in prevalence and underdiagnosis of COPD. Results of the IBERPOC multicentre epidemiological study. Chest. 2000; 118:981-989.

Sobradillo-Peña V, Miravitlles M, Jiménez CA, Gabriel R, Viejo JL, Villasante C, Masa JF, et al. Estudio Epidemiológico de la Enfermedad Pulmonar Obstructiva Crónica en España (IBERPOC): Prevalencia de síntomas respiratorios crónicos y limitación del flujo aéreo. Arch. Bronconeumol. 1999; 35: 159-66.

Health Level Seven Clinical Context Object Workgroup [online] http://www.hl7.org/Special/committees/visual/index.cfm (Consultada: Agosto de 2011).
Oracle Healthcare Transaction Base [online] http://www.oracle.com/us/industries/healthcare/046614.html

Health Level Seven International Version 3 [online] http://www.hl7.org/implement/standards/product_brief.cfm?product_id = 186

Electronic Surveillance of Healthcare-Associated Infections Using HL7's Arden Syntax

Dr. Klaus-Peter Adlassnig

By Dr. Klaus-Peter Adlassnig, CEO and Scientific Head, Medexter Healthcare in Vienna, Austria; and Section for Medical Expert and Knowledge-Based Systems, Center for Medical Statistics, Informatics, and Intelligent Systems, Medical University of Vienna

Arden Syntax is a medical knowledge representation and processing scheme for the development of clinical decision support (CDS) systems that that originated in 1989 at a gathering of several medical informaticists from the USA, the Netherlands, and Sweden at the Arden Homestead Retreat in Orange County, NY, conference estates owned by the Columbia University. The intention was to write computer-based clinical reminders, diagnostic and therapeutic recommendations, and crucial alerts in a clear and readable way and—as one of the main objectives—to make them shareable to others.

Since then, the early versions of Arden Syntax have been updated, extended, and were adopted by standards organizations. The American Society for Testing and Materials (ASTM) first approved the Arden Syntax as standard E-1460-92 in 1992. Ownership was transferred to Health Level Seven (HL7) and the American National Standards Institute (ANSI) in 1999 with the approval of version 2.0 of the standard. The latest release is Arden Syntax version 2.8 which was approved in January 2012; however, HL7's Arden Syntax Work Group is still preparing further improvements of, and extensions to, this representation and programming code.

Arden Syntax is a syntax defining how to arrange input data to be processed, condition and action parts of clinical rules to be written, and how and where to output the computed results. Medical logic modules (MLMs) are the basic representation and processing units in Arden Syntax, and the syntax was designed such that each MLM may contain all the knowledge for at least one single decision. However, MLMs can call each other, be interconnected, even intertwined, and can thus form whole medical knowledge packages (MKPs)[1], consisting of sets of MLMs.

To make the syntax operable, one needs to write—say program in a programming language—an interpreter or compiler for Arden Syntax, and an execution engine to have the MLMs being processed. In addition, an authoring tool containing an editor for writing MLMs—which possibly includes an execution engine for testing them before they become enacted—usually comes with such a suite of Arden Syntax software.

Following current software architectures and providing the Arden Syntax execution engine within a service-oriented architecture makes it possible to offer interoperable CDS systems for a variety of tasks. These tasks all have in common that data sources such as clinical, laboratory, or intensive care information systems or the web "itself" supply the data to be processed—preferably through standardized data communication—and that the MLM-processed results be returned to the connected information systems or be reported by separate web-based applications.

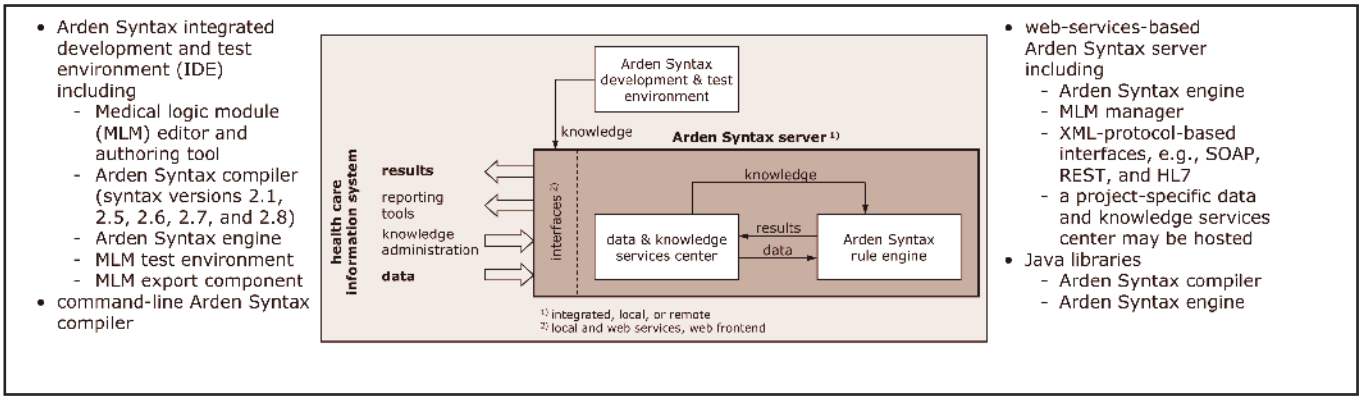


Figure 1: Suite of Arden Syntax software—service-oriented architecture and software components

Figure 1 shows the structure of an Arden-Syntax-based, service-oriented CDS system and lists some of its software components, as it is offered and applied by Medexter Healthcare. This software for Arden Syntax was written, distributed, and has been incorporated into a number of hospitals and some healthcare companies information systems.

One large-scale application is called Moni-ICU and runs as clinical routine application at the Vienna General Hospital, a tertiary care hospital with 2,134 beds and the main teaching hospital of the Medical University of Vienna, Austria. Moni-ICU has been built for electronic, fully-automated surveillance of healthcare-associated infections (HAIs) at the hospital's intensive care units (ICUs) with adult patients. The primary user is the infection control team of the Clinical Department of Hospital Hygiene of the Vienna General Hospital, which receives daily automated updates on its cockpit surveillance screen to see which patient at which ICU ward developed an ICU-associated infection, continued to have one, or recovered from one (See Figure 2). Based on classification criteria for HAIs, as they have been issued by the US Centers for Disease Control (CDC), the European CDC, and German KISS, the published definitions of the various forms of septicemias, pneumonias, urinary tract and central-venous-catheter-associated infections were linguistically decomposed, formally rearranged and structured, and brought into Arden Syntax MLM code.

Processing layers from raw data calculation and interpretation to intermediate and high-level clinical concept evaluation were introduced and a package of hierarchically interwoven MLMs was established (Figure 3). Patients' medical data is measured, observed and automatically transferred from the intensive care medical information systems and the microbiology laboratory. It is then put through a step-by-step pipeline of aggregation, interpretation, and evaluation that is eventually used to draw conclusions about whether one or more of the included infection criteria are fulfilled, fulfilled to a certain degree, or not fulfilled. Most of the encoded clinical entities are modeled as fuzzy sets, and fuzzy logic is used to perform the subsequent inference steps. Figure 3 shows a graphical depiction of the processing layers in Moni-ICU.

At present, this Arden Syntax application is used by 12 ICUs with a total of 96 beds and the microbiology department provide about 15-18,000 data items every day. For each of the 96 patients, an Arden Syntax knowledge package containing 74 MLMs (with emulated clinical fuzzy set definitions and fuzzy logic processing operators) is automatically invoked, and both intermediate medical concepts and final infection results are computed, stored, and prepared for viewing on screen or for reporting.

A study evaluating the effectiveness has shown an excellent conformance of Moni-ICU with an established clinical reference standard as well as Moni-ICU's superiority in

continued on next page

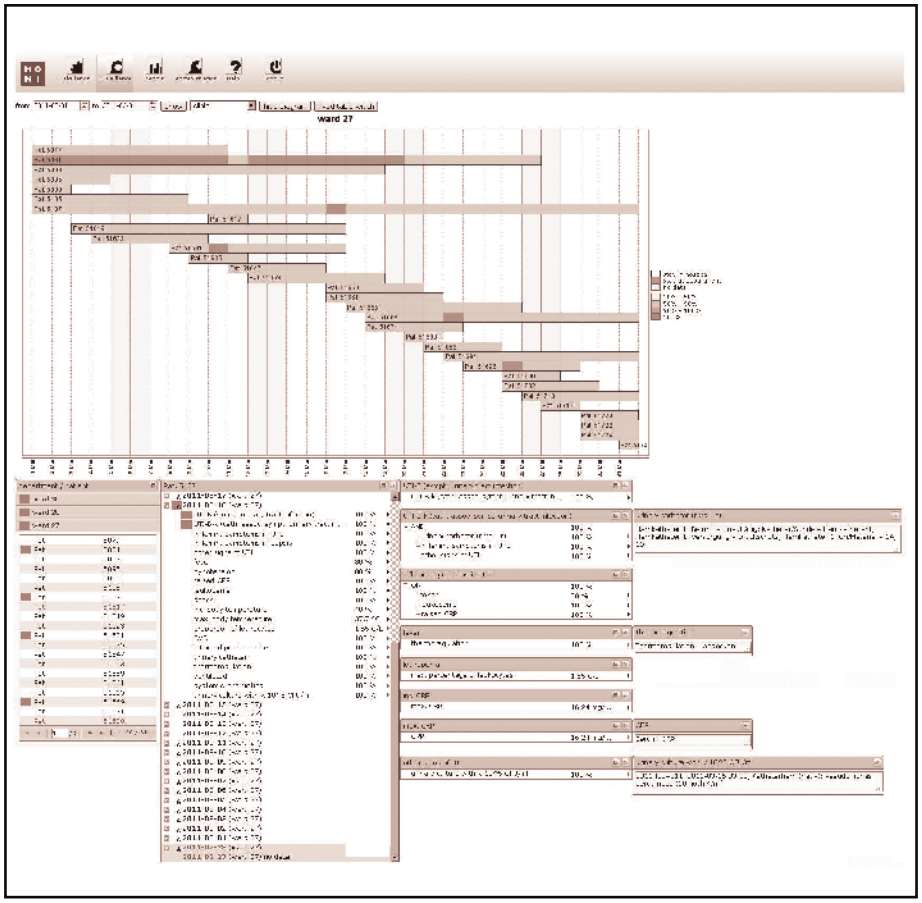


Figure 2: Screenshot of Moni-ICU showing daily results (lower half, middle part) including detailed explanations (lower half, right part) and patients' infection period over time (upper half)

Electronic Surveillance *continued from page 19*

minimizing time demands on the infection control team with respect to electronically supported versus sole human surveillance [2].

The next steps include extending Moni-ICU to neonatal care (Moni-NICU), forming standardized interfaces to medical information systems applying the HL7 messaging standards, defining and adopting a genuine Fuzzy Arden Syntax (presumably Arden Syntax version 2.9), and adding several automated reporting schemes for HAIs as requested by legal requirements in Austria, Germany, and the US.

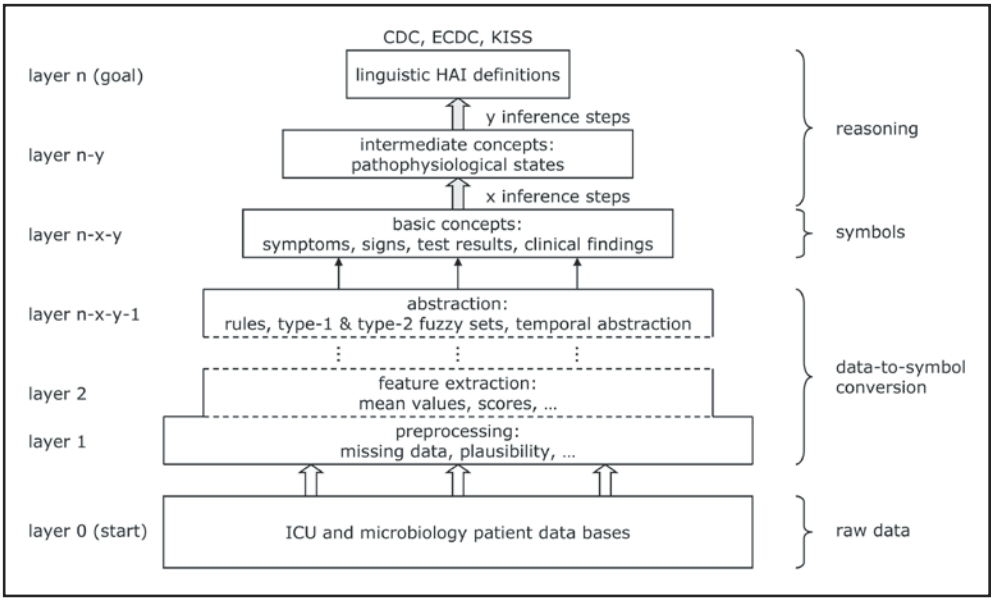


Figure 3: Processing layers from raw data to high-level clinical concept evaluation using Arden Syntax

[1] Adlassnig, K.-P. and Rappelsberger, A. (2008) Medical Knowledge Packages and their Integration into Health-Care Information Systems and the World Wide Web. In Andersen S.K., Klein, G.O., Schulz, S., Aarts, J., and Mazzoleni, M.C. (Eds.) eHealth Beyond the Horizon–Get IT There. In Proceedings of the 21st International Congress of the European Federation for Medical Informatics (MIE 2008), IOS Press, Amsterdam, 121–126.

[2] Blacky, A., Mandl, H., Adlassnig, K.-P., and Koller, W. (2011) Fully Automated Surveillance of Healthcare-Associated Infections with MONI-ICU – A Breakthrough in Clinical Infection Surveillance. Applied Clinical Informatics 2(3), 365–372.

Upcoming INTERNATIONAL EVENTS

eHealth Conference 2012 / World of Health IT Conference and Exhibition
Copenhagen, Denmark
May 7 - 9, 2012
For more information, please visit
http://www.worldofhealthit.org/

HL7 May Working Group Meeting
Vancouver, BC, Canada
May 13 - 18, 2012
For more information, please visit
http://www.hl7.org/events/Working Group Meetings

eHealth 2012: Innovating Health e-Care
Vancouver, BC, Canada
May 27 - 30, 2012
For more information, please visit
http://www.e-healthconference.com

MIE 2012: Quality of Life through Quality of Information
Pisa, Italy
August 26 - 29, 2012
For more information, please visit
http://www.mie2012.it

HIMSS AsiaPac 2012
Marina Bay Sands, Singapore
September 17 - 19, 2012
For more information, please visit
http://www.himssasiapac.org

13th International HL7 Interoperability Conference
Vienna, Austria
September 28 - 29, 2012
Watch the HL7 website for more information.

John Ritter

Lenel James

Health Level Seven International Project Supports the US Office of Personnel Management's Blue Button® Requirements

By John Ritter, Co-Chair, HL7 Electronic Health Records Work Group and HL7 Ambassador; and Lenel James, CPHIT, CPEHR, Member, HL7 EHR Work Group and HL7 Ambassador

HL7 recently announced a response to the US Office of Personnel Management's (OPM) recent requirement that US Federal Employees Health Benefit Program (FEHBP) health insurance carriers support the US Department of Veterans Affairs (VA) Blue Button® text file format as a means of conveying personal health information to federal employees. In January 2012, HL7 launched a project that defines the conversion of an HL7 Continuity of Care Document (CCD®) to the Blue Button format via an XSLT style sheet tool. Because most Meaningful Use–certified health information exchange systems already possess CCD-export capabilities, the tool will be able to leverage those capabilities as a simple and effective way for many carriers to meet OPM's new requirement.

The Blue Button, developed by the VA in collaboration with the Centers for Medicare and Medicaid Services (CMS), empowers Veterans to access and download their health information as an ASCII text file or PDF® document.

The Blue Button, developed by the VA in collaboration with the Centers for Medicare and Medicaid Services (CMS), empowers Veterans to access and download their health information as an ASCII text file or PDF® document. The Blue Button initiative was made nationally available in October 2010. In December 2011, OPM issued a formal request to all carriers in the FEHBP to add Blue Button functionality to their web-based personal health record systems. (See: http://www1.opm.gov/news/blue-button-added-to-health-insurance-carriers-for-federal-employees,1744.aspx)

The Blue Button service participates in the health information exchange continuum by enabling Veterans and consumers to share their data with clinicians and other caregivers via a simple text file. The service is part of the expanding landscape of national and local initiatives such as the Office of the National Coordinator's Standards and Interoperability Framework and the Beacon Community Programs.

John Ritter, co-chair of the HL7 Electronic Health Record Work Group (EHR WG), noted that HL7 quickly assembled a broad set of industry stakeholders, including vendors, providers, payers, and federal agencies, as part of its ongoing commitment to be responsive to the industry's needs in a timely manner.

The EHR WG and Structured Documents Work Group, co-sponsors of the project, expect to publish the file conversion tool and User's Guide after the May Working Group Meeting in Vancouver. Doug Dormer, President of SPINNphr and member of the project team stated, "I am pleased to be involved in this project. This tool will reduce my technical team's effort to offer a data download channel to consumers in the Blue Button format and help our clients meet OPM's requirement."

For more information visit: www.HL7.org/EHR

Congratulations

To the following people who recently passed the HL7 Certification Exams

Certified HL7 Version 2.x Chapter 2 Control Specialist

November 17, 2011
Vince Cirelli
Shane Fleeger
Violeta Jankov
Robert Kitchen, Jr.
Emmanuel Luna
Jason Martin
Dan McHugh
Carrie Van Stedum
Jeff Yost

December 9, 2011
Mary Kay Burke
Bruce A. Craig
Richard A. Day
John C. Delius
Connie M. Egerer
Patti Hansen
Hannah L. Howard
Babette M. Jacobson-Barnes
Matthew D. Jeanfreau
Nicolas V. Molinos
Sandi D. Meacham
Amy D. Moy
Ryan A. Rush
Tina M. Sobey

January 19, 2012
Lori M. Ashford
Patricia Bauer
Matthew M. Cettei
Teresa E. Garriott
Douglas S. Graham
Dale Grobeck
Chi Chen J. Hong
Jesse M. Phillips
Nagavalli Pothineni
Dejan Zivanovic

March 8, 2012
Khatera Cama
Joseph H. Dent
Dipak Patel
Cliff A. Searl
Scott H. Shellenbarger
Raghavan Srinivasan
Levi M. Teitelbaum
David J. Yacono
Robert Ziegenfus

HL7 Australia

November 30, 2011
Randal J. Fletcher
Mark A. Gilson
Chris J. Page
Sandra N. Polmear

HL7 Canada

November 23, 2011
Feda Birani
John Macintosh
Dorothy Seiler

January 6, 2012
Tak M. Ko

HL7 India

November 19, 2011
Suchitra Bapat
Tarun Chopra
Aditya Josh
Kapil Joshi
Madhuri Krishnakumar
Subashini Narayanan
Ravichandra K. Patel
Dr. Pawandeep Singh
Padmavathi K. Thiruvenkadam
Arun Kumar Tiriveedhi

February 11, 2012
Nikita Agrawal
Mohammed Saleej Saleem Ak
Jayesh Bhanushali
INDRANEEL S CHAUDHARY
Kevin Dama
Hardik Delwari
Adarsh Dharmavarapu
John E. Fernandes
Rasika V. Inamdar
Roshan Kamble
Ajay Kapoor
Rohit P. Khot
Rohit Kulkarni
Amol Maralikar
Teresa Mathew
Miss Pritam N. More
Rohit Natraj
Udeshangbhai Agarshangbhai Parmar
Neha Pathak
Priya Ramachandran
Ami Ramani
Shweta Satpalkar
Priyank Shah
Nilesh A. Shinde
Deesha Pratap Shingadia
Sandeep Swamy
Bina Vivek
Bini Vijan

February 25, 2012
Sipra Dimri
Bharathiraj Kanagaraj
Meena Namasivayam
Sandeep Narasimhegowda

HL7 Singapore

November 21, 2011
Fu Yanto
Seera Srinivasa Rao
Lee Chou Wee
Hu Bo
Reymond Darwin Wilaisono
Chin Teck Wei
Hendry Wijaya

February 9, 2012
Jocelyn R. Jawili
Chan Hock Yan

HL7 Spain

November 14, 2011
José Ignacio Sánchez Alonso
Martín Calvete Iglesias
María Esther Saavedra Martínez
Julio José Gómez Díaz
Ana Azpiazu Carmouze

December 12, 2011
Cesar Flores Carrera
Miquel Adrover
Josep Lluís Muñoz Ribalta

December 13, 2011
Carlos Sánchez García
Juan Carlos González Moreno
Ainhoa Barbeito Pardiñas
Bárbara Goyanes Valero
Ignacio Arnott González-Tova
Víctor Sancho Lorenzo
Rubén García Broncano
Pablo Esteve Díaz
José Moralo Molero
Francisco Novillo Pérez
Verónica Sáez Pérez
José Martínez Hellín
José María Leal Pozuelo
José Luis Fernández Rueda
Víctor Castaño Labajo
Gustavo Roig Domínguez
Javier Arribas Pastor
Francisco Javier Lubias García

December 14, 2011
Myriam Barroso Partida
José Andrés Morey Súñer
José Javier Pozo Morales
María Ángeles Merino Paredes
Raúl Palomino Sánchez

December 15, 2011
Naroj Macías Duarte
Marco Antonio Sánchez López

Natalia Medina Medina
Francisco Javier Martínez Aguiar
Rosa Mª Paz Espinosa
Noé Andrés Rodríguez González
Francisco Rodríguez Almeida
Javier Arencibia West

December 16, 2011
Jonay González Suárez
Carlos Rodríguez Reyes
Alfonso Hernández Ibáñez
Alexis Barrera Torres

February 23, 2012
Ángel José Faria Rodríguez
David Campos Nieto
Rafael Gallardo Picón
Jesús Mozos Ibáñez

February 28, 2012
Salvador Preckler

Certified HL7 CDA Specialist

November 17, 2011
Sanjeev Baral
Luan Dinh
Carlos Guzman
Mike Lomangino
Steven T. Porteus
Roman Radomski
Julie Steele
Michael Tyburski
Chun Yu

January 19, 2012
Louise K. Brown
Denny Cordy
Wayne Heth
Phillip E. Kiefer
Carlos J. Muentes
Kanaka Ramyasiri
Thomas S. Reventas
Cameron D. Tully-Smith

March 8, 2012
Randy P. Ayers
Joshua A. Douglas
Mark K. Caro
Terry L. Grammer
Kim M. Kegg
Randolph G. Pelikan
Joshua N. Robinson
Arman Samani
Alireza H. Tabrizi
Benjamin E. Victorica
Saunya M. Williams
Ying Zhang

HL7 Argentina

November 2, 2011
Lucía Grundel

HL7 Canada

February 8, 2012
Rick Lambert

HL7 India

February 11, 2012
Akash Gupta
Mayank Kapoor
Kanchan Sanjay Kokal
Pankjaj Kumar R. Mishra
Manali Mannur
Sandeep K. Patil
Santosh Gopi Pillai
Ritu Shukla
Ankur R. Tripathi

HL7 Korea

November 19, 2011
Dong Wook Park

HL7 Spain

November 14, 2011
Francisco Javier Martínez Aguiar
Carolina Hernández Ramos
Javier Arencibia West
Rosa Mª Paz Espinosa
Natalia Medina Medina
Marco Antonio Sánchez López
Agustín Tapia Quesada

December 12, 2011
David Rodríguez Cocinero
Martí Pàmies Solà
Francesc Ramos Rocarols
Silvia Morea Julián
María Belén Zabala Durán

December 13, 2011
Pedro Mayor Izquierdo

December 14, 2011
Raquel Casaus Álvarez
José Jesús Jiménez Flores
Manuel Jesús Morales Lara

December 16, 2011
Noé Andrés Rodríguez González

February 23, 2012
Diego Bosca Tomás
Diego Caballero Higueras
Ángel Colao Patón
José Rambla Lop

February 28, 2012
Alexis Barrera Torres

Certified HL7 Version 3 RIM Specialist

November 17, 2011
Sushmita Behera
Sunitha Byreddy
James Chan
Eldo Daniel
Viabhav Kothale
Viveka Panwar
Vivek Pillai
U. Prajapati
Rajiv Shahi

January 19, 2012
Patrick E. Loyd

March 8, 2012
Carolina Saborio

HL7 Canada

November 23, 2011
Paul Brown
Justin Fyfe
Harry Edwards

February 8, 2012
Mark Cong

HL7 India

November 19, 2011
Dinesh Cheluvegal Balasundara

HL7 Pakistan

February 12, 2012
Midhat Akhtar
Karim Amirali
Asif Ansari
Anita Abdul Habib Dharani
Uzma Mahmood
Erum Qadir Memon
Shehzad Shahabuddin Merchant
Shahana Mobin
Kamran Nayyer
Hafsa Saadat
Salma Shiraz Ali Dobani
Kashif Siddiqui

Andrea Ribick

One Step Closer to Secure EHRs and mHealth: OMG and HL7 Announce Adoption of the hData Specification

By Andrea Ribick, HL7 Director of Communications

HL7 and OMG® recently announced the adoption and availability of the hData Record Format and hData RESTful Transport specifications, a scalable electronic method for exchanging patient health information (such as electronic health records, "EHR" and mobile health, "mHealth") among patients, doctors, hospitals, and clinics.

"This is the latest in a number of standards jointly created as a result of our partnership with OMG. This collaborative relationship is successful because it combines HL7's expertise in creating healthcare interoperability standards with OMG's expertise in distributed process models, wrappers and transport specifications that are common to all industries," said John Quinn, CTO, HL7 International. "It is also one of the first published efforts to adopt the significant contributions and balloting efforts of our volunteers from MITRE, giving HL7 implementers API access to the hData RESTful Transport specification."

"The real impetus behind health data information standards like hData is saving lives and saving money by connecting clinical systems across doctors' offices, hospitals and research centers. This is accomplished by overcoming the differences in systems that make sharing information difficult in the medical world," said Dr. Richard Mark Soley, PhD, Chairman and CEO, OMG.

With the adoption at OMG and at HL7, hData is now the first set of peer-reviewed specifications within both organizations for implementing a RESTful exchange of clinical information in the context of national and international standards. With hData, implementers can achieve semantic interoperability between clinical systems both within and across organizational boundaries. By supporting a wide variety of clinical content models and media types, hData offers maximal flexibility while ensuring high scalability and efficiency through an optimized transport architecture.

"MITRE initiated and led hData's development in 2008 in an effort to promote the adoption and use of scalable electronic health record systems," says Gerald Beuchelt, Lead Software Systems Engineer, MITRE. "Doctors cite compliance as an area that will improve a patient's health and also help keep costs in the US system down. Mobile health is a useful tool, but first we need scalable exchange and semantic interoperability of health IT systems, and then we can support future growth in tools like mobile health that can all share common data – hence hData."

RESTful specification services are low-cost and easy to deploy versus other service types that are more cumbersome to build and implement. hData allows a Web developer to demonstrate a prototype in days instead of months with the current standards in use. Not surprisingly, RESTful Web services are used by companies such as Amazon.com and Google because they can scale to millions of users.

With the hData specifications, medical records present content in a tiered structure that allows for fast and secure access to only the specific information needed at a given time. This means that rather than having to download an entire record to a mobile device, doctors can download just the pieces of data they need in order to make decisions. hData makes the data securely accessible so the innovation of mobile use can happen.

The specification is available to the public for download from the OMG website at http://www.omg.org/cgi-bin/doc?dtc/2012-01-03.

HL7 has published the hData Record Format as a DSTU (Draft Standard for Trial Use). It is available on the HL7 website at http://www.hl7.org/dstucomments/.

Dr. Adam Chee

Health IT Standards – What Went Wrong Where?

By Dr. Adam Chee, Vice-Chair, HL7 Singapore

I had an interesting conversation about health IT standards recently, in a private setting, where a group of people debated a few popular standards adopted in the realm of medical imaging.

The discussion started with XDS (Cross Enterprise Document Sharing) from IHE and the topic was why it was not suitable for handling non-DICOM images. The first red flag that went off in my head was 'Perversion of the XDS standard!' XDS is not meant for handling of non-DICOM images; it is meant to register and share electronic health record documents between healthcare enterprises, ranging from physician offices to clinics to acute care inpatient facilities. In other words, it is meant to be used in an EMR/EHR environment for sharing of documents. The individual placing the complaint can go on about the how XDS has failed for him and he will be "correct" because it has indeed "failed," since XDS has been made to serve a wrong purpose. There are no surprises here.

However, the rationale of his argument is akin to saying that airplanes have failed because they make terrible cars when one tries to drive them like one – thinking that both are transportation devices, hence they should serve the same purpose. I call this a case of plain cognitive failure.

As a firm believer of adopting relevant standards in the right context, I tried to highlight that if one is looking at imaging, then maybe XDS-I (Cross Enterprise Document Sharing for Imaging) would be a better choice. The reply I received was an interesting one: "It's the same." Before I could explain the differences, I was shot down (well, it was a three person team versus me) and given an example from an article taken off the Internet, citing how a physician was trying to access a patient's medical records with an XDS enabled system and had trouble locating what he needed because he had to open every single document to find out what it was.

I was half-amused and half-worried at this stage.

- Half-amused because the example was describing a half-attempted adoption of XDS (citing one article out of millions off the Internet) in order to support the point that XDS failed to support a workflow that it was never meant to
- Half-worried because there will be people in the group walking out of the discussion, spewing the same misguided information

To describe the concept of XDS in a very simplistic manner – XDS manages a federated document repositories and a document registry to create a longitudinal record of information pertaining to a patient (in a given 'clinical affinity domain').

These are distinct entities with separate responsibilities.

- A document repository is responsible for storing documents in a transparent, secure, reliable and persistent manner and responding to document retrieval requests
- A document registry is responsible for storing information about those documents so that the documents of interest for the care of a patient may be easily found, selected and retrieved irrespective of the repository where they are actually stored

The example given obviously has the document registry part missing; therefore the implementation was not in compliance with the XDS specification. But somehow, XDS got blamed for it! This is like saying "work is going to kill you" because there are reported incidents of Karōshi (death from overwork) in Japan!

The topic then shifted suddenly to HL7 Version 2.x (V2) and the complaint was that HL7 V2.x is all the same, but they are not backward compatible, hence the need for interface engines. I tried to explain the concepts of HL7 V2.x and why it is in such a chaotic state (due to the lack of semantic interoperability, hence the reason why a logical information model such as RIM was developed), but the accuser became really defensive and further attempts to set the context right were met by rebuttals claiming that: standards looks nice on paper but fail in real world implementation and standards are developed by people sitting in ivory towers whereas he works in the industry so he "knows better." I pointed out politely that standards bodies like HL7 and IHE are made up of volunteers from the industry (myself included – I am practitioner first, academian second, consultant third) and the notion that standards have 'failed in the real world' is due to implementers not understanding the standards being implemented, thus implementing them half-right or just plain-wrong.

continued on next page

Heath IT Standards, *continued from page 15*

To put his argument into another context, it is akin to saying that:

- The traffic light system of Red = Stop, Yellow = Caution and Green = Go has failed because motorists are ignoring them or that in some places the color has been changed
- Because he is accustomed to driving in a such a chaotic environment (such as above), he is convinced that his opinions are the only ones that matter

Well, the world is a very big place and even traffic rules differ from place to place (e.g. speed limits, left-hand drive versus right-hand drive), let alone healthcare systems. It is important to understand that in the arguments above, standards have not failed; the implementation and enforcement has. If one cannot see the difference than one cannot fix the problem—it really is that simple. Now don't get me wrong, healthcare IT standards are by no means perfect (and nothing is) and the people working on the development of standards and their consistent improvements are practitioners from the industry who have not only encountered real-life problems, but have also decided to make a difference by volunteering their time to help rectify these problems.

However, in order for standards to be effectively adopted, it is very important that users receive the right information. While constant communication and knowledge transfer between standards developers and users are vital toward the effective adoption of standards, it is also important that users of standards take the effort and initiative to look for credible information from the right sources. As HL7 affiliates, we can serve as the enabler, facilitating the flow of knowledge between the two groups.

Last but not least, let us applaud the self-sacrificing individuals who dedicate their time and effort in the development of health It standards, facilitating interoperability that improves care delivery.

HL7 Benefactors
as of April 25, 2012

Abbott — A Promise for Life
Accenture — High performance. Delivered.
Allscripts
Booz | Allen | Hamilton
Centers for Disease Control and Prevention
Duke Translational Medicine Institute
Epic
European Medicines Agency — emea
FDA
GE
GlaxoSmithKline
HCA — Hospital Corporation of America
IBM
intel
InterSystems
Kaiser Permanente
McKesson
Microsoft
NHS — Connecting for Health
NICTIZ
Novartis
Oracle
Partners HealthCare System
Pfizer
Philips
Quest Diagnostics
Siemens
Thomson Reuters
US Department of Defense Military Health System
Department of Veterans Affairs

HL7 ORGANIZATIONAL MEMBERS

Benefactors

Abbott
Accenture
Allscripts
Booz Allen Hamilton
Centers for Disease Control and Prevention/ CDC
Duke Translational Medicine Institute
Epic
European Medicines Agency
Food and Drug Administration
GE Healthcare IT
Hospital Corporation of America (HCA)
IBM
InterSystems
Kaiser Permanente
McKesson Provider Technologies
Microsoft Corporation
NHS Connecting for Health
NICTIZ Nat.ICT.Inst.Healthc.Netherlands
Novartis
Oracle Corporation - Healthcare
Partners HealthCare System, Inc.
Philips Healthcare
Quest Diagnostics, Incorporated
Siemens Healthcare
Thomson Reuters
US Department of Defense, Military Health System
US Department of Veteran Affairs

Supporters

7 Delta, Inc
AEGIS.net, Inc.
Beeler Consulting LLC
Beijing TPHY Technology Development Co., Ltd.
Corepoint Health
Crescendo Systems Corporation
Gamma-Dynacare Medical Laboratories
iNTERFACEWARE, Inc.
LINK Medical Computing, Inc.
LiveProcess
Medicity, Inc.
MediSwitch (Pty)Ltd
Mediture
Socrates Healthcare Ltd.

Consultants

Accenture
AHIS - St. John Providence Health
Aileron Consulting LLC
Anakam Identity Services, Equifax
Blackbird Solutions, Inc.
Booz Allen Hamilton
Cambria Solutions, Inc.
Canon U.S.A., Inc.
Capgemini Government Solutions LLC
CentriHealth
Chong Qing TJPAN Inc
Cirrus Data & Telecom Inc
CSG
CTS
Dapasoft Inc.
Dell Services
Dent Technical Consulting Services
Diagnostic Radiology and Oncology Services
Discoverture Health
Eastern Informatics, Inc.
Edifecs, Inc.
Edmond Scientific
eHealth Workflow Analytics, LLC
Emergint Technologies, Inc.
Equinoxys
Etnomedijos
Evolvent Technologies
FEI.com
Forward Advantage, Inc.
Frank McKinney Group LLC
Gartner
Gensa Corporation
Gordon Point Informatics Ltd.
GSI Health, LLC
Guidewire Architecture
Healthcare Data Assets
Healthcare Integration Technologies
HealthVectors
HIMAP
HLN Consulting, LLC
Hubbert Systems Consulting
Huron Valley Physicians Association
Infovide-Matrix S.A.
Lantana Consulting Group
LMI
Mainstream Health, Inc.
Matricis Informatique Inc.
MD Informatics, LLC
MedQuist, Inc.
newMentor
Ockham Information Services LLC
Octagon Research Solutions, Inc.
OTech, Inc.
PenCentric Health Systems Inc
PFT LLC
Professional Laboratory Management, Inc.
Raven Tech LLC
Ray Heath, LLC
Rob Savage Consulting
SabiaNet Inc
SEC Associates, Inc.
Shafarman Consulting
Soa Software Inc.
Strategic Solutions Group, LLC
The Audigy Group, LLC
The Diebold Company of Canada
The St. John Group, LLC
True Process Inc.
Virginia Riehl
Westat
Wovenware

General Interest

Agency for Healthcare Research and Quality
AGH University of Science and Technology
Alabama Department of Public Health
Alliance for Pediatric Quality
American Assoc. of Veterinary Lab Diagnosticians
American College of Radiology
American College of Surgeons, NTDB
American Dental Association
American Dietetic Association
American Health Information Management Association
American Immunization Registry Association (AIRA)
American Medical Association
AORN
Arizona Department of Health Services
Blue Cross Blue Shield Association
Brigham Young University
CA Department of Public Health
Cabinet for Health and Family Services
California Department of Health Care Services
California HealthCare Foundation
CalOptima
CDISC
Center for Elders' Independence
Centers for Disease Control and Prevention/ CDC
Centers for Medicare & Medicaid Services
City of Houston
College of American Pathologists
College of Healthcare Information Mgmt. Executives
Colorado Regional Health Information Organization
CompDrug
Connecticut Department of Public Health
Contra Costa County Health Services
COPE Community Services,Inc
Council of State and Territorial Epidemiologists
Delaware Division of Public Health
Delta Dental Plans Association
Department of Computer Science, Aarhus University
Department of Developmental Services
Department of Health
Department of Human-Computer Interaction
DGS, Commonwealth of Virginia
Duke Translational Medicine Institute
ECRI Institute
Emory University, Research and Health Sciences IT
Estonian eHealth Foundation
European Medicines Agency
Food and Drug Administration
Georgia Department of Public Health
Georgia Institute of Technology
Georgia Medical Care Foundation
HIMSS
ICCBBA, Inc.
Illinois Department of Public Health
Illinois Office of Health Information Technology
Indian Health Service
Indiana Health Information Exchange
Indiana State Department of Health
Interior Health Authority
Iowa Department of Public Health
Japan Pharmaceutical Manufacturers Association
Kansas Department of Health & Environment
Kyungpook National Univ. MIPTH
L.A. County Dept of Public Health
LCF Research
Maine Center for Disease Control and Prevention
Medical University of South Carolina
Michigan Department of Community Health Lab
Michigan State University
Ministry of Health - Slovenia
Minnesota Department of Health
Missouri Department of Health & Senior Services
N.A.A.C.C.R.
NANDA International
National Association of Dental Plans
National Center for Health Statistics/CDC
National Council for Prescription Drug Programs
National Health Service
National Institute of Standards and Technology
National Library of Medicine
National Marrow Donor Program
National Quality Forum
NATO Consultation, Command and Control Agency
New Mexico Department of Health
New York State Department of Health
NICTIZ Nat.ICT.Inst.Healthc.Netherlands
NIH/CC
NIH/Department of Clinical Research Informatics
North Coast HIE
OA-ITSD - Department of Mental Health
Oak Ridge Associated Universities
Office of the National Coordinator for Health IT
OHIO DEPT. OF JOB AND FAMILY SERVICES
Oklahoma State Department of Health
Oregon Public Health Division
Pennsylvania Dept of Health-Bureau of Information
Pharmaceuticals & Medical Devices Agency
Phast
Primary Care Information Project, NYC Dept Health
Public Health Data Standards Consortium
Region Syddanmark
RTI International
SAMHSA
SC Dept. of Health & Environmental Control HS
Social Security Administration
South Dakota Department of Health
State of Montana DPHHS
Telligen
Tennessee Department of Health
Texas Department of State Health Services - Lab
Texas Health and Human Services Commission
The Joint Commission
The MITRE Corporation
US Army Institute of Surgical Research
University HealthSystem Consortium
University of AL at Birmingham
University of Kansas Medical Center
University of Minnesota
University of Texas Medical Branch at Galveston
University of Utah Pediatric Critical Care/ IICRC
USDA APHIS VS CIO
Utah Department of Health
Utah Health Information Network
Utah State Developmental Center
Vermont Department of Health
Virginia Department of Health
Virginia Information Technologies Agency
Washington State Department of Health
Wayne State University School of Medicine
WEST WIRELESS HEALTH INSTITUTE
WNY HEALTHeLINK
WorldVistA

Payers

American Imaging Management
Blue Cross and Blue Shield of Alabama

HL7 ORGANIZATIONAL MEMBERS, continued

Blue Cross and Blue Shield of Florida
Blue Cross Blue Shield of Arizona
Blue Cross Blue Shield of North Carolina
Blue Cross Blue Shield of South Carolina
CIGNA
CompliantDRG
Health Care Service Corporation
Magellan Health Services
Neighborhood Health Plan
Premera Blue Cross
TriWest Healthcare Alliance
Valence Health
Wisconsin Physicians Service Ins. Corp.

Pharmacy

Bristol-Myers Squibb
Eli Lilly and Company
Merck & Co. Inc.
Novartis
Pharmaxo Pharmacy Services
Sanofi-Aventis R&D

Providers

Advanced Biological Laboratories (ABL) SA
Advantage Dental
Akron General Medical Center
Alamance Regional Medical Center
Albany Medical Center
Angel MEDICAL cENTER
ARUP Laboratories, Inc.
Ascension Health Information Services
Aspirus - Wausau Hospital
Athens Regional Health Services, Inc.
Avalon Health Care
Aviir, Inc
BayCare HomeCare
BJC HealthCare
Blessing Hospital
Bloomington Hospital & Healthcare Systems
Blount Memorial Hospital
Butler Healthcare Providers
Cape Regional Medical Center
Carilion Clinic
Cedars-Sinai Medical Center
Center for Life Management
Central Illinois Radiological Associates
Children's Health System of Alabama
Children's Hospital Medical Center of Akron
Childrens Mercy Hospitals and Clinics
Cincinnati Children's Hospital
City of Hope National Medical Center
Cleveland Clinic Health System
Concentra
Consolidated Medical Bio-Analysis, Inc.
Continuum Health Partners
Deaconess Health System
Diagnostic Laboratory Services
Dignity Health
Dovetail Health
East Alabama Medical Center
Emergency Medical Services Authority
Emory Healthcare
Georgia Cancer Specialists, Inc.
Hill Physicians Medical Group
Hospital Corporation of America (HCA)
Human Service Agency
Inland Northwest Health Services
Institut Jules Bordet
Integrated Telemedical Solutions
Intermountain Healthcare
Johns Hopkins Hospital
Kaiser Permanente
Kalispell Regional Medical Center
Kernodle Clinic, Inc.
Laboratory Corporation of America
Lakeland Regional Medical Center
Life Labs
Loyola University Health System
Lucile Packard Children's Hospital
Lux Med
Mayo Clinic
McDonough District Hospital
Meridian Health
Milton S. Hershey Medical Center
MultiCare Health System
National Cancer Institute
New York-Presbyterian Hospital
NHS Connecting for Health
North Carolina Baptist Hospitals, Inc.
NYC Health and Hospital Corporation
Oregon Providence Health & Service
Partners HealthCare System, Inc.
Pathologists' Regional Laboratory
Pathology Associates Medical Laboratories
Patient First
Quest Diagnostics, Incorporated
Rady Children's Hospital and Health Center
Regional Medical Center at Memphis
Rheumatology and Dermatology Associates PC
Rockford Health System
Rockingham Memorial Hospital
SA Tartu University Clinics
Saint Francis Care
Saudi Aramco - Healthcare Applications Division
Seneca Family of Agencies
Sharp HealthCare Information Systems
South Bend Medical Foundation, Inc.
Spectrum Health
Stanford Hospital & Clinics
Steven Porter, MD
Steward Health Care
Summa Health System
Texas Health Resources
The Children's Hospital of Philadelphia
Tuomey Healthcare System
US Department of Defense, Military Health System
UK HealthCare
UNC Healthcare
University of Chicago Medical Center
University of Nebraska Medical Center
University of Pittsburgh Medical Center
University of Utah Health Care
University Physicians, Inc.
UT M.D. Anderson Cancer Center
UW Medicine, IT Services
Vanguard Health Systems
VUMC
Washington National Eye Center
West Virginia University Hospitals
Wheaton Franciscan Healthcare

Vendors

//SOS/Corporation
3M Health Information Systems
4Medica
A.J. Boggs & Company
Abbott
ABELSoft Inc.
ABILITY Network
Accent on Integration
Accumedic Computer Systems, Inc.
Aceso Health Information Management
ADP AdvancedMD, Inc.
Advent InfoSystems LLC
AEGIS.net, Inc.
Aequor Technologies, Inc.
Affiliated Computer Services, Inc.
Affiliated Computer Services, Inc., a Xerox Company
Agilex Technologies
Alert Life Sciences Computing, Inc.
Allscripts
AlphaCM, Inc
AlphaGlobal-IT
Altos Solutions, Inc
Altova GmbH
American Data
American Health Care Software
American HealthTech, Inc.
AmerisourceBergen Specialty Group
Amtelco
Anasazi Software, Inc.
Angel Systems, Inc.
ANXeBusiness
Apelon, Inc.
Argility Healthcare
ARGO Data Resource Corporation
Askesis Development Group
Aspyra, LLC.
Atirix Medical Systems
Availity, LLC
Axolotl Corporation
Axway
Beeler Consulting LLC
Beijing TPHY Technology Development Co., Ltd.
Benchmark Systems
BIO-NUCLEAR, S. A.
Bostech Corporation
Bottomline Technologies
Bradoc Data Management, Inc
BusinessOn
CAL2CAL Corporation
CareCloud Corp
Carefx Corporation
carepaths, inc
Carestream Health, Inc.
CareTech Solutions, Inc.
Caristix
Center for Clinical Innovation
Cerner Corporation
Certify Data Systems
Cetrea A/S
ChartLogic, Inc.
ChartWise Medical Systems, Inc.
ChemWare
Cientive Group Inc.
CJPS Medical Systems, LLC
Clear EMR
Clinix Medical Information Services, LLC
CM Care Technology
CMR
CNIPS, LLC
CNSI
Cognosante, LLC
Cognovant, Inc
Community Computer Service, Inc.
Compania de Informatica Aplicata
Computer Technology Corporation
Computrition, Inc.
COMS Interactive, LLC
ConexSys, Inc.
Consilience Software
Core Sound Imaging, Inc.
Corepoint Health
Cortex Medical Management Systems, Inc.
Covisint
CPCHS
Crescendo Systems Corporation
Croudcare, S.A.
CS STARS, LLC.
CSAM International AS
CSC Healthcare
CTIS, Inc.
Curaspan Healthgroup, Inc.
Cybernius Medical Ltd.
Cyberpulse L.L.C.
Cyrus-XP LLC
Dansk Medicinsk Datacenter ApS
Data Information System Solutions LLC
Data Services
Data Tec, Inc.
Dataflo Consulting
DATALINK SOFTWARE DEVELOPMENT INC
Datuit, LLC
Dawning Technologies, Inc.
Daxor Corporation
dbMotion LTD
Defran Systems
DeJarnette Research Systems, Inc.
Delta Health Technologies, LLC
Dg Med Technology Corp.
Digital Infuzion, Inc.
Digital Medical Merge, Inc.
Div Media
DoctorCom
DocuTrac, Inc.
Dolbey & Company
DynamicDR
EasyMed Services Inc
EASYTALK MD LLC
EBM Technologies Inc.
echoBase
eDerm Systems
eHana LLC
e-Health Data Solutions
eHealthCare Systems, Inc.
Electronic Medical Solutions, LLC
eManual System Sdn Bhd
Embedded Wireless Labs
Embla
EMC Information Intelligence Group
Emdeon, LLC
eMedology LLC
Emerging Systems
Empower Technologies, Inc
EMRgence LLC
Epic
ESRI
eTransX, Inc.
Expert Sistemas Computacionales S.A. DE C.V.
Explorys
EyeMD EMR Healthcare Systems, Inc.
ezEMRx
e-Zest Solutions Ltd.

HL7 ORGANIZATIONAL MEMBERS, continued

F5 Networks
Falcon LLC
Fifth Light Technology
First Medical Solutions
Foothold Technology
Fresenius Medical Care
Futures Group
Gamma-Dynacare Medical Laboratories
GE Healthcare
GEMMS, Inc
Genesis Systems, Inc.
gloStream, Inc.
Greenway Medical Technologies, Inc.
GrowlCMS
Haemonetics Corporation
Harris Corporation
Health Care DataWorks
Health Care Software, Inc.
Health Companion, Inc.
Health Data Services, Inc.
Health Innovation Technologies
Health Intersections Pty Ltd
Health Language, Inc.
Health Plan Systems, Inc.
Health Records for Everyone
Healthcare Management Systems, Inc.
HEALTHeSTATE
Healthland
HealthTrio, LLC
Healthwise, Inc.
heartbase, inc.
Hewlett-Packard Enterprises Services
Hickman-Kenyon Systems, Inc
Hill Associates
Hi-Tech Software, Inc.
Home Dialysis Plus, Ltd
Hospira
HospiServe Healthcare Services Pty) Ltd.
i2i Systems
i4i Inc. (Infrastructures for Information Inc.)
Iatric Systems
IBM
IBS Expertise
iConnect Consulting
Ignis Systems Corporation
iMDsoft
iMetrikus, Inc.
Imprivata
Info World
Information Management Associates
Inmediata Health Group
Innovative Workflow Technologies
Insight Software, LLC
Institute for Health Metrics
integration AG
Intelligent Medical Objects (IMO)
Intelliware Development Inc
Interbit Data, Inc.
Interface People, LP
iNTERFACEWARE, Inc.
Interfix, LLC
InterSystems
Intuit Health
iPatientCare, Inc.
IQ-EQ Systems, LLC.
iRCODER.COM
iSEEK Enterprise (USA), LLC
Isoprime Corporation
IT Broadcasting
J&H Inc.
Jack Russell Software
Jackson Healthcare, LLC.
JVM
Keane, Inc.
Keiser Computers Inc.
Kestral Computing Pty Ltd
Key Management Group
knowtion
Krames StayWell
Lab Warehouse, Inc.
Labware, Inc.
Lane Telecommunications, Inc
Lavender & Wyatt Systems, Inc.
Lawson
Leafsprout Technologies Inc.
Liaison Technologies Inc.,
Life Systems Software
Life Technologies
Lifepoint Informatics
LINK Medical Computing, Inc.
Liquent, Inc.
LiveProcess
Logibec
Loopback Analytics
LORENZ Life Sciences Group
LSS Data Systems
Lumeris
M2comsys
MacPractice, Inc.
Maicom Healthcare Solutions GmbH
Mammography Reporting System Inc.
ManagementPlus
Marin Health Network
McKesson Provider Technologies
MD Logic, Inc
MDIntelleSys, LLC
MD-IT Transcription Services, LLC
MDP Systems, LLC
MECTA Corporation
MED3OOO, Inc.
MedConnex
Medflow, Inc.
MEDfx Corporation
MEDHOST, Inc.
MEDIBIS
Medical Systems Co. Ltd - medisys
Medicity, Inc.
MediServe Information Systems, Inc.
MediSwitch (Pty)Ltd
MEDITECH, Inc
Mediture
MediVault, LLC
Medivo Inc.
MEDIWARE Information Systems
Medlinesoft
MedLInk Computer Sciences, LLC
MedMagic LLC
MEDSEEK
Medtronic
MedUnison LLC
MedVirginia
Mellon Consulting Group, LLC
Meta, Inc.
MicroFour, Inc.
Microsoft Corporation
Mighty Oak Technology, Inc.
Mirth Corporation
MITEM Corporation
Mitochon Systems.
Mobile Physician Technologies
MobileMD
Mobiusoft, LLC
Modernizing Medicine, Inc.
MPN Software Systems, Inc.
MxSecure
NetDirector
NexJ Systems Inc
NextGen Healthcare Information Systems, Inc.
Notable Solutions
novaHEALTH Pte Ltd
NRC - Illuminate
O&P Digital Technologies
OA Systems, Inc.
Oakland Software
OD Link
OFFI-PLUS, Inc.
Omnicell, Inc.
OMNICOM srl
Open Dental Software
Optima Healthcare Solutions
Optimus EMR, Inc.
Opus-ISM LLC
Oracle Corporation - Healthcare
Orchard Software
Orion Health
OSSLLC
Ototronix
OZ Systems
P&NP Computer Services, Inc.
Panacea Healthcare, LLC
Patient360
PCE Systems
PCIS GOLD
Pegasystems
Perry Baromedical Inc
Philips Healthcare
Physician's Computer Company
Physicians Medical Group of Santa Cruz County
PilotFish Technology
PPM Information Solutions, Inc.
Practice Fusion
Practice Velocity, LLC.
Premier Healthcare Alliance
PresiNET Healthcare
Press Ganey Associates
PrimeSource Healthcare
Procentive
ProComp Software Consultants, Inc
Procura
Prognosis Health Information Systems
Prometheus Computing LLC
Proventys, Inc.
PsyTech Solutions, Inc.
QS/1 Data Systems, Inc.
QuadraMed Corporation
Quantros
Razor Insights, LLC
Recondo Technology, Inc.
Redpine Healthcare Technologies, Inc
Reed Technology and Information Services Inc.
RL SOLUTIONS
Robust For Life
Rosch Visionary Systems
RTZ Associates, Inc
SAIC - Science Applications International Corp
Sandlot, Inc.
SAS Institute
Scantron Corporation
Scientific Retail Systems, Inc.
ScriptRx, Inc.
Seeburger AG
Shared Health
Siemens Healthcare
Simavita Pty Ltd
simplifyMD
SMARTMD Corp
SNAPS, Inc.
SOAPware, Inc.
Socrates Healthcare Ltd
Softek Solutions, Inc.
Software AG USA, Inc.
Software Partners LLC
SonoSite, Inc
SOUTHERN LIFE SYSTEMS, INC
St. Jude Medical
StatRad, LLC
STI Computer Services, Inc.
Stockell Healthcare Systems, Inc.
SuccessEHS
Suitelinq inc
Suncoast Solutions
Sunquest Information Systems
SunRise Systems and Solutions
Surescripts
Surgical Information Systems
SurgiVision Consultants, Inc.
Swearingen Software, Inc.
Sybe Medical Management
Systematic Group
Tetrus
TGI Software
The Antidote.biz
The CBORD Group Inc.
The Delta Group
The Echo Group
The SIMI Group, Inc.
The SSI Group, Inc.
The Tailored Approach, LLC.
Therap Services, LLC
Thomson Reuters
Tiatros Inc.
TIBCO Software Inc.
Tidgewell Associates, Inc.
TIMS INC
Tolven, Inc.
Tranquilmoney Inc.,
Trifork Public A/S
Unibased Systems Architecture, Inc.
Unifi Technologies
Universal Medical Records, LLC
Universal Research Solutions
Unlimited Systems
Valley Hope Association - IMCSS
VeinDraw
Verizon Business
ViMedicus, Inc
Virco BVBA
Virtify
VisionTree Software, Inc.
Vitera Healthcare Solutions
Vocollect Healthcare Systems, Inc.
Wairever Inc
Walgreens
Watermark Research Partners, Inc.
WellCentive, LLC
WellDoc, Inc.
Wellsoft Corporation
White Plume Technologies
Wolters Kluwer Health
Workflow.com, LLC
World Medical Center Nordic AS
Xeo Health
XIFIN, Inc.
XPress Technologies
ZetaSys LLC
ZipChart, Inc
Zoho Corp.
Zweena
Zynx Health
ZetaSys Dental Enterprise Solution
ZipChart, Inc
Zoho Corp.
Zweena
Zynx Health

2012 TECHNICAL STEERING COMMITTEE MEMBERS

CHAIR
Austin Kreisler
Science Applications International Corp. (SAIC)
Phone: 404-542-4475
Email: austin.j.kreisler@saic.com

CHIEF TECHNICAL OFFICER
John Quinn
HL7 International
Phone: 216-409-1330
Email: jquinn@HL7.org

ARB CO-CHAIRS
Charles Mead, MD, MSc
3rd Millennium, Inc.
Phone: 510-541-8224
Email: meadch@mail.nih.gov

Ron Parker
HL7 Canada
Phone: 902-832-0876
Email: rparker@infoway-inforoute.ca

INTERNATIONAL REPRESENTATIVE
Giorgio Cangioli
HL7 Italy
giorgio.cangioli@gmail.com

Ravi Natarajan
NHS Connecting for Health
Phone: 44 113-390-6520
Email: ravi.natarajan@nhs.net

DOMAIN EXPERTS CO-CHAIRS
Edward Tripp
Edward S Tripp and Associates, Inc.
Phone: 224-234-9769
Email: edward.tripp@estripp.com

Mead Walker
Mead Walker Consulting;
Phone: 610-518-6259
Email: dmead@comcast.net

FOUNDATION & TECHNOLOGY CO-CHAIRS
George (Woody) Beeler
Beeler Consulting, LLC
Phone: 507-254-4810
Email: woody@beelers.com

Anthony Julian
Mayo Clinic
Phone: 507-266-0958
Email: ajulian@mayo.edu

STRUCTURE & SEMANTIC DESIGN CO-CHAIRS
Calvin Beebe
Mayo Clinic
Phone: 507-284-3827
Email: cbeebe@mayo.edu

Patricia Van Dyke
Delta Dental Plans Association
Phone: 503-243-4492
Email: vandykp@odscompanies.com

TECHNICAL & SUPPORT SERVICES CO-CHAIRS
Frieda Hall
Quest Diagnostics, Incorporated
Phone: 610-650-6794
Email: freida.x.hall@questdiagnostics.com

Patrick Loyd
ICode Solutions
Phone: 415-209-0544
Email: patrick.e.loyd@gmail.com

AD-HOC MEMBER
Helen Stevens Love
M Gordon Point Informatics Ltd.
Phone: 250-598-0312
Email: helen.stevens@gpinformatics.com

STEERING DIVISIONS

DOMAIN EXPERTS
Anatomic Pathology
Anesthesiology
Attachments
Child Health
Clinical Genomics
Clinical Interoperability Council*
Community Based Collaborative Care
Emergency Care
Health Care Devices
Patient Care
Patient Safety
Pharmacy
Public Health & Emergency Response
Regulated Clinical Research Information Management

FOUNDATION & TECHNOLOGY
Conformance & Guidance for Implementation/Testing
Implementable Technology Specifications
Infrastructure & Messaging
Modeling & Methodology
RIM Based Application Architecture
Security
Service Oriented Architecture
Templates
Vocabulary

TECHNICAL & SUPPORT SERVICES
Education
Electronic Services
International Mentoring Committee
Process Improvement Committee
Project Services
Publishing
Tooling

STRUCTURE & SEMANTIC DESIGN
Arden Syntax
Clinical Context Object Workgroup
Clinical Decision Support
Clinical Statement
Electronic Health Record
Financial Management
Imaging Integration
Orders & Observations
Patient Administration
Structured Documents

*Voice only; no vote

HL7 WORK GROUP CO-CHAIRS

Anatomic Pathology

David Booker, MD
College of American Pathologists
Phone: 706-736-0991
Email: david.booker1@gmail.com

Victor Brodsky, MD
College of American Pathologists
Phone: 646-322-4648
Email: victorbrodsky@gmail.com

Jeffrey Karp
College of American Pathologists
Phone: 847-832-7358
Email: jkarp@cap.org

Architectural Review Board

Charlie Mead, MD, MSc
3rd Millennium, Inc.
Phone: 510-541-8224
Email: meadch@mail.nih.gov

Ron Parker
HL7 Canada
Phone: 902-832-0876
Email:
rparker@infoway-inforoute.ca

John Quinn
Health Level Seven International
Phone: 216-409-1330
Email: jquinn@HL7.org

Arden Syntax

Peter Haug
Intermountain Healthcare
Phone: 801-442-6240
Email: peter.haug@imail.org

Robert Jenders, MD
National Library of Medicine
Phone: 301-435-3192
Email: robert.jenders@nih.gov

Attachments

Durwin Day
Health Care Service Corporation
Phone: 312-653-5948
Email: dayd@bcbsil.com

Craig Gabron
Blue Cross Blue Shield of South Carolina
Phone: 803-763-1790
Email: craig.gabron@pgba.com

Jim McKinley
Blue Cross and Blue Shield of Alabama
Phone: 205-220-5960
Email: jbmckinley@bcbsal.org

Child Health

David Classen, MD, MS
Alliance for Pediatric Quality
Phone: 801-532-3633
Email: dclassen@csc.com

Gaye Dolin, MSN
Lantana Consulting Group
Phone: 714-744-4152
Email:
gaye.dolin@lantanagroup.com

Joy Kuhl
Alliance for Pediatric Quality
Phone: 818-308-7063
Email: joy@optimalaccords.com

Andy Spooner, MD, FAAP
Cincinnati Children's Hospital
Phone: 513-803-0121
Email: andrew.spooner@cchmc.org

Feliciano Yu, MD
St. Louis Children's Hospital
Phone: 314-454-2808
Email: Yu_F@kids.wustl.edu

Clinical Context Object Workgroup (CCOW)

David Fusari
Microsoft Corporation
Phone: 978-749-0022
Email: david.fusari@microsoft.com

Michael Russell, MD
Duke Translational Medicine Institute
Phone: 919-668-3889
Email: michael.russell@nc.rr.com

David Staggs
US Department of Veterans Affairs
Phone: 858-826-5629
Email: david.staggs@va.gov

Clinical Decision Support

Guilherme Del Fiol, MD
University of Utah
Phone: 919-213-4129
Email: guilherme.delfiol@utah.edu

Robert Jenders, MD
National Library of Medicine
Phone: 310-435-3192
Email: robert.jenders@nih.gov

Kensaku Kawamoto, PhD
Duke Translational Medicine Institute
Phone: 801-587-8076
Email:
kensaku.kawamoto@utah.edu

Howard Strasberg
Wolters Kluwer Health
Phone: 858-481-4249
Email: howard.strasberg@
wolterskluwer.com

Clinical Genomics

Joyce Hernandez
Merck & Co., Inc.
Phone: 732-594-1815
Email:
joyce_hernandez@merck.com

Amnon Shabo, PhD
IBM
Phone: 972-544-714070
Email: shabo@il.ibm.com

Daryl Thomas MSCS, PhD
(Interim)
Life Technologies
Email: daryl.thomas@lifetech.com

Mollie Ullman-Cullere
Partners HealthCare System, Inc.
Phone: 617-582-7249
Email: mollie_ullman-cullere@dfci.harvard.edu

Clinical Interoperability Council

W. Edward Hammond, PhD
Phone: 919-383-3555
Email: hammo001@mc.duke.edu

Meredith Nahm
Duke Translational Medicine Institute
Phone: 919-668-8339
Email: meredith.nahm@duke.edu

Dianne Reeves
National Cancer Institute
Phone: 301-435-5602
Email: reevesd@mail.nih.gov

Anita Walden
Duke Translational Medicine Institute
Phone: 919-668-8256
Email: anita.walden@duke.edu

Clinical Statement

Hans Buitendijk
Siemens Healthcare
Phone: 610-219-2087
Email:
hans.buitendijk@siemens.com

Patrick Loyd
ICode Solutions
Phone: 415-209-0544
Email: patrick.e.loyd@gmail.com

Rik Smithies
HL7 UK
NProgram Ltd.
Phone: 44-7720-290967
Email: rik@nprogram.co.uk

Community Based Collaborative Care

Suzanne Gonzales-Webb
US Department of Veterans Affairs
Phone: 619-972-9047
Email:
suzanne.gonzales-webb@va.gov

Richard Thoreson
SAMHSA
Phone: 240-276-2827
Email:
richard.thoreson@samhsa.hhs.gov

Max Walker
Department of Health
Phone: 61-3-9096-1471
Email:
max.walker@health.vic.gov.au

Conformance & Guidance for Implementation/ Testing

Wendy Huang
Canada Health Infoway Inc.
Phone: 416-595-3449
Email:
whuang@infoway-inforoute.ca

Frank Oemig
HL7 Germany
Agfa Healthcare
Phone: 49-208-781194
Email: frank@oemig.de

Ioana Singureanu
Eversolve, LLC
Phone: 603-870-9739
Email:
ioana.singureanu@gmail.com

Robert Snelick
National Institute of Standards & Technology
Phone: 301-975-5924
Email: robert.snelick@nist.gov

Education

Diego Kaminker
HL7 Argentina
Phone: 54-11-4781-2898
Email: kaminker.diego@gmail.com

Patrick Loyd (Interim)
ICode Solutions
Phone: 415-209-0544
Email: patrick.e.loyd@gmail.com

Melva Peters
HL7 Canada / Gordon Point Informatics
Phone: 604-515-0339
Email:
melva.peters@gpinformatics.com

Electronic Health Records

Gary Dickinson
CentriHealth
Phone: 951-536-7010
Email:
gary.dickinson@ehr-standards.com

Don Mon, PhD
RTI International
Phone: 312-777-5228
Email: donmon@rti.org

John Ritter
Phone: 412-372-5783
Email: johnritter1@verizon.net

Helen Stevens Love
Gordon Point Informatics Ltd.
Phone: 250-598-0312
Email:
helen.stevens@gpinformatics.com

Patricia Van Dyke
Delta Dental Plans Association
Phone: 503-243-4492
Email:
vandykp@odscompanies.com

Electronic Services

Bill Braithwaite, MD, PhD
Anakam Equity Services, Equifax
Phone: 202-543-6937
Email:
bill.braithwaite@equifax.com

HL7 Work Group Co-Chairs, continued

Lorraine Constable
Constable Consulting Inc.
Phone: 780-951-4853
Email: lorraine@constable.ca

Ken McCaslin
Quest Diagnostics, Incorporated
Phone: 610-650-6692
Email: kenneth.h.mccaslin@questdiagnostics.com

Emergency Care

Laura Heermann Langford
Intermountain Healthcare
Phone: 801-507-9254
Email: laura.heermann@imail.org

Donald Kamens, MD
XPress Technologies
Phone: 904-296-1189
Email: xpress@gmail.com

James McClay, MD
University of Nebraska Medical Center
Phone: 402-559-3587
Email: jmclay@unmc.edu

Peter Park, PhD
US Department of Defense, Military Health System
Phone: 202-762-0926
Email: peter.park@med.navy.mil

Financial Management

Kathleen Connor
Edmond Scientific
Email: kathleen_connor@comcast.net

Beat Heggli
HL7 Switzerland
Phone: 41-1-806-1164
Email: beat.heggli@nexus-schweiz.ch

Mary Kay McDaniel
Markam, Inc.
Email: mk_mcdaniel@hotmail.com

Generation Of Anesthesia Standards

Martin Hurrell, PhD
Phone: 44-7711-669-522
Email: martinhurrell@gmail.com

Terri Monk, MD
Duke Translational Medicine Institute
Phone: 919-286-6938
Email: terri.monk@duke.edu

Health Care Devices

Todd Cooper
80001 Experts, LLC
Phone: 858-435-0729
Email: todd@80001Experts.com

Allen Hobbs, PhD
Kaiser Permanente
Phone: 510-267-5031
Email: allen.hobbs@kp.org

Patty Krantz
Medtronic
Phone: 763-526-0513
Email: patty.krantz@medtronic.com

John Rhoads, PhD (Interim)
Philips Healthcare
Phone: 978-659-3024
Email: john.rhoads@philips.com

Imaging Integration

Helmut Koenig, MD
Siemens Healthcare
Phone: 49-9131-84-3480
Email: helmut.koenig@siemens.com

Harry Solomon
GE Healthcare
Phone: 847-277-5096
Email: harry.solomon@med.ge.com

Implementable Technology Specifications

Paul Knapp
Knapp Consulting Inc.
Phone: 604-987-3313
Email: pknapp@pknapp.com

Dale Nelson
Squaretrends LLC
Phone: 916-367-1458
Email: dale.nelson@squaretrends.com

Andy Stechishin
CANA Software & Services Ltd.
Phone: 780-903-0885
Email: andy.stechishin@gmail.com

Infrastructure & Messaging

Anthony Julian
Mayo Clinic
Phone: 507-266-0958
Email: ajulian@mayo.edu

Patrick Loyd
ICode Solutions
Phone: 415-209-0544
Email: patrick.e.loyd@gmail.com

David Shaver
Corepoint Health
Phone: 214-618-7000
Email: dave.shaver@corepointhealth.com

Sandra Stuart
Kaiser Permanente
Phone: 925-924-7473
Email: sandra.stuart@kp.org

International Council

Catherine Chronaki—Affiliate Liaison
HL7 Hellas/FORTH-Institute of Computer Science
Phone: 30-2810-391691
Email: chronaki@ics.forth.gr

Philip Scott, PhD - HL7 International Liaison
HL7 UK
Phone: 44 8700-112-866
Email: chair@hl7.org.uk

Robert Stegwee, MSc, PhD—HL7 International Liaison
HL7 the Netherlands
Phone: 31-30-689-2730
Email: robert.stegwee@capgemini.com

Helen Stevens Love—Secretary
Gordon Point Informatics Ltd.
Phone: 250-598-0312
Email: helen.stevens@gpinformatics.com

International Mentoring Committee

Diego Kaminker
HL7 Argentina
Phone: 54-11-4781-2898
Email: kaminker.diego@gmail.com

John Ritter
Phone: 412-372-5783
Email: johnritter1@verizon.net

Marketing Council

Rene Spronk
HL7 the Netherlands
Phone: 31-318-553812
Email: rene.spronk@ringholm.com

Edward Tripp
Edward S. Tripp and Associates, Inc.
Phone: 224-234-9769
Email: edward.tripp@estripp.com

Grant Wood
Intermountain Healthcare
Phone: 801-408-8153
Email: grant.wood@imail.org

Modeling and Methodology

George (Woody) Beeler Jr., PhD
Beeler Consulting, LLC
Phone: 507-254-4810
Email: woody@beelers.com

Jean Duteau
HL7 Canada
Phone: 780-937-8991
Email: jean.duteau@gpinformatics.com

Grahame Grieve
Health Intersections Pty Ltd
Phone: 61-3-9450-2222
Email: grahame@healthintersections.com.au

Lloyd McKenzie
HL7 Canada (Gordon Point Informatics)
Email: lloyd@lmckenzie.com

Ravi Natarajan
NHS Consulting for Health
Phone: 44-113-390-6520
Email: ravi.natarajan@nhs.net

Orders and Observations

Hans Buitendijk
Siemens Healthcare
Phone: 610-219-2087
Email: hans.buitendijk@siemens.com

Lorraine Constable
Constable Consulting Inc.
Phone: 780-951-4853
Email: lorraine@constable.ca

Robert Hausam, MD
Hausam Consulting
Phone: 801-949-1556
Email: rrhausam@gmail.com

Patrick Loyd
ICode Solutions
Phone: 415-209-0544
Email: patrick.e.loyd@gmail.com

Ken McCaslin
Quest Diagnostics, Incorporated
Phone: 610-650-6692
Email: kenneth.h.mccaslin@questdiagnostics.com

Outreach Committee for Clinical Research

Ed Helton, PhD
National Cancer Institute
Phone: 919-465-4473
Email: heltone2@mail.nih.gov

Patient Adminstration

Alexander deLeon
Kaiser Permanente
Phone: 626-381-1455
Email: alexander.j.deleon@kp.org

Line Saele
Helse Vest IKT
Phone: 47-55976494
Email: line.sele@helse-vest-ikt.no

Patient Care

Stephen Chu, PhD
National eHealth Transition Authority (NEHTA)
Phone : 61-730238448
Email: stephen.chu@nehta.gov.au

Kevin Coonan, MD
Deloitte Consulting LLP
Email: kevin.coonan@gmail.com

William Goossen
HL7 The Netherlands
Results4Care B.V. Amersfoort
Phone: 31-654-614458
Email: wgoossen@results4care.nl

Hugh Leslie
Ocean Informatics
Email: hugh.leslie@oceaninformatics.com

Ian Townend
NHS Connecting for Health
Phone: 44-113-280-6743
Email: ian.townend@nhs.net

Klaus Veil
HL7 Australia
Phone: 61-412-746-457
Email: klaus@veil.net.au

HL7 Work Group Co-Chairs, continued

Patient Safety

Nick Halsey
European Medicines Agency
Phone: 44-0-20-7523-7100
Email: nick.halsey@ema.europa.eu
Ali Rashidee
Quantros
Phone: 408-514-4804
Email: rashidee.ali@gmail.com

Mead Walker
Mead Walker Consulting
Phone: 610-518-6259
Email: dmead@comcast.net

Pharmacy

Tom de Jong
HL7 the Netherlands
Phone: 31-6-3255291
Email: tom@nova-pro.nl

Hugh Glover HL7
UK Blue Wave Informatics
Phone: 44-07889407113
Email: hugh_glover
@bluewaveinformatics.co.uk

Melva Peters
HL7 Canada / Gordon Point Informatics
Phone: 604-515-0339
Email:
melva.peters@gpinformatics.com

Process Improvement Committee

Sandra Stuart
Kaiser Permanente
Phone: 925-924-7473
Email: sandra.stuart@kp.org

Project Services

Rick Haddorff
Mayo Clinic
Phone: 978-296-1462
Email: haddorff.richard@mayo.edu

Freida Hall
Quest Diagnostics, Inc.
Phone: 610-650-6794
Email:
freida.x.hall@questdiagnostics.com

Public Health Emergency Response

Joginder Madra
Gordon Point Informatics Ltd.
Phone: 780-717-4295
Email:
joginder.madra@gpinformatics.com

Ken Pool, MD
OZ Systems
Phone: 214-631-6161
Email: kpool@oz-systems.com

John Roberts
Tennessee Department of Health
Phone: 615-741-3702
Email: john.a.roberts@tn.gov

Rob Savage
Rob Savage Consulting
Email: robsavage@att.net

Publishing Committee

George (Woody) Beeler Jr., PhD-V3
Beeler Consulting, LLC
Phone: 507-254-4810
Email: woody@beelers.com

Jane Curry-V2/V3
Health Information Strategies Inc.
Phone: 780-459-8560
Email:
janecurry@healthinforstrategies.com

Jane Daus-V2
McKesson Provider Technologies
Phone: 847-495-1289
Email: jane.daus@mckesson.com

Brian Pech-V2
Kaiser Permanente
Phone: 678-245-1762
Email: brian.pech@kp.org

Andrew Stechishin-V3
CANA Software & Services Ltd.
Phone: 780-903-0855
Email: andy.stechishin@gmail.com

Sandra Stuart-V2
Kaiser Permanente
Phone: 925-924-7473
Email: sandra.stuart@kp.org

Regulated Clinical Research Information Management

Ed Helton, PhD
National Cancer Institute
Phone: 919-465-4473
Email: heltone2@mail.nih.gov

Armando Oliva, MD
Food & Drug Administration
Phone: 301-796-8126
Email: armando.oliva@fda.hhs.gov

Edward Tripp
Edward S. Tripp & Associates, Inc.
Phone: 224-234-9769
Email: edward.tripp@estripp.com

RIM Based Application Architecture

Peter Hendler, MD
Kaiser Permanente
Phone: 510-248-3055
Email: peter@javamedical.com

Amnon Shabo, PhD
IBM
Phone: 972-544-714070
Email: shabo@il.ibm.com

Rene Spronk
HL7 The Netherlands
Phone: 33-318-553812
Email: rene.spronk@ringholm.com

Security

Bernd Blobel, PhD
HL7 Germany; University of Regensburg Medical Center
Phone: 49-700-7777-6767
Email: bernd.blobel@
klinik.uni-regensburg.de

Mike Davis
US Department of Veterans Affairs
Phone: 760-632-0294
Email: mike.davis@va.gov

John Moehrke
GE Healthcare IT
Phone: 920-912-8451
Email: john.moehrke@med.ge.com

Services Oriented Architecture

Gerald Beuchelt
The MITRE Corporation
Email: beuchelt@mitre.org

Don Jorgenson
Inpriva, Inc.
Phone: 970-472-1441
Email: djorgenson@inpriva.com

Galen Mulrooney
US Department of Veterans Affairs
Phone: 703-815-0900
Email: galen.mulrooney@va.gov

Ken Rubin
Hewlett-Packard Enterprises Services
Phone: 703-845-3277
Email: ken.rubin@hp.com

Structured Documents

Calvin Beebe
Mayo Clinic
Phone: 507-284-3827
Email: cbeebe@mayo.edu

Robert Dolin, MD
Lantana Consulting Group
Phone: 714-532-1130
Email:
bob.dolin@lantanagroup.com

Grahame Grieve
Health Intersections Pty Ltd
Phone: 61-3-9450-2222
Email: grahame@
healthintersections.com.au

Austin Kreisler
Science Applications International Corp (SAIC)
Phone: 404-542-4475
Email: austin.j.kreisler@saic.com

Brett Marquard
Lantana Consulting Group
Phone: 413-549-6886
Email: brett.marquard@
lantanagroup.com

Templates

John Roberts
Tennessee Department of Health
Phone: 615-741-3702
Email: john.a.roberts@tn.gov

Mark Shafarman
Shafarman Consulting
Phone: 510-593-3483
Email:
mark.shafarman@earthlink.net

Tooling

Jane Curry
Health Information Strategies, Inc.
Phone: 780-459-8560
Email:
janecurry@healthinfostrategies.com

Tim Ireland
NHS Connecting for Health
Email: tim.ireland@nhs.net

Andrew Stechishin
CANA Software & Services Ltd.
Phone: 780-903-0855
Email: andy.stechishin@gmail.com

Vocabulary

Jim Case, DVM, PhD
National Library of Medicine
Phone: 301-594-9152
Email: james.case@mail.nih.gov

Heather Grain
Standards Australia, Llewelyn Grain Informatics
Phone: 613-956-99443
Email: heather@lginformatics.com

Russell Hamm
Apelon, Inc.
Phone: 507-271-0227
Email: rhamm@apelon.com

Robert Hausam, MD
Hausam Consulting
Phone: 801-949-1556
Email: rrhausam@gmail.com

William T. Klein
Klein Consulting, Inc.
Phone: 631-924-6922
Email: kci@tklein.com

HL7 FACILITATORS

Steering Division Facilitators

Rick Haddorff
Mayo Clinic/Foundation
Structure & Semantic Design
Phone: 978-296-1462
Email:
haddorff.richard@mayo.edu

Lynn Laakso
Health Level Seven International
Foundation & Technology
Phone: 906-361-5966
Email: lynn@HL7.org

Dave Hamill
Health Level Seven International
Technical & Support Services
Phone: 734-677-7777
Email: dhamill@HL7.org

Modeling and Methodology Facilitators

George (Woody) Beeler, Jr., PhD
Beeler Consulting LLC
Facilitator-at-Large
Phone: 507-254-4810
Email: woody@beelers.com

Charlie Bishop
iSoft
Clinical Statement
Phone: 44-7989-705-395
Email: cbishop25@csc.com

Bernd Blobel, PhD
HL7 Germany
Security
Phone: 49-700-7777-6767
Email: bernd.blobel@
klinik.uni-regensburg.de

Kathleen Connor
Edmund Scientific
Financial Management
Email:
kathleen.connor@comcast.net

Kevin Coonan, MD
Deloitte Consulting LLP
Emergency Care
Email: kevin.coonan@gmail.com

Norman Daoust
Daoust Associates
Anatomic Pathology
Phone: 617-491-7424
Email:
normand@daoustassociates.com

Jean Duteau
Gordon Point Informatics Ltd.
Patient Care; Pharmacy
Phone: 780-937-8991
Email:
jean.duteau@gpinformatics.com

Hugh Glover
HL7 UK
Medication
Phone: 44-0-7889-407-113
Email: hugh_glover@
bluewaveinformatics.co.uk

Grahame Grieve
Health Intersections Pty Ltd
Infrastructure & Messaging
Phone: 61-3-9450-2222
Email: grahame
@healthintersections.com.au

Alexander Henket
HL7 The Netherlands
Patient Administration
Email: alexander.henket
@enovation.nl

William "Ted" Klein
Klein Consulting, Inc.
Vocabulary
Phone: 631-924-6922
Email: kci@tklein.com

Austin Kreisler
Science Applications International
Corporation (SAIC)
Structured Documents
Phone: 404-542-4475
Email: austin.j.kreisler@saic.com

Patrick Loyd
ICode Solutions
Orders & Observations
Phone: 415-209-0544
Email: patrick.e.loyd@gmail.com

Joginder Madra
Gordon Point Informatics Ltd.
Immunization; PHER
Phone: 780-717-4295
Email:
Joginder.madra@gpinformatics.co

Lloyd McKenzie
HL7 Canada
(Gordon Point Informatics)
Email: lloyd@lmckenzie.com

Dale Nelson
Squaretrends LLC
Implementable Technology
Specifications
Phone: 916-367-1458
Email:
dale.nelson@squaretrends.com

Craig Parker, MD
Intermountain Healthcare
Clinical Decision Support
Phone: 801-859-4480
Email: craig.parker@imail.org

Jenni Puyenbroek
Science Applications International
Corporation (SAIC)
Conformance & Guidance for
Implementation/Testing
Phone: 678-261-2099
Email: jpuyen@gmail.com

Amnon Shabo, PhD
IBM
Clinical Genomics
Phone: 972-544-714070
Email: shabo@il.ibm.com

AbdulMalik Shakir
City of Hope National Medical
Center
Clinical Interoperability Council;
Modeling & Methodology
Phone: 626-644-4491
Email:
abdulmalik@shakirconsulting.com

Ioana Singureanu
Eversolve, LLC
CBCC & Health Care Devices
Phone: 603-870-9739
Email:
ioana.singureanu@gmail.com

Corey Spears
McKesson Provider Technology
Electronic Health Records
Phone: 206-269-1211
Email:
corey.spears@mckesson.com

Mead Walker
Mead Walker Consulting
Patient Safety; RCRIM
Phone: 610-518-6259
Email: dmead@comcast.net

Publishing Facilitators

Becky Angeles
ScenPro, Inc.
RCRIM
Phone: 972-437-5001
Email: bangeles@scenpro.com

Douglas Baird
Boston Scientific Corporation
Templates
Phone: 651-582-3241
Email:
douglas.baird@guidant.com

Mike Davis
US Department of Veterans Affairs
Security
Phone: 760-632-0294
Email: mike.davis@va.gov

Jean Duteau
Gordon Point Informatics Ltd.
PHER
Phone: 780-937-8991
Email:
jean.duteau@gpinformatics.com

Isobel Frean
Bupa Group
Clinical Statement
Phone: 44-207-656-2146
Email: isobelfrean@btinternet.com

Peter Gilbert
Covisint
Structured Documents
Phone: 313-227-0358
Email: peter.gilbert@covisint.com

Robert Hallowell
Siemens Healthcare
Medication; Pharmacy
Phone: 610-219-5612
Email:
robert.hallowell@siemens.com

Alexander Henket
HL7 The Netherlands
Patient Administration
Email:
alexander.henket@enovation.nl

Anthony Julian
Mayo Clinic
Infrastructure & Messaging
Phone: 507-266-0958
Email: ajulian@mayo.edu

Helmut Koenig, MD
Siemens Healthcare
Imaging Integration
Phone: 49-9131-84-3480
Email:
helmut.koenig@siemens.com

Austin Kreisler
Science Applications International
Corporation (SAIC)
Orders & Observations
Phone: 404-542-4475
Email: austin.j.kreisler@saic.com

Margaret (Peggy) Leizear
Food and Drug Administration
RCRIM
Phone: 301-827-5203
Email: peggy.leizear@fda.hhs.gov

Mary Kay McDaniel
Markam, Inc.
Financial Management
Email:
mk_mcdaniel@hotmail.com

Dale Nelson
Squaretrends LLC
CMET; Implementable Technology
Specifications
Phone: 916-367-1458
Email:
dale.nelson@squaretrends.com

Frank Oemig
HL7 Germany
German Realm
Phone: 49-208-781194
Email: frank@oemig.de

HL7 FACILITATORS, continued

Nancy Orvis
US Department of Defense, Military Health System
Government Projects
Phone: 703-681-3900
Email: nancy.orvis@tma.osd.mil

Craig Parker, MD
Intermountain Healthcare
Clinical Decision Support
Phone: 801-859-4480
Email: craig.parker@imail.com

John Ritter
Electronic Health Records
Phone: 412-372-5783
Email: johnritter1@verizon.net

Ioana Singureanu
Eversolve, LLC
CBCC
Phone: 603-870-9739
Email: ioana.singureanu@gmail.com

Margarita Sordo
Partners HealthCare System, Inc.
Gello
Phone: 781-416-8479
Email: msordo@dsg.harvard.edu

Anita Walden
Duke Translational Medicine Institute
Clinical Interoperability Council
Phone: 919-668-8256
Email: anita.walden@duke.edu

Grant Wood
Intermountain Healthcare
Clinical Genomics
Phone: 801-408-8153
Email: grant.wood@imail.org

Vocabulary Facilitators

Paul Biondich, MD
IU School of Medicine
Child Health
Phone: 317-278-3466
Email: mollewis@iupui.edu

Kathleen Connor
Edmond Scientific
Financial Management; Security
Email: kathleen_connor@comcast.net

Kevin Coonan, MD
Deloitte Consulting LLP
Emergency Care
Email: kevin.coonan@gmail.com

Guilherme Del Fiol, MD
University of Utah
Clinical Decision Support
Phone: 919-213-4129
Email: guilherme.delfiol@utah.edu

Christof Gessner
HL7 Germany
Health Care Devices
Phone: 49-172-3994033
Email: gessner@mxdx.de

Margaret Haber, BSN, RN, OCN
National Cancer Institute Center for Bioinformatics
RCRIM
Phone: 301-594-9185
Email: mhaber@mail.nih.gov

W. Edward Hammond, PhD
Templates
Phone: 919-383-3555
Email: hammo001@mc.duke.edu

Monica Harry
Gordon Point Informatics
PHER
Email: monica.harry@gpinformatics.com

Robert Hausam, MD
Hausam Consulting
Orders & Observations; Structured Documents
Phone: 801-949-1556
Email: rrhausam@gmail.com

Joyce Hernandez
Merck & Co. Inc.
Clinical Genomics
Phone: 732-594-1815
Email: joyce_hernandez@merck.com

Wendy Huang
Canada Health Infoway Inc.
Patient Administration
Phone: 416-595-3449
Email: whuang@infoway-inforoute.ca

Julie James
Blue Wave Informatics
Medication; Pharmacy
Email: julie_james@bluewaveinformatics.co.uk

William "Ted" Klein
Klein Consulting, Inc.
Modeling & Methodology
Phone: 631-924-6922
Email: kci@tklein.com

Patrick Loyd
ICode Solutions
Clinical Statement
Phone: 415-209-0544
Email: Patrick.e.loyd@gmail.com

Susan Matney
3M Health Information Systems
Patient Care
Phone: 801-265-4326
Email: samatney@mmm.com

Robert McClure, MD
Apelon, Inc.
CBCC
Phone: 303-926-6771
Email: rmcclure@apelon.com

Nancy Orvis
US Department of Defense, Military Health System
Government Projects
Phone: 703-681-3900
Email: nancy.orvis@tma.osd.mil

Sarah Ryan
Clinical Interoperability Council
Email: ryansaraha1@earthlink.net

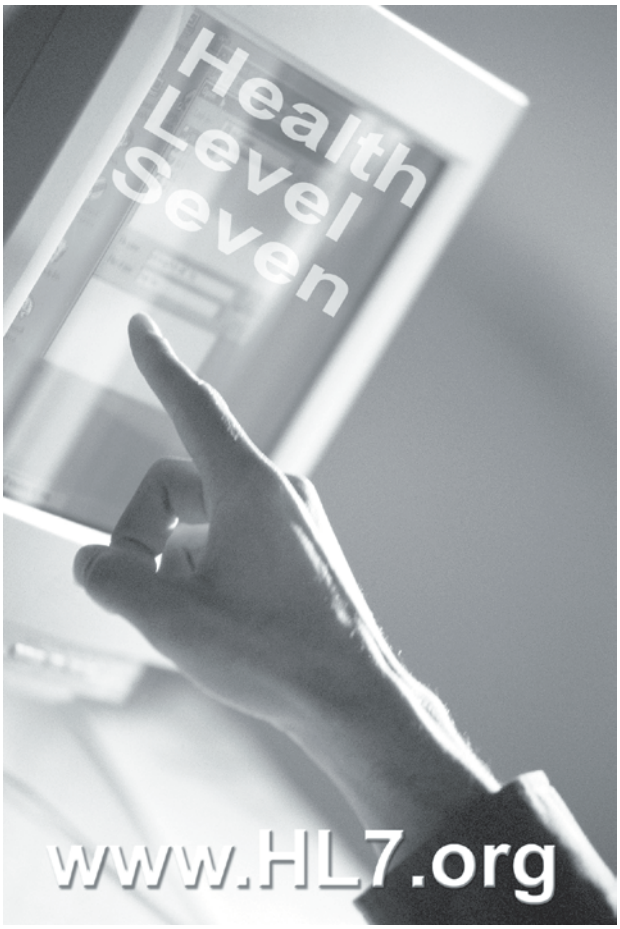
Harold Solbrig
Apelon, Inc.
Modeling & Methodology
Phone: 807-993-0269
Email: hsolbrig@apelon.com

Harry Solomon
GE Healthcare IT
Imaging Integration
Phone: 847-277-5096
Email: harry.solomon@med.ge.com

Sandra Stuart
Kaiser Permanente
Infrastructure & Messaging
Phone: 925-924-7473
Email: sandra.stuart@kp.org

Pat Van Dyke
Delta Dental Plans Association
Electronic Health Records
Phone: 503-243-4992
Email: vandykp@odscompanies.com

Tony Weida
Apelon
Security
Email: weida@apelon.com



AFFILIATE CONTACTS

HL7 Argentina
Diego Kaminker
Phone: +54-11-4781-2898
Email: diego.kaminker@kern-it.com.ar

HL7 Australia
Richard Dixon Hughes
Email: richard@dh4.com.au

HL7 Austria
Stefan Sabutsch
Phone: +43-664-3132505
Email: standards@sabutsch.at

HL7 Bosnia and Herzegovina
Samir Dedovic
Phone: +387 0-33-721-911
Email: Samir.Dedovic@medit.ba

HL7 Brazil
Marivan Santiago Abrahao
Phone: +55-11-3045-3045
Email: chair@HL7.org.br

HL7 Canada
Melva Peters
Phone: +604-515-0339
Email: melva.peters@gpinformatics.com

HL7 Chile
Sergio Konig
Phone: +56-2-7697996
Email: Chair@HL7chile.cl

HL7 China
Prof. Baoluo Li
Phone: +86-010-65815129
Email: liblpumch@gmail.com

HL7 Colombia
Fernando A. Portilla
Phone: +57-2-5552334 x241
Email: fportila@gmail.com

HL7 Croatia
Miroslav Koncar
Phone: +385-99-321-2253
Email: Miroslav.koncar@oracle.com

HL7 Czech Republic
Libor Seidl
Phone: +420 605740492
Email: seidl@HL7cr.eu

HL7 Finland
Juha Mykkanen, PhD
Phone: +358-403552824
Email: juha.mykkanen@uef.fi

HL7 France
Nicolas Canu
Phone: +33 02-35-60-41-97
Email: nicolas.canu@wanadoo.fr

HL7 Germany
Kai Heitmann, MD
Phone: +49-172-2660814
Email: hl7@kheitmann.de

HL7 Greece
Alexander Berler, PhD
Phone: +30-2111001691
Email: a.berler@gnomon.com.gr

HL7 India
Supten Sarbadhikari, MBBS, PhD
Email: chairman@HL7india.org

HL7 Italy
Stefano Lotti
Phone: +39-06-42160685
Email: slotti@invitalia.it

HL7 Japan
Michio Kimura, MD, PhD
Phone: +81-3-3506-8010
Email: kimura@mi.hama-med.ac.jp

HL7 Korea
Byoung-Kee Yi, PhD
Phone: +82 234101944
Email: byoungkeeyi@gmail.com

HL7 Luxembourg
Stefan Benzschawel
Phone: +352-425-991-889
Email: stefan.benzschawel@tudor.lu

HL7 Mexico
Pablo Ceballos Yanez
Phone: +52 55-5261-4000
Email: pablo.ceballos@draeger.com

HL7 New Zealand
David Hay
Phone: +64-9-638-9286
Email: david.hay25@gmail.com

HL7 Norway
Espen Moeller
Phone: +47 97008186
Email: espen.moller@helsedir.no

HL7 Pakistan
Dr. Hafiz Farooq Ahmad
Phone: +92 51-90852155
Email: farooq.ahmad@seecs.edu.pk

HL7 Puerto Rico
Julio Cajigas
Phone: +1 787-805-0505 x6003
Email: julio@medirecpr.com

HL7 Romania
Florica Moldoveanu, PhD
Phone: +40-21-4115781
Email: florica.moldoveanu@rdslink.ro

HL7 Russia
Tatyana Zarubina MD, PhD
Phone: +007-495-434-55-82
Email: tv.zarubina@gmail.com

HL7 Singapore
Colleen Brooks
Phone: +65-68181246
Email: colleen.brooks@mohh.com.sg

HL7 Spain
Carlos Gallego Perez
Phone: +34-93-693-18-03
Email: cgallego@ticsalut.cat

HL7 Sweden
Gustav Alvfeldt
Phone: +46 08-123-13-117
Email: gustav.alvfeldt@sll.se

HL7 Switzerland
Beat Heggli
Phone: +41-1-806-1164
Email: beat.heggli@nexus-schweiz.ch

HL7 Taiwan
Chih-Chan (Chad) Yen
Phone: +886-2-25526990
Email: cyen@linkmedasia.com

HL7 The Netherlands
Robert Stegwee, MSc, PhD
Phone: +31-30-689-2730
Email: robert.stegwee@capgemini.com

HL7 Turkey
Ergin Soysal
Email: esoysal@gmail.com

HL7 UK
Philip Scott, PhD
Phone: +44 8700-112-866
Email: chair@HL7.org.uk

HL7 Uruguay
Selene Indarte
Phone: +5985-711-0711
Email: hclinica@suat.com.uy

2012 HL7 STAFF

Chief Executive Officer

Charles Jaffe, MD, PhD
+ 1-858-720-8200
cjaffe@HL7.org

Chief Technical Officer

John Quinn
+ 1-216-409-1330
jquinn@HL7.org

Executive Director

Mark McDougall
+ 1-734-677-7777
markmcd@HL7.org

Associate Executive Director

Karen Van Hentenryck
+ 1-734-677-7777
karenvan@HL7.org

Director of Meetings

Lillian Bigham
+ 1-989-736-3703
lillian@HL7.org

Manager of Education

Mary Ann Boyle
+ 1-734-677-7777
maryann@HL7.org

Web Development Coordinator

Joshua Carmody
+ 1-734-677-7777
joshua@HL7.org

Director, Project Management Office

Dave Hamill
+ 1-734-677-7777
dhamill@HL7.org

Manager of Administrative Services

Linda Jenkins
+ 1-734-677-7777
linda@HL7.org

Director of Technical Services

Michael Kingery
+ 1-919-636-4032
mkingery@HL7.org

TSC Project Manager

Lynn Laakso
+ 1-906-361-5966
lynn@HL7.org

Director of Technical Publications

Donald Lloyd
+ 1-734-677-7777
dlloyd@HL7.org

Director of Communications

Andrea Ribick
+ 1-734-677-7777
andrea@HL7.org

Director of Membership Services

Diana Stephens
+ 1-734-677-7777
diana@HL7.org

2012 HL7 BOARD OF DIRECTORS

Chair

Donald Mon, PhD
RTI International
+ 1-312-777-5228
donmon@rti.org

Past Chair

Robert Dolin, MD
Lantana Consulting Group
+ 1-714-532-1130
bob.dolin
@lantanagroup.com

Treasurer

Michael van Campen
Gordon Point Informatics Ltd.
+ 1-250-881-4568
michael.vancampen
@gpinformatics.com

Secretary

Jill Kaufman, PhD
College of American Pathologists
+ 1-847-832-7163
jkaufma@cap.org

Technical Steering Committee Chair

Austin Kreisler
Science Applications International Corp. (SAIC)
+ 1-404-542-4475
austin.j.kreisler@saic.com

Chair Emeritus and Director-at-Large

W. Edward Hammond, PhD
+ 1-919-383-3555
hammo001@mc.duke.edu

Directors-at-Large

Keith Boone
GE Healthcare IT
+ 1-617-519-2076
keith.boone@ge.com

James Ferguson
Kaiser Permanente
+ 1 510-271-5639
jamie.ferguson@kp.org

Douglas Fridsma, MD, PhD
Office of the National Coordinator for Health IT
+ 1-202-205-4408
doug.fridsma@hhs.gov

Affiliate Directors

Catherine Chronaki, MSc
FORTH-Institute of Computer Science; HL7 Hellas BoD
+ 30-2810-391691
chronaki@ics.forth.gr

Diego Kaminker
Chair, HL7 Argentina
+ 54-11-4781-2898
kaminker.diego
@gmail.com

Stanley Huff, MD
Intermountain Healthcare
+ 1-801-442-4885
stan.huff@imail.org

Rebecca Kush, PhD
CDISC
+ 1-512-791-7612
rkush@cdisc.org

Edward Tripp
Edward S Tripp and Associates, Inc.
+ 1-224-234-9769
edward.tripp@estripp.com

Ex Officio Members

Charles Jaffe, MD, PhD
HL7 CEO
+ 1-858-720-8200
cjaffe@HL7.org

John Quinn
HL7 CTO
+ 1-216-409-1330
jquinn@HL7.org

Mark McDougall
HL7 Exective Director
+ 1-734-677-7777
markmcd@HL7.org

Advisory Council Chair

Richard Dixon Hughes
HL7 Australia / DH4 Pty Limited
richard@dh4.com.au

HL7 EDUCATIONAL SUMMITS

Gain real-world HL7 knowledge

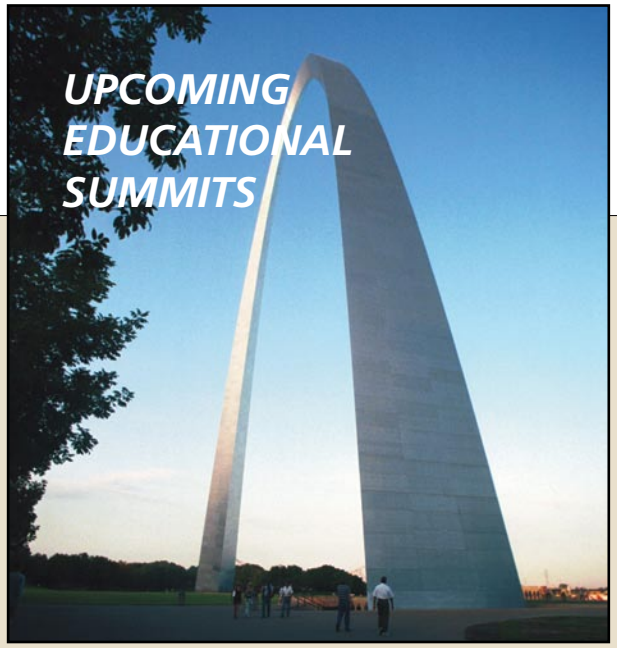
TODAY

that you can apply

TOMORROW

What is an Educational Summit?

The HL7 Educational Summit is a a two-day schedule of tutorials focused on HL7-specific topics such as Version 2, Version 3 and Clinical Document Architecture. Educational sessions also cover general interest industry topics such as vocabulary.



July 17-19, 2012
Hilton St. Louis at the Ballpark
St. Louis, MO

November 13-15, 2012
San Francisco Marriot
Fisherman's Wharf

Why Should I Attend?

This is an invaluable educational opportunity for the healthcare IT community as it strives for greater interoperability among healthcare information systems. Our classes offer a wealth of information designed to benefit a wide range of HL7 users, from beginner to advanced.

Among the benefits of attending the HL7 Educational Summit are:

- **Efficiency**
  Concentrated two-day format provides maximum training with minimal time investment
- **Learn Today, Apply Tomorrow**
  A focused curriculum featuring real-world HL7 knowledge that you can apply immediately
- **Quality Education**
  High-quality training in a "small classroom" setting promotes more one-on-one learning
- **Superior Instructors**
  You'll get HL7 training straight from the source: Our instructors. They are not only HL7 experts; they are the people who help produce the HL7 standards
- **Certification Testing**
  Become HL7 Certified: HL7 is the sole source for HL7 certification testing, now offering testing on Version 2.7, Clinical Document Architecture, and Version 3 RIM
- **Economical**
  A more economical alternative for companies who want the benefits of HL7's on-site training but have fewer employees to train

Upcoming WORKING GROUP MEETINGS

September 9 – 14, 2012

26th Annual Plenary & Working Group Meeting

Hyatt Regency Baltimore
Baltimore, MD

January 13 – 18, 2013

Working Group Meeting

Pointe Hilton Squaw Peak Resort
Phoenix, AZ

May 5 – 10, 2013

Working Group Meeting

Sheraton Atlanta Hotel
Atlanta, GA

September 22 – 27, 2013

27th Annual Plenary & Working Group Meeting

Hyatt Regency Cambridge
Cambridge, MA

January 12 – 14, 2014

Working Group Meeting

Hilton in the Walt Disney World® Resort
Lake Buena Vista, FL