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INTERNATIONAL

SEPTEMBER 2015

HL7 INTERNATIONAL NEWS

Enabling Healthcare IT Solutions

FHIR-based Clinico-Genomics Apps

Koppeltaal—a New Behavior Health Platform in the Netherlands

NI2016 to Feature Interoperable Nursing EHRs and Apps for Care Coordination

Plus...

Introducing the HL7 Standards Governance Board and the US Realm Steering Committee

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HL7 News

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Update from Headquarters

By Mark McDougall,
HL7 Executive Director

Paris Working Group Meeting

We served 341 attendees at our May Working Group Meeting (WGM) held in Paris, France, May 9-15, 2015. More than 40 HL7 work groups convened meetings in Paris, 23 of which conducted co-chair elections. Attendees also took advantage of 18 tutorials, an HL7 Fast Healthcare Interoperability Resources (HL7 FHIR®) connectathon, a policy summit, and three certification tests that week. The HL7 affiliates also sponsored a reception with poster boards on Sunday evening.

I would like to express sincere appreciation to everyone who contributed to the success of the Paris WGM, particularly:

- Nicolas Canu
- Lillian Bigham
- Elizabeth Marshall
- Ticia Gerber
- Helen Stevens
- HL7 affiliates

Meeting Sponsors

HL7 was pleased to recognize the May Working Group Meeting Sponsors.

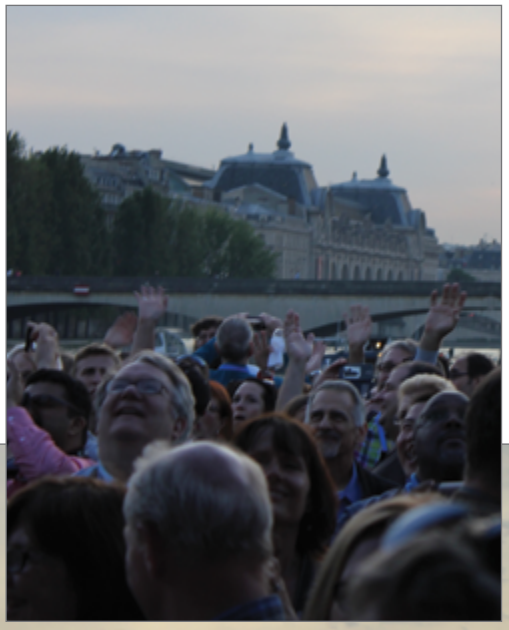
Meeting Sponsors

A special thank you is extended to Interop'Santé for sponsoring a memorable networking reception boat cruise on the Seine River. Ringholm also provided a significant sponsorship for our Paris WGM. I am pleased to recognize the following organizations that sponsored key components of our May Working Group meeting in Paris.

- Interop'Santé
- Ringholm
- AEGIS
- GEVITY
- Hi3 Solutions
- iNTERFACEWARE
- PHAST
- QVERA
- VIDAL GROUP

Networking Reception Boat Cruise on the Seine River

A special thank you is extended to Interop'Santé for sponsoring a memorable networking reception boat cruise on the Seine River.



HL7 Affiliates Sponsor Paris Poster Board Session

Thank you also to the many HL7 affiliates who sponsored the Sunday evening reception and participated in our poster board session:

HL7 Austria	HL7 Netherlands
HL7 Finland	HL7 Norway
HL7 France	HL7 Spain
HL7 Germany	HL Sweden
HL7 Greece	HL7 Switzerland
HL7 Italy	HL7 UK

The additional sponsorship support provided by the organizations listed above contributed significantly to HL7's meeting budget and is much appreciated.

Benefactors and Supporters

We are pleased to recognize HL7's 2015 benefactors and gold members who are listed on page 29. 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 all of our HL7 press releases, and at all of our HL7 Working Group Meetings.

Organizational Member Firms

As listed on pages 29-32, HL7 is very proud to recognize the organizations who are HL7 organizational member companies. We sincerely appreciate their ongoing support of HL7 via their organizational membership dues.

29th Annual Plenary Meeting in Atlanta

We are pleased to report that the upcoming plenary meeting will provide insight on some exciting devices and technologies that are available or in development for use in the healthcare industry.

The plenary meeting will cover several examples of remote monitoring and the interoperability of things. The program will also provide insight on clinicians needs for improved interoperability and how HL7 can help.

Please join us for the 29th plenary meeting that will occur on Monday, October 5th at the Sheraton Hotel in Atlanta, Georgia.

In Closing

I'd like to share with you two inspirational sayings that I recently came across online that regrettably did not credit the authors:

Refuse to ruin a perfectly good today, by thinking about a bad yesterday.

Yesterday is history, tomorrow's a mystery, today's a gift, that's why they call it the present; enjoy life to the fullest!

Best wishes to you and your loved ones for good health and plenty of laughter!

Co-located Meeting Boosts Attendance

Joint Meeting of HL7, IHE and ISO in Paris

By Michael Tan, Co-Chair, HL7 Patient Care Work Group; Senior Product Manager, NICTIZ

The HL7 May 2015 Working Group Meeting in Paris presented the perfect opportunity to combine the HL7 meeting with a joint meeting between the ISO TC215 WG6, the HL7 Pharmacy Work Group and the IHE Pharmacy group. The annual meeting took place on May 15 at the Concorde Hotel in Montparnasse, hosted by ASIP Santé.

The event in Paris was the largest joint meeting of the groups to date. The HL7 May Working Group Meeting most likely had a positive effect on the presence of HL7 and ISO representatives. The twenty delegates in attendance were from different backgrounds and a variety of nationalities ranging from the USA, France, Canada, Germany, Austria, Australia, Greece, Belgium, Portugal, Switzerland and the Netherlands.

The meeting commenced with a high level overview of the current activities of the three organizations. Christian Hay gave a presentation on the recent ISO activities and meeting in San Francisco, followed by José Costa Teixeira on IHE Pharmacy and John Hatem on the HL7 Pharmacy Work Group.

Vada Perkins from the FDA presented the details of the IDMP standards while Jean Louis Forget from the VIDAL group explained the requirements for the Medicinal Product Dictionary (MPD) and Niels Speksnijder from Z-index provided an update on the progress of the joint ballot of e-Prescriptions.

The HL7 Pharmacy Work Group covered how to find the most recent version of the HL7 Fast Healthcare Interoperability Resources (HL7 FHIR®) draft standard for trial use (DSTU) and how to understand the HL7 FHIR® resources. IHE confirmed their interest in this topic, and the groups discussed further collaboration considering how IHE requirements – such as workflow management and statuses – would be jointly checked as HL7 works on the fundamental resources.

In the afternoon Kai Heitmann explained how IHE profiles using ART-DECOR were implemented in North Rhine Westfalia for the patient centric Medication List. A similar type of project is underway in Geneva, Switzerland.

The last slot was dedicated to the IHE whitepaper on supply. This topic is not limited to pharmacy supply, but also includes all purchase and supply orders such as devices. For HL7 this would also concern orders and observations. José Costa Teixeira lead the session which featured a lively discussion on the contribution that could be expected from the HL7 Pharmacy Work Group and GS1.

This joint meeting was very useful for attendees and the day concluded with thoughts on how to improve collaboration for the upcoming 2016 meetings.

Post-Working Group Effectiveness Survey Insights

Results of the Post May 2015 WGM Effectiveness Survey

By Karen Van Hentenryck, HL7 Associate Executive Director

The Post Working Group Effectiveness Survey is well known to HL7's co-chairs. Sponsored by the Process Improvement Work Group (PIC), the survey attempts to measure the effectiveness of the working group meeting by co-chair-provided answers to a series of questions related to how well their work group was able to accomplish its work during the meeting.

This survey has been a part of our culture for several years now and is one of the work group health metrics. Recently, one of our co-chairs suggested that we share the results of that survey.

Before reading through the questions and responses, please be aware that 54 co-chairs representing 100% of the work groups responded to the survey. Most survey questions were optional, so each question did NOT receive 54 responses. Therefore, the pie charts provide two numbers: 1) The actual count of the co-chairs who provided the answer, followed by 2) the percentage of respondents who provided that answer (the numbers are separated by a comma). In the first pie charts below, for example, 51 co-chairs provided a "yes" response (94% of the respondents) while 3 (or 6%) provided a "no" response.

1: Was your work group represented at the Tuesday evening co-chairs dinner and steering division meeting?

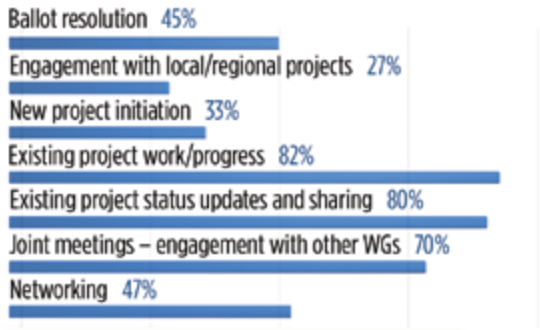
2: Did your work group achieve quorum for the majority of its sessions based on your WG's decision making practices?

3: Did your work group set objectives for the working group meeting?

4: If you answered "No" to the previous questions, please explain how you planned your meetings:

- *This was LHS first meeting at HL7 and we did not make any decisions. We were reviewing project charter and getting to know interested participants*
- *Work group met jointly with other work groups*

5: Did your work group set any of the following specific objectives for the WGM? *(choose all that apply)*



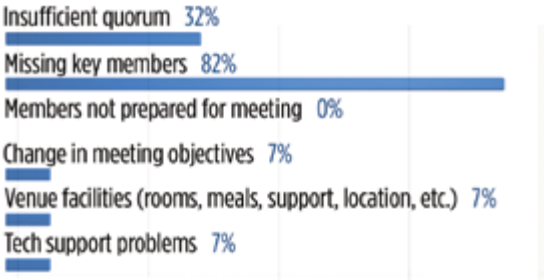
6: Were you able to substantively accomplish your objectives and meeting business?

Comments:

- *We documented feedback on project charter for further discussion in Atlanta*
- *But, our objectives were realistic in scope*
- *Key players attended this meeting with regards to our projects (this is not always the case in other international meetings)*
- *We made substantive progress but still have work to do for ballot resolution due to missing key commenters. Resolution will continue by teleconference*

7: What hindered your ability to achieve your work group objectives or planned work items

(choose all that apply)

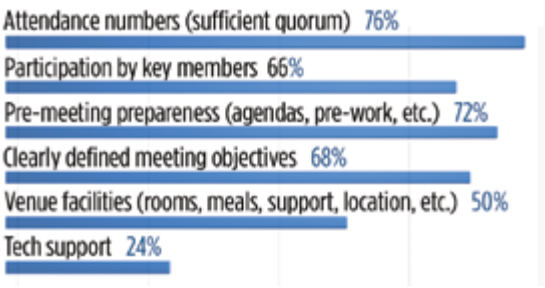


Comments:

- *Death of co-chair*
- *Some of the regular co-chairs and attendees were unable to attend Paris meeting*
- *We failed to achieve quorum during one quarter despite having appointed an additional acting co-chair*
- *Difficulty getting permission from any work group members to attend an international event*
- *One of the two co-chairs became ill*
- *Several of our key members weren't able to attend the meeting in Paris. We were still able achieve some level of progress. Wi-Fi was spotty*
- *Some items were discussed at the working group meeting and presented for vote on the first work group call after the Paris meeting*
- *We had people that were turned away due to lack of space/ chairs in the room. Not good! We had booked room for more than 10 in some quarters, as FHIR work gives more attendance*

8: What supported your ability to achieve your work group objectives or planned work items?

(choose all that apply)



Comments:

- *Key players attended and the facilities were very good*
- *While we had several key members attend, several others were not able to attend. Wi-Fi was spotty*
- *I never know what to select for Technical Support. I think of Technical Support as what you get when something goes wrong. We didn't need support, because nothing went wrong. But we did make use of the technical facilities. So maybe this question, if it means that, should say "Technical Facilities". Then people can check it if all went well. Or it could have an explanation after it, to say what checking it represents*

9: Would your work group recommend using this working group meeting venue and location again?

Comments:

- *The staff was very interested in our success. I could not ask for a better staff at the hotel*
- *Venue was costly*
- *The venue facilities themselves were very nice, but the remoteness of the location from the city center made it difficult to enjoy and engage with the setting after business hours*
- *The facilities themselves were quite nice. However, the remoteness from the city made it difficult to enjoy the setting after business hours unlike other venues (e.g., San Antonio)*
- *Air conditioning a problem throughout*
- *Despite location a distance away from Paris, the venue at the Hyatt Regency was great! Rooms, A/V support, food and hotel staff were top notch*
- *Yes we did have more international participation, but were missing regular participation due to funding issues*
- *Food was wonderful at this location*
- *Too remote*
- *Airport locations are not conducive to high attendance*
- *We were just barely able to meet quorum and key members were not present*
- *Maybe not out at the airport, but overall the location was outstanding and facilities to conduct meetings were excellent*
- *One of the best international venues we've had*
- *Would like a hotel closer to downtown Paris*
- *Paris was wonderful, but the location of the hotel was not. Location was adequate, but little available in the way of walking distance. Wi-Fi was spotty*
- *Paris is a good place, and the hotel was fine. But really it is too distant from Paris. So it is borderline to use this actual venue again. But I would still be happy with it*
- *Yes, recommend location. No, venue Technical issues re: network Unfortunately rooms too hot, both meeting and participant*

Continued on page 8

Available Online:

To see the responses to these Post WGM Effectiveness Survey for the last several years, please go to:

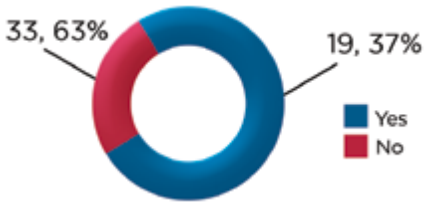
bit.ly/1HYmluz

Continued from page 7

Post-Working Group Effectiveness Survey Insights

Results of the Post May 2015 WGM Effectiveness Survey

10: Did your work group have additional participation from local/regional members?



Comments:

- *Participants from other work groups were present at our meeting*
- *I think the local European members could have been better engaged and am surprised at how difficult it was to get them involved*
- *Participation from several national affiliates was obtained*
- *We have very little if any local/regional participation in our work group sessions*
- *One local attendee and one from Germany*
- *We had a couple people attend from Europe (UK and Sweden) that we hadn't seen before*
- *Few extra persons only intermittently*

11: Does your work group anticipate having difficulty having enough co-chairs in attendance to achieve quorum at the next working group meeting?

12: If you answered Yes to the previous question, has your work group designated an acting chair for the next working group meeting?

13: Please enter any other comments or considerations that you would like to be considered by the TSC and/or PIC

- *We elected an interim co-chair prior to the working group meeting to help facilitate*
- *Thank you for the cruise; it was terrific*
- *As always, the HL7 staff does a great job of making everything run smoothly*
- *Consider Philadelphia for future meeting*
- *Please continue international locations as we are an international organization*

14: Are you or is anyone from your work group interested in running for one of the Board positions being elected this summer?

15: Are you aware of and feel you understand how Board nominations work?

Introducing the HL7 Standards Governance Board

By Mary Kay McDaniel,
HL7 Product Line
Architecture Program
Facilitator

Many across HL7 have been working to implement an integrated Standards Governance Board (SGB). This Governance Board is part of a framework that will bring consistency across all standards product families. The Mission and Charter for this new board can be found on the TSC Wiki page.

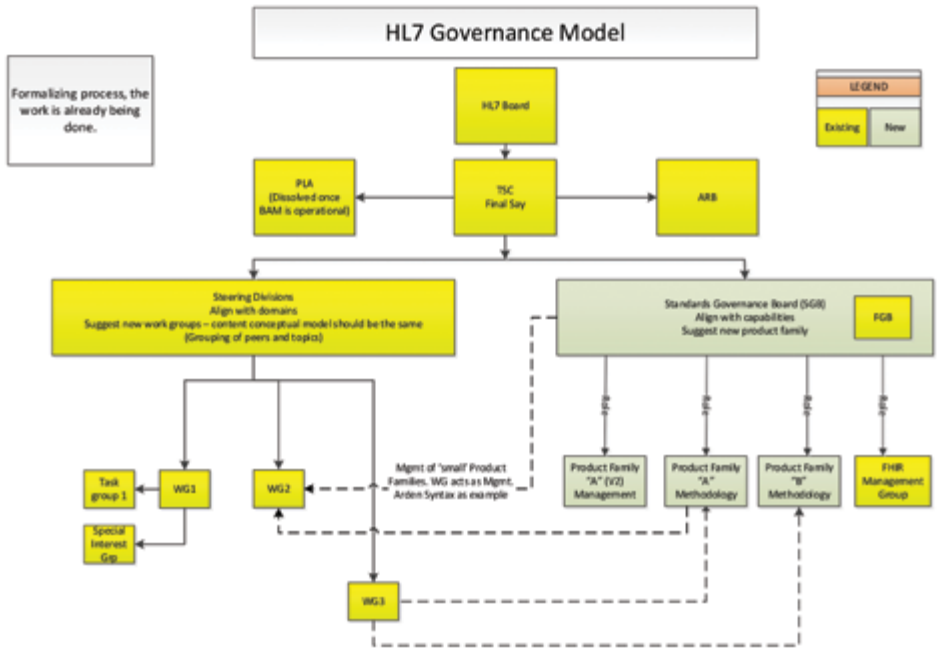
In the coming weeks, information about the initial SGB members and conversion plans from our existing operational steps and processes will be shared. We anticipate there will be a period of time in which management and existing governance groups will need to co-exist. The TSC and other work groups are working to ensure the least amount of disruption.

The SGB membership will consist of the following voting members:

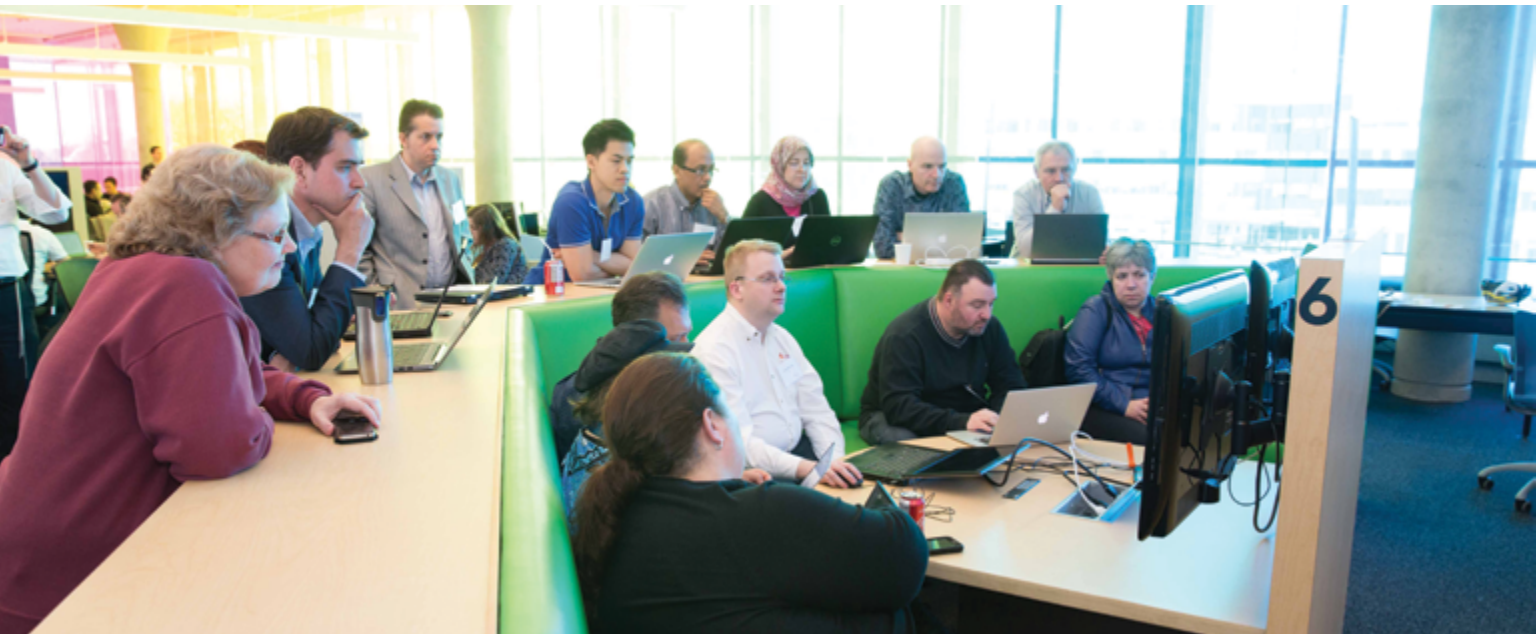
- Chief Technology Officer
- 2 Co-Chairs (1 elected from SGB membership, 1 appointed by TSC)
- TSC Chair
- ARB Chair or designated representative
- 5 Members-at-Large

A brief timeline for the rest of the process:

June – September 2015	• Identify potential SGB candidates for TSC review • Announce SGB members • Prepare insights/process overview for management and methodology groups for how to interact with the SGB, overview materials for October WGM rollout
October 2015	• Formal Announcement on Monday Plenary session by TSC Chair. • First official meeting for the SGB at WGM
January 2016 - ongoing	• SGB develops DMPs and other administrative processes



This diagram identifies how the Standards Governance Board fits into the HL7 Governance Model.



Hosted by Mohawk College in Hamilton, Ontario

FHIR® North – HL7 Canada's First FHIR Connectathon

By Lloyd McKenzie, PEng: Co-Chair, HL7 FHIR Management Group; Co-Chair, HL7 FHIR Infrastructure Work Group; Member, HL7 FHIR Governance Board; Consultant, LM&A Consulting LTD; and Senior Consultant, Information Technology Service, Gevity Consulting, Inc.; Member, HL7 Canada

FHIR® North—Canada's first FHIR Connectathon—was held on April 29, 2015 at Mohawk College in Hamilton, Ontario and was sponsored by Mohawk College, University Health Network and Gevity Inc. The event provided an opportunity for implementers to see whether they could implement and successfully interoperate using some portion of the HL7 FHIR® specification. The objective was to give Canadian implementers an opportunity to share in the sort of hands-on interactive experience that has been offered in the United States and other countries.

A total of 40-45 participants attended from various organizations including government healthcare agencies, software companies and college/university programs. The event was hosted by Mohawk who graciously offered the splendid view, seating and connectivity of the second floor of their Collaboratory Center. The day included introductory and in-depth presentations on HL7 FHIR® as well as a half-day of development to allow implementers to experiment with the HL7 FHIR specification.

The combination of presentations provided an introduction to HL7 FHIR and gave an overview of the Java API, SMART on FHIR and an explanation of why FHIR is having such a significant impact on the market so early in its life cycle. Presenters included Lloyd McKenzie (Gevity), James Agnew (University Health Network) and Josh Mandel, MD (Boston Children's Hospital) – all key leaders in the HL7 FHIR initiative.

The second-half of the day was intended for development and collaboration with others in the industry. Because of the high ratio of non-developers (approximately 50%), the afternoon also included an ad-hoc "FHIR hacking for non-techies" that included a detailed overview of the specification and an opportunity to explore FHIR simply by creating queries and manipulating instances via the University Health Network website. The session also provided an opportunity for executive level attendees to ask questions covering a wide range of FHIR-related topics.

At the end of the event, participants demonstrated how they were able to use HL7 FHIR within their solutions. Some teams had prepared code a few days before the event, whereas others started developing the day of the event. Below are examples of the demonstrations:

- A team demonstrated an immunization solution that used FHIR bundles

to represent individual immunizations and also explored encoding FHIR as 2D bar-codes to support capturing immunizations by non-connected systems.

- Another group demonstrated how their existing clinical data aggregator system added support to FHIR in about two days and added support for SMART on FHIR in about one hour.
- There was also a demonstration of an application using bluetooth proximity beacons and smart phones to manage patient arrival and admission.

Based on feedback that was received, the participants found it helpful to have the ability to interact with HL7 FHIR® subject matter experts and receive technical guidance throughout the day. Having the opportunity to ask questions, have discussions with other projects/participants and see hands-on use of HL7 FHIR from other colleagues made the event a success for attendees with a wide range of backgrounds. ■

Newly Certified HL7 Specialists

Congratulations to the following people who recently passed the HL7 Certification Exam

Certified HL7 Version 2.x Chapter 2 Control Specialist

APRIL 2015

Narendra Nalluri

MAY 2015

JianQing Yang
Ye Sun
Jialiang Zeng
Selina Liu
Caroline Rosin
Qian Hu
Zheng Ding
Mingyao Zhang

JUNE 2015

Swetha Nalakonda
Alvaro Paz Jimenez
Carmen Rodriguez Montero
Ricardo Benedicto Dorronzorro
Estefania de Luis Carretero
Chen Hao
Te Huang
Nathaniel Dash
Zhongzheng Li
Vijay DUNNALA
Luzdivina Agud Cardona
Francisco Ventura Nofuentes
Israel Muñoz Cebollero
Sofia Margallo Borreguero
Samir Sinha
Sirisha Rao
Kiran Sangem
Akshay Jangir
Mithun Kadam
Murali Krishna
Poonam Tayshete
Sarvesh Raut
Bhavesh Mandalia
Vinayak Bamane
Renuka Yadav
Prasad Ghuge
Pranamita Baishya

JULY 2015

Pedro Canet Ruiz
Melissa Yukari Kusumoto Gonçalves
Fabio Capponi
Daniel Fernández Iglesias
Oscar Merida Raposo
Kishore Pendyala
Wingina Lindamood, RN
Mark Pidgeon
Kimberly Moore

Certified HL7 CDA Specialist

MAY 2015

Shehzad Merchant
Vitaly Rodionov

JUNE 2015

Ihor Andrukhiv
Nishant Makawana
Aniruddha Mandale
Karan Thakkar
Sagar Sutar
Omprakash Sharma
Ashish Shetty
Annapurna Dabhade
Jekin Desai

JULY 2015

Adam Bloomfield
David Duca

Certified HL7 Version 3 RIM Specialist

MAY 2015

Jose Choi

JULY 2015

Cheng Yi Yang

Member Spotlight on Brett Marquard

HL7 Member Brett Marquard with wife Jenna and son Edison.

Brett Marquard attended his first HL7 working group meeting in January 2005 after a colleague asked if he wanted to participate in standards development. And so his journey began...10 years and many standards later, Brett is an integral member of the HL7 community.

Brett is a current co-chair of the HL7 Structured Documents Work Group. One of his most noteworthy HL7 roles to date is as the primary editor on the HL7 Consolidated CDA® (C-CDA), a standard that reconciled 12 healthcare exchange document types into one document and is required in the US Meaningful Use regulations. He is also the primary editor for the Data Access Framework – a US Fast Healthcare Interoperability Resources (FHIR®) profile to set data free. In addition to these notable standards, Brett has been the primary editor, or co-editor, on numerous HL7 health information exchange standards, including: Discharge Summary Release 2, Healthcare Associated Infections Release 2 through 6, Operative Note, Procedure Note, Progress Note, Quality Reporting Document Architecture Release 2 (QRDA), and Unstructured Documents.

Brett currently works as an independent consultant and is the principal at Rock River Associates where he focuses on the deployment of healthcare interoperability standards. He does his best to find projects that involve both the development and implementation of standards. Brett believes that being at the intersection of standards and implementation is what is most beneficial to HL7 and the health IT industry. In the past, he worked as a designer, developer and implementer for interfaces at Epic Systems.

Brett enjoys spending time with his wife Jenna and 2 year old son Edison. One of Edison's favorite things to do is make cameo appearances while Brett is on conference calls, running into his office to say "Daddy is working." In addition, cross-country skiing (Nordic) is a large part of his family and life. Brett has spent the past six years helping coach a high school team in Amherst, MA. For the past thirteen years, Brett has found his way to northern Wisconsin to compete in the largest cross-country ski race in North America, the Birkiebeiner, with his father. Ask him about skiing a marathon in sub-zero temperatures the next time you see him.

Brett and his family spent 2014-2015 away from Amherst. His wife is an industrial engineering professor at the University of Massachusetts-Amherst with an interest in informatics. He admits that they have some fun conversations at night. While she was on sabbatical, the family joined her for five months in Portland, Oregon at Oregon Health and Sciences University and then another seven months at the University of Minnesota – Twin Cities. They recently moved back to their home in Amherst, MA.

HL7 Terminology Authority

Have You Heard of the HTA?

By Sandy Stuart,
Co-Chair, HL7 Health Terminology Authority;
Executive Director Health IT Standards, Health IT Strategy and Policy, Kaiser Permanente Information Technology

Purpose of the HL7 Terminology Authority

The purpose of the HL7 Terminology Authority (HTA) is to ensure that HL7 standards are provided with timely and high quality terminology products and services to meet its business needs. As a representative body of HL7 International, the HL7 Terminology Authority acts as the point of communication concerning terminology and/or code systems with other standards development organizations (SDOs) and with the working groups within the HL7 organization.

Scope

The Terminology Authority is concerned with coded content and descriptions specified in HL7 standards about choices, composition, use, meaning and interpetation.

The scope of responsibility of the HL7 Terminology Authority includes:

Advice

- Provide advice, where needed, on the acceptability of vocabulary proposed for inclusion in HL7 vocabulary (NOT "infrastructure controlling" vocabulary, e.g. CS data type).
- Provide advice on the tooling requirements to meet the objective of consistency of meaning representation across HL7 products.
- Provide advice to support the governance of terminology content across HL7 standards.

Quality

- Develop and maintain HL7 quality processes and measures related to HL7 terminology to support interoperability and clarity of meaning across HL7 standards.
- Develop quality standards for a licensed user community when using external terminology systems in HL7 standards and support sustainable interpretation of that terminology.
- Prepare updates to the Governance Operations Manual (GOM) for consideration by the HL7 Board regarding terminology use and development in HL7 products.

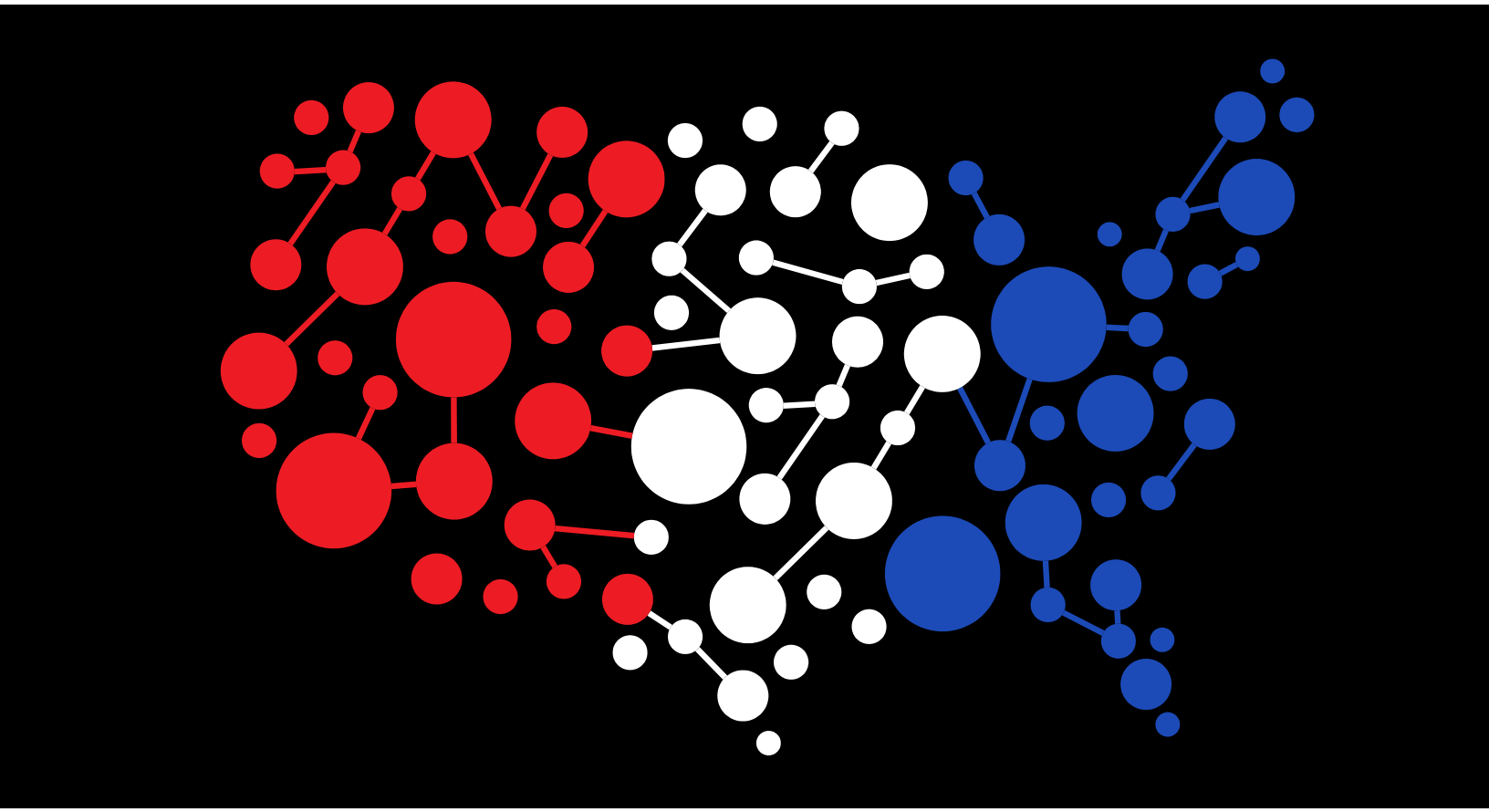
Relations

- Maintain relationships with external terminology providing standards development organizations to ensure legal and safe use of their products in HL7 standards.
- Provide guidance to the Technical Steering Committee (TSC) on the implementation processes and policy changes that impact the work groups.
- Work with the Vocabulary Work Group, who will implement the processes and governance.

The Terminology Authority serves in an advisory capacity to the existing harmonization process. All final terminology decisions are made as part of the harmonization process.

Composition

The HTA is composed of six individuals selected from the current HL7 membership and who possess the skills, expertise and experience noted on the HTA webpage. The HTA members, who are appointed by the HL7 Board from the slate of nominees, must include at least two members of HL7 International affiliates and one co-chair from the Vocabulary Work Group. The Board shall ensure that appointments to the HTA are consistent with the goals and objectives currently defined for the HTA and best serve the interests and responsibilities of HL7.



Furthering Health Care Objectives in the US

The HL7 US Realm Steering Committee

By W. Edward Hammond, PhD, Co-Chair, HL7 US Realm Steering Committee and Secretary, HL7 Board of Directors

Over the past several years, the United States has seen a significant increase in interest in several areas, including: sharing data among sites; creating health information exchanges; transitioning the barriers between research and clinical domains; creating a common data model; creating and populating data registries; learning health systems; and most recently precision medicine. All of these areas require interoperability, which in turn requires the use of standards. Significant funding in developing the required functionality in these areas resulted from the American Recovery and Reinvestment Act, (ARRA) of 2009. Much of those funds went to the Office of the National Coordination (ONC), which used them to create groups within ONC to drive activities that influenced the need to develop certain standards and implementation guides. Examples of these groups include the Standards and Interoperability Framework, Structured Data Capture, and Data Access Framework. Other US government agencies such as the Food and Drug Administration, the Centers for Disease Control, the National Library of Medicine, the Department of Defense, and Veterans Affairs have also pursued their interests within HL7 International.

Initially, HL7 addressed these needs by creating a task force on the Technical Steering Committee (TSC) known as the US Realm Task Force. This group coordinated US realm activities within HL7, including the approval of project scope statements for projects designated

for the US realm. Recently, the US Realm Task Force was restructured and renamed the US Realm Steering Committee (USR-SC) as the need arose to designate a group to have the authority to govern, administer, and manage US Realm activities. The USR-SC is now an HL7 International Board Committee and its chair is appointed and approved by the board. The USR-SC reports to the Board, but coordinates its operational activities through the TSC. The mission and charter statement of the (USR-SC) was approved by the Board in June 2015. The mission statement, charter, and composition of the USR-SC are included below.

Mission

The HL7 US Realm Steering Committee's (USR-SC) mission is to provide the US Realm technical direction to the HL7 International organization to achieve the vision of creating the best and most widely used standards in US healthcare. In conjunction with the HL7 International TSC, the USR-SC oversees and coordinates the US Realm technical efforts contributed by HL7 participants to ensure that the efforts of the HL7 International Working Group (HL7 I-WG) are focused on the overall HL7 mission while still addressing US Realm needs. The USR-SC reviews and provides oversight to US Realm projects during the approval process. This allows the USR-SC to identify gaps and overlaps between projects of the Working Group and the US Realm requirements. The USR-SC is also responsible for establishing appropriate governance, management and methodology structures necessary for the US Realm focused standards development. The USR-SC should follow an approach similar to how the International TSC is establishing and overseeing governance, management and methodology for HL7 International.

Charter

The HL7 US Realm Steering Committee is responsible for overseeing the execution of US Realm standards development within HL7 International by assuring that the efforts of the I-WG are in line with the product and services strategy set forth by the Board. Since there will be considerable overlap between the responsibilities of the USR-SC the HL7 International Technical Steering Committee (TSC), the two groups will need to coordinate closely.

The HL7 International TSC oversees the technical operations of the HL7 I-WG and assures that the HL7 I-WG works smoothly together and covers the work scope in a consistent manner. The USR-SC will restrict its activities to oversight of US Realm related projects brought forward to HL7 International for development by HL7 International work groups. The USR-SC does not have direct authority over the HL7 I-WG; rather it will work through the HL7 International TSC should such oversight become necessary.

The HL7 International TSC serves as the primary communication vehicle for the technical operations of HL7 International and serves as the technical authority of HL7 International, communicating status and guidelines regarding standards and operations. The USR-SC will closely coordinate its communications with the HL7 International TSC.

Composition

The USR-SC is composed of the following members:

- A chair who is appointed by the HL7 International Board Chair
- The chair of the HL7 International Technical Steering Committee who serves as the USR-SC co-chair
- The HL7 International Chief Technical Officer (CTO) (HL7 International TSC Vice-Chair) who serves as a USR-SC co-chair.
- Four members who represent the four HL7 International steering divisions (one from each steering division)
- One member representing the Architectural Review Board (ARB)
- Up to four ad hoc members representing external stakeholder organizations
- Three at-large members, at least one of whom should represent the international community

The ad hoc and at-large members are selected to provide interested and informed persons to best deal with topics of interest in the US Realm. ■

A New Behavioral Health Platform for Information Exchange in the Netherlands

Koppeltaal on HL7® FHIR®

By Sergej van Middendorp, MBA, MA, Architect and Project Lead, Koppeltaal Foundation and Researcher, developer and consultant, milesahead.eu

Robert Stegwee, MSc, PhD, FHL7, Chair HL7 Netherlands and Principal Consultant, Capgemini Consulting

Rob Mulders, Vice Chair, HL7 Netherlands and CEO, Furore

Introduction

Dutch behavioral healthcare providers are investing in eHealth in order to support blended care plans, which mix face-to-face treatment with self-directed work in eHealth interventions. These interventions are increasingly developed by independent companies which is an integration challenge for the existing EHR systems and eHealth platforms.

The Challenge

Given the evolution of health IT, behavioral health institutions are facing a multitude of applications that have to talk to each other. Until recently, no such large scale integration effort had been necessary, as most of the work was supported through a single EHR that also included logistical and administrative support. Faced with the eHealth investments, architecture of typical behavioral healthcare providers is evolving to a four-tier model as illustrated in Figure 1.

The lowest layer is formed by the traditional hospital information system (HIS) or practice management system (PMS) for non-hospital providers of behavioral healthcare. The electronic health record (EHR) has been in place for a few years and tends to be focused on the legal requirements for documentation, rather than true support for the work of the professional. For the purpose of providing blended healthcare, a few eHealth platforms have evolved. They provide a common place of interaction for patients and professionals, including secure messaging, online therapy modules, and assessment tools. More sophisticated self-directed interventions are being developed by niche players that stem from the serious gaming or virtual reality industry.

Individual providers will choose a single eHealth platform for engaging their patients in blended care. However, they do want to take advantage of new and highly effective interventions that are being developed independently, often in the form of online and sometimes multiplayer games that address behavioral problems. The key challenge is to provide integration between independently developed eHealth

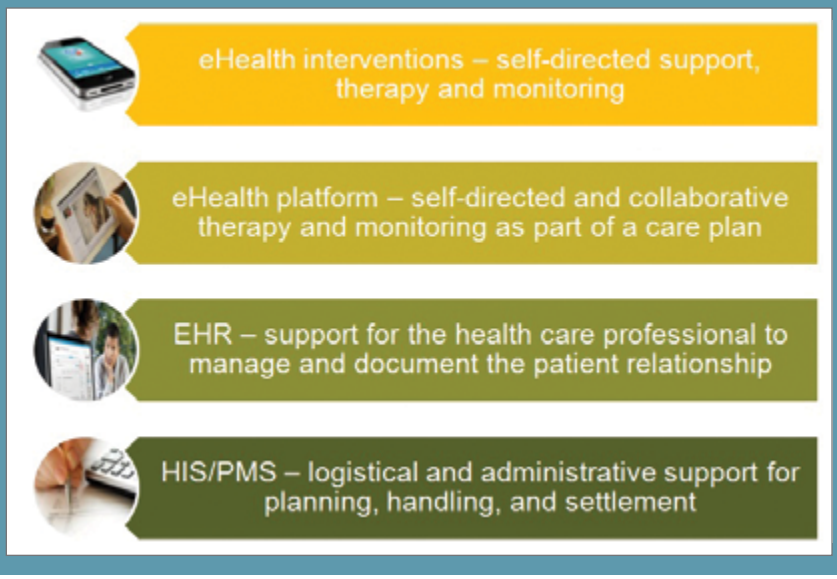


Figure 1: The four-tier model of information systems in behavioral health

interventions and the eHealth platform of choice of the provider of behavioral healthcare.

Joining Forces with HL7

Supported by health insurance companies, the Dutch behavioral healthcare sector has joined forces to develop a shared integration language and service to share data between eHealth interventions and eHealth platforms. This has the following benefits:

- Patients can work more independently on improving their condition and self-reliance. It is also easier to involve their family and friends
- Behavioral health institutions have more flexibility in what they offer patients and will lower both the costs of labor and of IT
- eHealth platform developers can increase their market reach and broaden their product portfolios
- Health insurance companies obtain better care at lower costs

HL7's Fast Healthcare Interoperability Resources (FHIR®) emerged as the best standard to implement the architecture of what is now called "Koppeltaal" (which is Dutch for 'Connectivity Language'). Applications can register with the Koppeltaal server and use a publish subscribe model to share data. In its first version, Koppeltaal supports the exchange of HL7 FHIR messages between eHealth platforms and a game for children with autism. The architecture of Koppeltaal is visualized in Figure 2.

Each provider of behavioral healthcare is free to choose their own eHealth platform. Through the connection with the Koppeltaal Server, they can include all available eHealth interventions, independent of the eHealth platform chosen. Including eHealth interventions is simple. The language supports the identification of specific eHealth interventions in the specification of an individual care plan for a patient in the eHealth platform. The patient will then be provided with the link to the appropriate intervention, which is already aware of the key patient details. Conversely, the eHealth intervention is able to communicate back the key achievements of the patients in using the game or other intervention, to be included in the therapy overview in the eHealth platform.

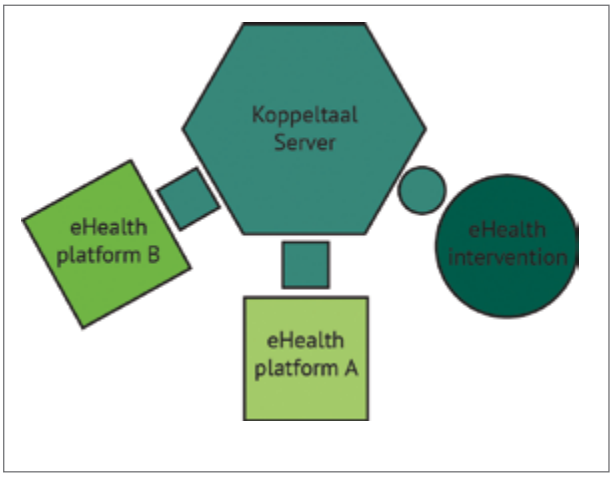


Figure 2: Visualization of the Koppeltaal architecture. Koppeltaal means 'Connectivity Language' in Dutch.

The key reasons for choosing FHIR are its built-in flexibility, its alignment with current internet standards, its extensibility, and its profile mechanism.

HL7 FHIR and the Support of FHIR API's

As mentioned, HL7 FHIR emerged as the best standard to implement the Koppeltaal architecture. The key reasons for choosing FHIR are its built-in flexibility, its alignment with current internet standards, its extensibility, and its profile mechanism. The Koppeltaal server uses one of the FHIR reference implementations, the open source FHIR API for .Net. This library is maintained and supported by the company Furore from Amsterdam, The Netherlands. The founding father of the .Net API, Ewout Kramer, is on the core specification team of the HL7 FHIR standard, together with Grahame Grieve from Australia and Lloyd McKenzie from Canada. The fact that the open source APIs for FHIR (besides the .Net one there are also Java and Delphi reference implementations) are widespread and used by a fast growing community, was important for the Koppeltaal Foundation to be able to make the decision to rely on FHIR.

Achievements and next steps

The first version of the Koppeltaal Server and its initial interfaces were tested in December 2014. Koppeltaal now runs in beta and is being adopted by the eHealth platforms one by one. The beta version was demonstrated to high acclaim at the 3rd HL7 Netherlands Working Group Meeting in April 2015, as part of the close collaboration with the HL7 Netherlands FHIR team. After phase 1, Koppeltaal expects to extend the language and service to connect to EHR and Routine Outcome Measurement (ROM systems). The International FHIR Developer Days on November 18-20, 2015, will provide a great opportunity to work with the Koppeltaal specifications and to provide input for its further development. ■

Interoperability for Behavioral Health

Improving Meaningful Use HL7 Standards Adoption Using Semantic Mapping

Ioana Singureanu, Co-Chair, HL7 Conformance & Guidance for Implementation/ Testing Work Group and Principal Consultant, Eversolve LLC

Ken Salyards, Information Management Specialist, Substance Abuse and Mental Health Services Agency (SAMHSA)

Behavioral health providers are expected to adopt standards-based information exchanges without the benefit of financial incentives offered by the Centers for Medicare and Medicaid Services (CMS) to those providers who demonstrate Meaningful Use (MU) of EHR systems. Therefore, these providers require a cost-effective approach to interoperability that relies on open-source and standard-based software tools to leverage the collective investments of federal, state and private sector stakeholders.

To reduce the cost of interoperability, the Behavioral Health Interoperability demo, initiated by the Substance Abuse and Mental Health Services Administration (SAMHSA), implemented software components and developed methodologies for EHR systems sharing healthcare information using the standards and implementation guides required by the Meaningful Use certification criteria. The certification criteria include the adoption of Consolidated Clinical Document Architecture templates (C-CDA®) for document-based exchanges, HL7 Version 2.7.1 profiles for laboratory results and orders (Laboratory Results Interface [LRI] and Laboratory Orders Interface [LOI]) in addition to Health Quality Measures Format (HQMF), Quality Reporting Document Architecture (QRDA), and the emerging implementation guides for HL7's Fast Healthcare Interoperability Resources (FHIR®).

The level of difficulty increases for implementers each time a new implementation guide (IG) or format is proposed for adoption. Each system must map local business data to a variety of formats (e.g. HL7 Version 2 or CDA R2) based on the constraints and criteria defined by implementation guides (e.g. Consolidated CDA, Laboratory Results Interface, and the Health Quality Measure Format). The challenge for implementers is to not only understand the information exchange format and the implementation constraints and guidance, but also to create semantic relationships between local data elements and the standard data elements identified in the target implementation guide. If these semantic relationships are incorrect, the resulting CDA document or HL7 Version 2 message may pass validation and even certification, but may carry the incorrect business data. These semantic errors could amplify when a health information exchange (HIE) or other data aggregation system combines information received from a variety of senders. Each semantic error further limits the ability of such systems to process the data pertaining to a patient population.

The Behavioral Health Interoperability demo addresses this semantic challenge by basing its mapping approach on the Open Management Group's (OMG) Model-Driven Message Interoperability (MDMI™) specification. The MDMI allows sending systems to first specify the meaning of their data by relating it to a common Referent Index of business data elements. The EHR local data can then be represented correctly as an IG-specific payload using set "standard" maps, which describe how business data is represented in a specific CDA template, HL7 Version 2 profile, HL7 Fast Healthcare Interoperability Resources (HL7 FHIR®) profile, etc. These computable runtime maps provide add-on clarifications for implementers. As new implementation guides and profiles/templates are developed by HL7 or other stakeholders, the Referent Index business data elements can be identified and the mapping can be modeled alongside each template and profile. A model driven approach promotes the reuse of the Referent Index as the canonical representation of all the data that is exchanged through any of the interoperability specifications required by Meaningful Use. The importance of correctly representing business data when creating a new profile or template is evident in the way other open-source tools start the development of a new template. They first create a data model of required

data and then apply the necessary constraints to the underlying standard structure to support the data set. The model-driven approach promotes the reuse of business data elements for two purposes:

1. To help applications clarify the semantics of their local data
2. To help profile developers clarify how a message or document would represent business data elements in an interoperable way using standard constructs and syntax

The resulting architecture proposes two sets of open-source components intended to provide a clear separation of design vs run-time concerns throughout the development process (i.e. IExHub REST). This separation offers two benefits: (1) it increases the reuse potential of the software by allowing the functional specification to be reused with different non-functional requirements, and (2) it facilitates the automated generation of infrastructure code addressing non-functional concerns pertaining to run-time behavior. Based on experience, design time tools require robust, vetted models which allow us to develop better end-user tooling based on user feedback.

Use of model-driven mapping to address the consistent representation of business data across HL7 standards and implementations:

- Simplifies the process of mapping local EHR semantics to standard semantics by using a canonical information representation called a Referent Index. This concept is based on the MDMI and promotes a rigorous approach of mapping local business semantics to common business semantics than basing them on information exchange format semantics which are typically too generic and prone to misinterpretation
- Creates reusable, open-source mapping definitions that enable diverse EHR systems to conform to common information exchange formats. A library of mapping/transformation models specific to an information exchange standard implementation guide (e.g. HL7 C-CDA 1.1, HL7 LRI, etc.) would ensure the meaning of the business information is mapped identically across information exchanges
- Promotes mapping to implementation guides, not to a base information exchange standard/format. This important principle acknowledges that health information technology (HIT) standards require explanation using additional constraints before a real-life implementation is possible. By mapping to an implementation guide (IG) or a profile of a standard, we ensure that the business semantics are clearly addressed and have unambiguous or unique representations in the payload for each business data element. This principle also guarantees that the complexity of the "on the wire" representation of business data is isolated to a specific map and does not permeate into an application's own representation, thus separating concerns of application optimization from information exchange optimization
- Promotes model-based development of specifications for new profiles and templates traceable to the Referent Index business data elements leading to implementation ready specification

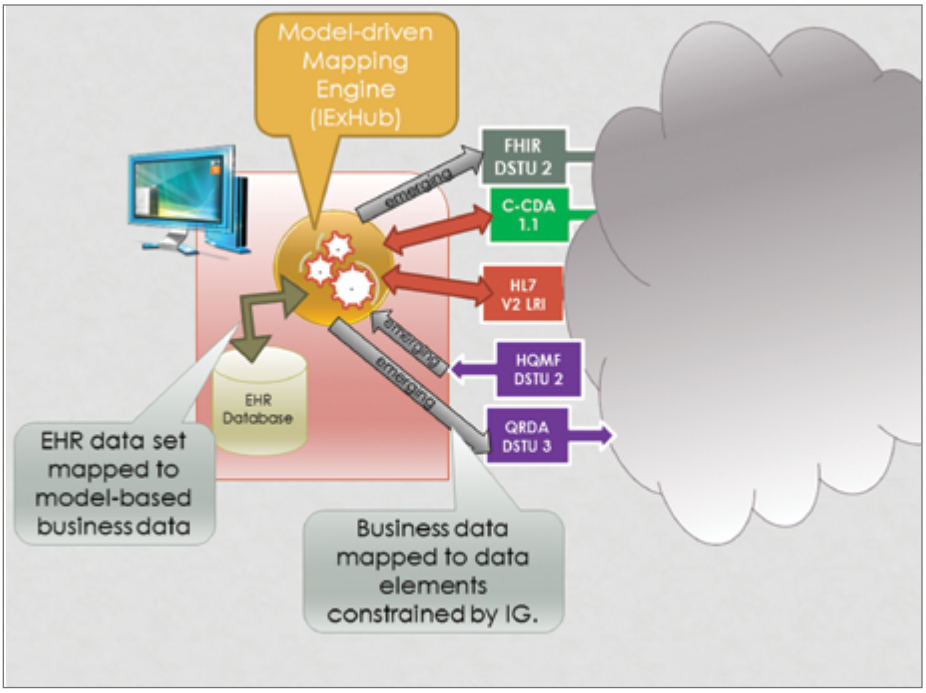


Figure 1: Model mapping (using open source tools) could simplify the implementation of MU2 and MU3 criteria

References and follow up: http://gforge.hl7.org/gf/project/cbcc/frs/ IExHub_Interop_Projects ■

Gil Alterovitz, PhD, Co-Chair, HL7 Clinical Genomics Work Group; Assistant Professor at Harvard Medical School and the Computational Health Informatics Program at Boston Children's Hospital

David Kreda, Business Translation Consultant, SMART Platforms Project, Harvard Medical School/ Boston Children's Hospital

Smart on FHIR for Genomics

Specifications To Enable FHIR-based Clinico-Genomics Apps

HL7 Fast Healthcare Interoperability Resources (HL7 FHIR®) is poised to make genomic apps at the point of care a reality, as described in **SMART on FHIR Genomics: Facilitating Standardized Clinico-Genomic Apps** (*Journal of the American Medical Informatics Association*, August 2015).

The paper's authors (including Gil Alterovitz and David Kreda) describe how researchers at Harvard Medical School, Boston Children's Hospital, and Vanderbilt University created working prototypes of genomic FHIR resources and SMART on FHIR profiles:

> *Both to develop and test our solution, we attached a FHIR Application Protocol Interface (API) layer to proprietary sequencing platforms and EHRs in order to expose gene variant data for presentation to the end-user. Three representative apps based on the SMART platform were built to test end-to-end feasibility, including integration of genomic and clinical data. Our prototyping work suggest that an entirely data (and web) standards-based approach could prove both effective and efficient for advancing personalized medicine.*

At scale, this effort will yield broad dividends. It would enable genetic sequencing vendors to deliver data and analytical reports to the point of care.

In addition, genetic sequencing vendors will be able to use the same SMART on FHIR technology being adopted by EHR vendors to access clinical data, which assists in the analysis of sequencing results.

Finally, the same SMART on FHIR solution will offer app developers a simple, developer-friendly way to access both the clinical and sequencing data to create diverse clinico-genomics apps (Figure 1).

The progress in incorporating SMART on FHIR Genomics specifications into FHIR has been a joint effort with the HL7 Clinical Genomics Work Group.

This synergy has allowed feedback and interaction in improving standards, allowing FHIR to incorporate views from different stakeholders. SMART on FHIR Genomics components are already part of proposed FHIR's Draft Standard for Trial Use Release 2 (DSTU 2) after being balloted positively within the work group this past March.

At the May 2015 HL7 FHIR meeting in Paris, the HL7 Clinical Genomics Work Group submitted a follow-on Project Scope Statement to further expand clinical genomics in FHIR, including ideas for SMART on FHIR Genomics components that are not yet part the DTSU R2. The Project Scope Statement calls for resource extensions,

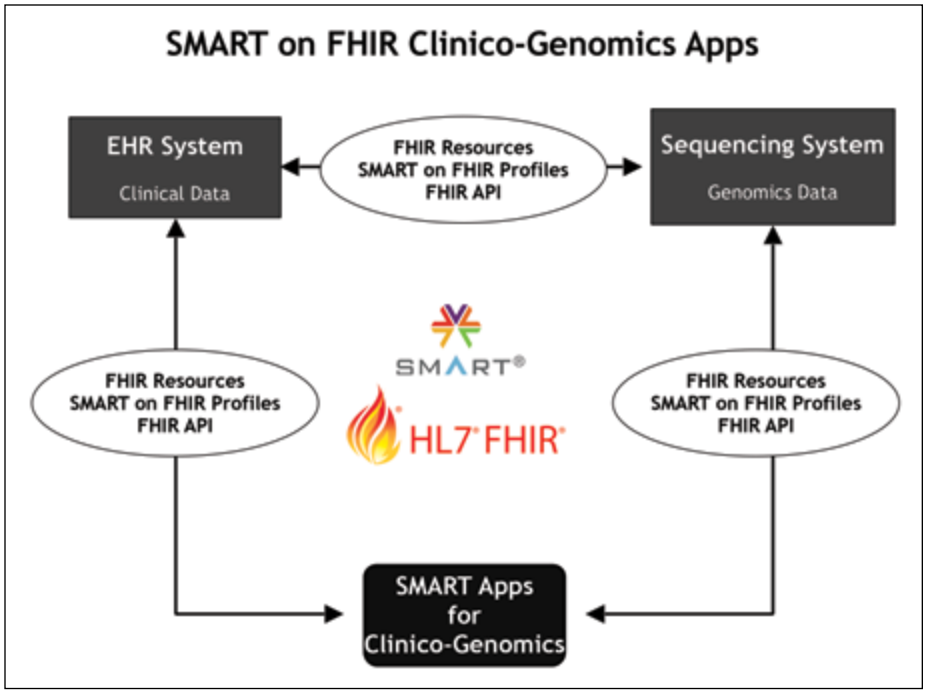


Figure 1: SMART on FHIR Clinico-Genomics Apps

profiles, terminology standards, and a new sequence resource to enable FHIR to handle clinical genetic and genomic data, as well as biomolecular findings and interpretations. The HL7 FHIR Domain Experts Steering Division approved the project scope statement and work in ongoing to develop specifications for the next FHIR release.

With continuing HL7 community support, next year's FHIR Normative Edition will substantially advance the integration of genomic data into clinical care. ■

About SMART on FHIR

SMART on FHIR is a specification developed at Harvard Medical School and Boston Children's Hospital for a standards-based medical app platform.

In addition to adopting HL7 FHIR for baseline resource definitions and the FHIR RESTful API, SMART provides FHIR profiles for ensuring semantic consistency.

SMART has also adopted the OAuth2 and OpenID Connect web standards for authorization and authentication, respectively.

SMART provides specifications and software for launching HTML5-based web apps or native mobile apps from or linked to an EHR system.

For more information, please visit:

http://smarthealthit.org.

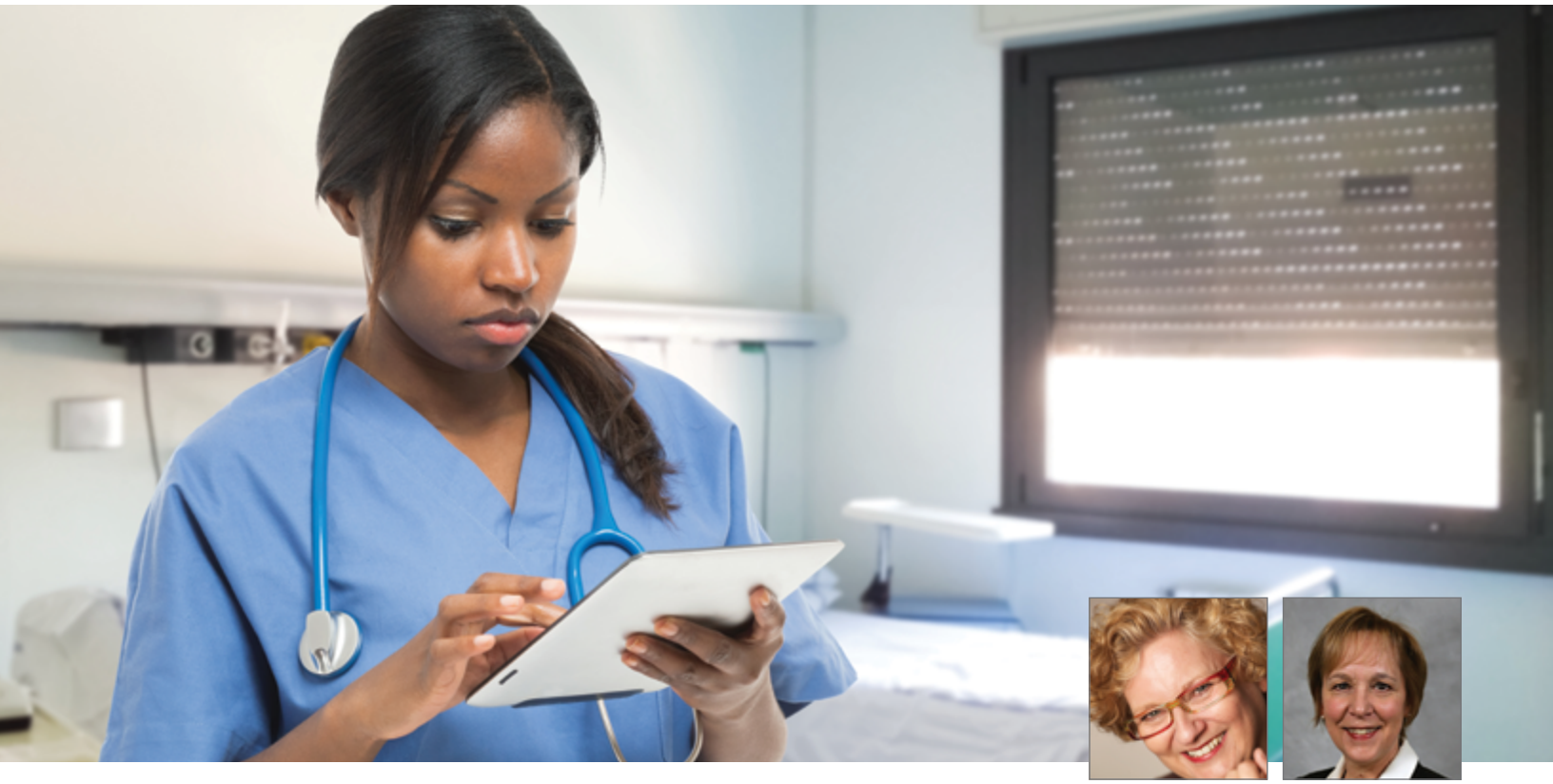
HL7 Welcomes New Members

Gold

- American College of Cardiology
- ELXR Health Inc.
- UMass Memorial Health Care
- WiseDesign

Organizational

- Agence eSante Luxembourg
- American Clinical Laboratory Association
- Incerio, LLC
- Ifa united i-tech, inc.
- Mercer University
- Point Click Care
- Pulse Systems Inc.
- The Sequoia Project
- Sutter Health
- Twin Lakes Regional Medical Center



Supporting Information Technology for Nurses

Participating in the Interoperability Showcase at the NI2016 Conference

By Anneke Goossen-Baremans, MScN, Researcher and Health Informatics Consultant, Results4Care

Joyce Sensmeier, MS, RN, BC, CPHIMS, FHIMSS, FAAN, Vice President Informatics, HIMSS

Introduction

The HL7 Nurses Work Group is organizing a HIMSS Interoperability Showcase™ during the 13th International Congress in Nursing Informatics. This joint effort between the HL7 Patient Care Work Group, the EHR Work Group, and the CIC Work Group, will be hosted in collaboration with NI2016, IMIA-NI, ICN, HIMSS and IHE. The conference, which will be held in Geneva, Switzerland, on June 25-29, 2016, will welcome about 1,000 nurses and medical professionals from around the world. The conference will provide an opportunity to hear the latest scientific developments, from research to implementation results for the benefits of patients; engage in lasting collaboration and professional relationships; and participate in discussions and debates on controversial informatics topics. Attendees will also learn from others in their field, and connect to the key leaders in informatics. The 2016 conference will feature its first HIMSS Interoperability Showcase to demonstrate the interoperability of nursing electronic health record applications, devices and apps communicating patient data using interoperability protocols including HL7 standards and IHE profiles.

The Project

The project is focused on the development and testing of a use case of interoperable nursing applications, deploying various interoperability standards from HL7 and IHE. The showcase will leverage both new and existing resources with suggestions for modifications that come out of testing at the connectathons. The project will deploy a set of HL7 and other resources, including but not limited to the list below:

- HL7 Version 3 Care Record Message with Basic Patient and Provider Data (in particular CMETs Person, Patient, Provider, Professional, all universal) and specified Nursing Content

- HL7 Version 3 Clinical Document Architecture (CDA®) examples, in particular from the German test sites, for nursing content
- Domain analysis models for pressure ulcer prevention, care plan, concern and medical devices, where implementable
- HL7 Version 3 Assessment Scale Draft Standard for Trial Use (DSTU) for Braden Scale and Pain scale
- Detailed Clinical Models length, weight (published), vitals signs, such as heart rate, and Braden Scale and Pain Scale
- HL7 Version 3 Care Plan R-MIM (if this can be converted into Version 3 message content)
- If implementable: HL7 Fast Healthcare Inoperability Resources (FHIR®) resource for care plan and other to be determined resources that fit nursing care
- HL7 CDA Release 2 care plan templates
- The selection of the specific and feasible set of the above potential sources is part of the project
- The interoperability resources used will be refined as the project matures.

Internationally, nursing care is lagging behind other health and medical specialty domains when it comes to the level of IT use, dedicated applications, and nurses' involvement in development and deployment. Although there have been many connectathons and showcases in the past, they have addressed clinical areas other than nursing care. On the other hand, there is an increasing number of patients requiring nursing care after treatment due to demographic developments and other factors. Hence, it is timely to demonstrate that nurses, standards developers, organizations and vendors are indeed able to support nursing care coordination and documentation.

Opportunity for Nurses

The HIMSS Interoperability Showcase during NI2016 offers nurses the chance to see the interoperability of nursing electronic health record applications, devices and apps communicating patient data using interoperability protocols such as HL7 standards and IHE profiles.

The HIMSS Interoperability Showcase is your opportunity to:

- Learn how interoperable nursing applications and systems can improve care coordination
- Engage with nurses that are leading today's interoperability efforts
- Understand how standards enable the interoperability of systems from different vendors

Opportunity for Vendors

The HIMSS Interoperability Showcase during NI2016 offers health IT solution providers the chance to play a critical role in leading the evolution of healthcare while connecting with qualified, engaged decision makers. The vendor-neutral, live environment allows providers to collaborate to maximize the collective impact of their technologies, demonstrating how seamless health information exchange and true continuity of care contribute to improved outcomes, more engaged consumers and regulatory compliance.

The HIMSS Interoperability Showcase is your organization's opportunity to:

- Compare your solutions side-by-side with other health IT solution providers
- Display the functionality of your technologies while engaging decision makers in simulated health journeys that allow your key messages to resonate with their unique needs
- Connect with industry leaders and experts, including system developers from healthcare provider organizations
- Represent the patient perspective while joining forces with other state-of-the-art health IT solution providers
- Demonstrate your thought leadership before an elite group of healthcare providers, policy makers and industry VIPs ■

Easy Search by Category

HL7 Education Portal Gets New Look This Fall

By Sharon Chaplock, PhD, HL7 Director of Education

HL7 launched the Education Portal in late 2013 as a repository of certification preparation resources and recordings of live training and professional development webinars. Since then, it has served members and non-members alike, providing a gateway to both paid and free training and education materials for the worldwide HL7 community. There is something for everyone, including project and product managers, implementers, software engineers, clinicians and business analysts working within the HL7 space.

The HL7 Education Portal now offers more than 50 programs on topics such as: HL7 Fast Healthcare Interoperability Resources (HL7 FHIR®), Meaningful Use, skill building in the standards, health IT policy, electronic health records, certification exam preparation and much more. It also supports an archive of free Member Advantage Webinars that address timely topics such as the Argonaut Project, telehealth, genomics, FHIR as a draft standard for trial use (DSTU), policy issues, and leadership addresses on the state of HL7 from working group meetings.

With the growing number of offerings supported in the Education Portal, HL7 decided to migrate all its recorded resources over the summer to a new and improved platform. This new platform, called the Blue Sky Path™, reorganizes and makes the content more easily accessible. It is a next generation learning management system (LMS) in BlueSky Broadcast's suite of software that currently supports HL7's Education Portal. Path™ provides HL7 with a cloud based, digital storehouse for HL7's educational archive and is accessible on any device, no applications required. That means you can use your tablet, mobile phone or desktop computer to access and view the entire library of offerings from wherever you are, 24/7/365.

The new Education Portal has a bold, graphic look and allows you to search by category instead of scanning a long list of titles and topics. That makes finding topics you're looking for easier and faster. Each title features a category banner designed by HL7's Web Developer, Laura Mitter.

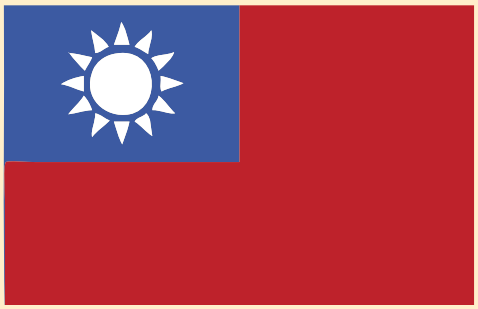
The HL7 Education Portal provides Certificates of Completion that users can print after having viewed the programs that offer CEUs. The newly designed Education Portal also offers a feature called "My Activity." This maintains a record of programs and certificates earned for each user that can be accessed at any time. The "My Activity" feature also serves as a transcript database of CEUs earned within the Education Portal.

We hope you take time soon to log in through the HL7 website to view the new and improved Education Portal. The extensive resources available are now easier to find than ever before. Just select "Education Portal" from the Training tab in the navigation bar to take advantage of all these HL7 education offerings.

Affiliate Spotlight: HL7 Taiwan

Background on HL7 Taiwan

HL7 Taiwan was established in 2001 and is actively involved in HL7 International and in promoting standards in the Asia-Pacific region. The affiliate organizes and hosts the annual HL7 Asia-Pacific Conference as well as numerous seminars and tours on topics such as hospital management, electronic



health records, and information standards. HL7 Taiwan will also hold the 4th HL7 Asia Symposium in Taipei in June 2016.

What are the most successful HL7 implementations in Taiwan?

The HL7 Clinical Document Architecture (CDA®) is widely used across the country. CDA and associated implementation guides have been used to establish a patient-centric infrastructure for the exchange of electronic health records. In addition, Taiwan currently has 277 certified CDA specialists.

What other implementations are currently underway in Taiwan?

HL7 Taiwan is actively promoting HL7 standards such as HL7 Version 2.x, Taiwan Medical Template, HL7 Version 3, CDA Release 2 and others. The government has vigorously implemented CDA into electronic medical records (EMR). We also have plans to implement the HL7 Structured Product Labeling (SPL) standard into medical devices.

What other health IT standards are used in Taiwan?

The HL7 CDA Release 2 standard is the most commonly implemented health IT standard in Taiwan. However, we do use other standards such as DICOM ICD-10, SNOMED, and LOINC as well as nursing related standards such as NANDA, Nursing Interventions Classification (NIC), Nursing Outcomes Classification (NOC) and Clinical Care Classification (CCC).

What role do you see HL7 standards playing in Taiwan over the next 1-3 years?

The goal of adopting EMRs in Taiwan is medical information exchange through the meaningful use of health IT. Therefore, the most important strategy to us is to use healthcare standards for the capturing and sharing of health information. Over the next few years, the government-built EMR blueprint is planning to develop a personal health record (PHR) and various value-added applications. HL7 standards play an important role in promoting EMR data exchange across hospitals and even nations. The HL7 CDA is being implemented in electronic health records projects to provide a standard format for entry, retrieval and storage of health information. It helps patients retrieve their data from external sources and store the useful information from the external sources in patients' EHRs at medical institutions to improve care, efficiency, and population health outcomes.

Who are the current members of the HL7 Taiwan Board?

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Lawyer
Washington Group & Associates

Hsyien-Chia Wen
Associate Professor
School of Health Care Administration, Taipei Medical University

Part 6: Going International

The Early History of HL7

By Rene Spronk, Senior Consultant and Trainer, Ringholm; Co-chair, HL7 Application Implementation and Design Work Group

HL7 was founded in 1987. During the initial years there was some interest in the HL7 Version 2 standard outside of the US, notably by academics who had come into contact with it during international conferences. Within five years, this led to the creation of the first HL7 affiliates in Germany and the Netherlands.

CEN

In the late 1980s CEN, the European standards body, had initiated a standardization effort for messages in healthcare based on the UN EDIFACT standard. That, along with the perception that HL7 was very American and was not an officially recognized standards development organization (SDO), hampered adoption in some countries.

The Netherlands

Bert Kabbes of Coopers & Lybrand Healthcare in the Netherlands learned of HL7 during a company meeting on November 1, 1990 where George Ahlin (who managed the permanent HL7 demonstration at Coopers & Lybrand Healthcare Technology Center in Parsippany, NJ) presented an overview of HL7 Version 1. He recognized that HL7 would help solve some of the interoperability challenges faced by Dutch hospitals.

Bert subsequently organized a number of 'study tours' (an *almost* annual event from 1991 to 2002) to enable Dutch organizations to gain knowledge about HL7. These study tours were mostly a series of onsite visits to US hospitals. The 1991 study tour included eight representatives from healthcare provider organizations. This study tour involved a HL7 Version 2.0 training course by Mike Glickman, a visit of the permanent HL7 demonstration at Coopers & Lybrand Healthcare Technology Center, and on-site visits to Cabrini Medical Hospital, Fox Chase Cancer Center, Moses Cone Hospital and Duke University Hospital. In addition, an informal 'HL7 Initiative Committee the Netherlands' was created on the final day of the study tour (September 27, 1991).

The Dutch HL7 Initiative Committee held a meeting in January 1992 with 100 attendees. The aim of this meeting was to inform both the provider as well as the vendor community about the HL7 protocol. The main topic of discussion revolved around choosing HL7 instead of EDIFACT. Later that same year, CEN announced they were against HL7 being introduced in Europe since it was considered a US standard.

The first Dutch HL7 Version 2.1 ADT interface between the Raet HIS and the Philips Labosys laboratory system went live in December of 1992 at the Merwede Hospital in Dordrecht. The implementation of this interface was aided by the fact that all those involved in the creation of this interface were active members of the Dutch HL7 Initiative Committee.

A letter was sent to the HL7 executive committee in March 1992 to establish some kind of formal relationship between this Dutch Initiative Committee and HL7. This initiated a discussion within HL7 that ultimately led to the creation of the HL7 Affiliate agreement, which was authored by Bert Kabbes, Ed Hammond, Philip Caillouet, Joachim Dudeck and Mark McDougall.

Germany

The meeting that sparked the beginning of HL7 Germany took place in 1991. Joachim Dudeck, the head of the Medical Informatics Institute in Göttingen and Bernd Blobel, the CIO of Magdeburg University Hospital and head of the Medical Informatics Department, held a strategic discussion on hospital information system architectures.

"Joachim Dudeck showed me a copy of a thin document (HL7 Version 1) distributed by HP talking about the HL7 endeavor" recalled Bernd Blobel. "He asked me whether I'd already seen this specification. Because the Magdeburg University Hospital was implementing a new hospital information system, I had received this and some other documents about HL7 as well. Joachim was interested in my opinion and I answered: 'It's still very immature; the philosophy of the approach, however, is really

interesting.' We decided to engage in this endeavor, aiming to improve and push the HL7 approach."

As it happened Joachim Dudeck and a couple of his colleagues visited Ed Hammond at Duke University Hospital one week prior to the visit by Bert Kabbes and the Dutch delegation in September 1991. Bert Kabbes wasn't aware of any interested parties from Germany, and he made sure to contact Joachim to compare notes. According to Bert, "He was in a university environment, and had a different interest at the time, which was the research side. He didn't establish a group – that only happened at a later point in time."

On March 27-28, 1992, Dudeck, with support of Anderson Consulting Germany, and Bert Kabbes organized an HL7 workshop in Göttingen. This event attracted a sizable representation of the medical informatics community as well as the software vendor community. As a result, Dudeck launched the working group "HL7" within the German Medical Informatics Association GMDS. At its working group meeting on November 30 through December 1, 1992, the creation of a German HL7 User Group was approved, which was subsequently founded on March 2, 1993.

HL7 Germany was formally established about two months prior to HL7 Netherlands, which is why HL7 Germany was the first organization to sign the affiliate agreement, followed by HL7 the Netherlands.

The first European HL7 meeting was held during MedInfo on September 6, 1992. Organizers and speakers included: Ed Hammond, Clem McDonald, Bert Kabbes (the Netherlands), Sam Schultz and Joachim Dudeck (Germany).

The 1992 HL7 Board of Directors gathers for a casual photo at its Board Retreat.

The CEN TC 251 Chair Gunnar Klein successfully intervened at DIN (the German standardization organization) to hinder HL7's accreditation as formally recognized national standards, but he could not prevent the creation of an HL7 affiliate.

Internationalization

Ever since the creation of the initial affiliate agreement, the number of affiliates has steadily grown. The role of 'affiliate director' was created in order to represent the interests of the affiliate members at the board level. The very first non-North American meeting was held in the Netherlands in May 2005, followed by other non-US locations such as Rio, Sydney, Kyoto, Cologne, Vancouver and Paris. The organization is currently working on restructuring itself in order to properly represent all stakeholders, irrespective of their location. Quite a change from the local scope of the original protocol—the development of the direct precursor of HL7 Version 2 was initiated in the late–1970s at UCSF in San Francisco (see the first part of this series). ■

The Early History of HL7 Series Available Online

This is the sixth and final part of a series of articles about the early history of HL7. This article is an abridged version of a creative commons article available at http://bit.ly/1e7KScz – you are referred to the full article for references.

See http://bit.ly/1njzICA for video interviews related to these series. Please let us know should you have additional information about the early history of HL7.

Upcoming International Events

September 6-10, 2015 HIMSS AsiaPac15	www.eiseverywhere.com/ehome/ap15/247194	Marina Bay Sands, Singapore
October 4-9, 2015 HL7 29th Annual Plenary & Working Group Meeting	www.hl7.org/events/wgm102015	Atlanta, Georgia
October 21–22, 2015 European Telemedicine Conference	www.telemedicineconference.eu	Odense, Denmark
November 25-27, 2015 eChallenges e-2015 Conference	www.echallenges.org/e2015	Vilnius, Lithuania
November 8-11, 2015 mHealth Summit	www.mhealthsummit.org	Washington, DC
January 10-15, 2016 HL7 January Working Group Meeting	www.HL7.org	Orlando, Florida
February 21-22, 2016 HEALTHINF 2016	www.healthinf.biostec.org	Rome, Italy
February 29-March 4, 2016 HIMSS16	www.himssconference.org	Las Vegas, Nevada
May 8-13, 2016 HL7 May Working Group Meeting	www.HL7.org	Montreal, Quebec, Canada
June 6-8, 2016 16th International HL7 Interoperability Conference 2016	ihic2016.eu	Genoa, Italy
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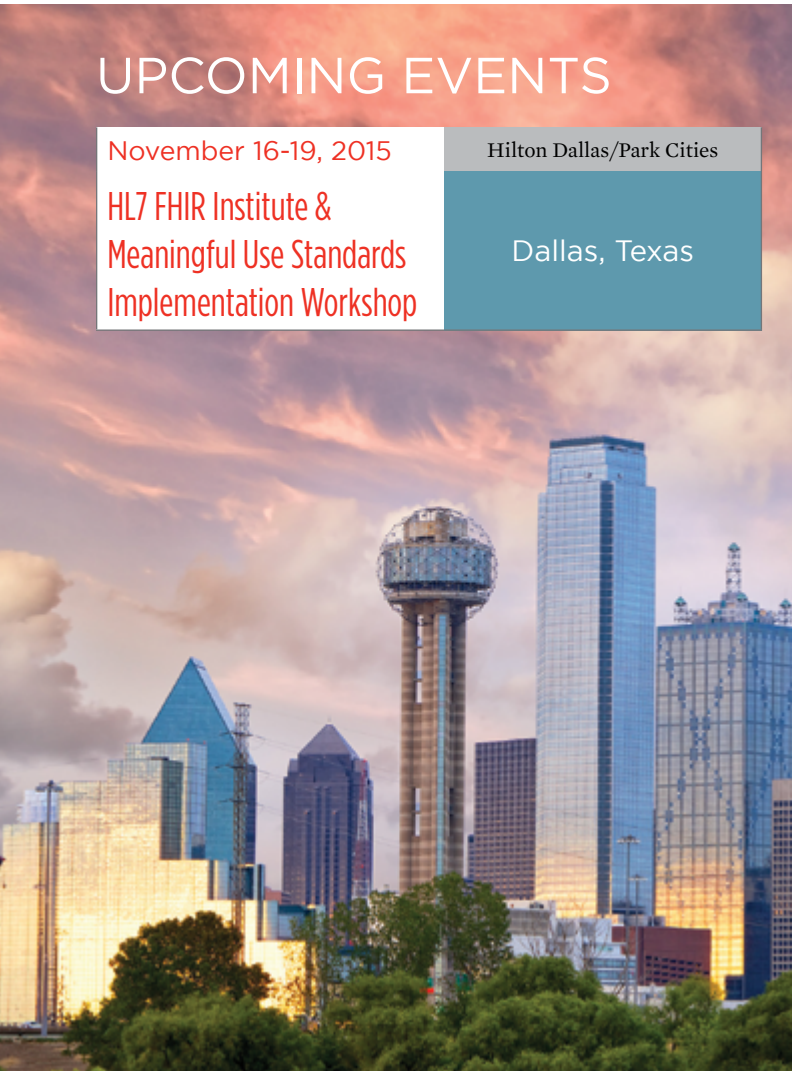
HL7® FHIR®

Institute & Meaningful Use Standards Implementation Workshops

What is the HL7 FHIR® Institute?

The HL7 FHIR® Institute provides resources and training for the next generation standards framework created by HL7: Fast Health Interoperability Resources or FHIR®. The FHIR Institute focuses on making this new standard easier to understand and implement across the healthcare community. Training at the FHIR Institute includes both face-to-face and virtual events and is targeted at software developers, implementers and executives. Learn about FHIR straight from the source at FHIR® Institute programs delivered by expert FHIR standard developers.



What is an Implementation Workshop?

An HL7 Implementation Workshop is a three-day interactive hands-ons event focused on HL7-specific topics such as Version 2, Clinical Document Architecture (CDA®), Quality Health Reporting Document Architecture (QRDA), and Health Quality Measure Format (HQMF). It includes a combination of exercises and presentations to help attendees learn how to implement HL7 standards.

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 are:

- **Efficiency** Concentrated 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 develop 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

October 4 – 9, 2015
29th Annual Plenary & Working Group Meeting

Sheraton Atlanta Hotel
Atlanta, Georgia

January 10 – 15, 2016
Working Group Meeting

Hyatt Regency Orlando
Orlando, Florida

May 8 – 13, 2016
Working Group Meeting

Le Centre Sheraton
Montreal (Quebec), Canada

September 18 – 23, 2016
30th Annual Plenary & Working Group Meeting

Hyatt Regency Baltimore
Baltimore, Maryland

January 15 – 20, 2017
Working Group Meeting

Hyatt Regency San Antonio on the Riverwalk
San Antonio, Texas

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