HL7 INTERNATIONAL

NEWS

Solving the Conundrum of Healthcare IT Computable Interoperability

Plus...

Promoting Standards for Secure and Consumer-Friendly Health App Development

Using HL7 FHIR and DICOMweb to Support Imaging Research

ONC Grant Project and Tooling Updates

In this Issue

Update from Headquarters

By Mark McDougall,
HL7 Executive Director

Board Changes

The new year brought a change at the helm of the HL7 Board of Directors. We welcomed Calvin Beebe to the start of his two-year term as Board Chair. We also recognized the many contributions of outgoing Board Chair, Patricia Van Dyke, RN. It has been a pleasure working with Pat during her term as the chair and we thank her for her leadership. Pat will continue serving on the Board during 2018 as the Vice Chair.

Calvin Beebe honors outgoing board chair Pat Van Dyke for her service to HL7.

We recognized five outgoing Board members of the HL7 Board of Directors at the January 2018 Working Group Meeting in New Orleans: Keith Boone, GE Healthcare; Beat Heggli, HL7 Switzerland; Floyd Eisenberg, MD, iParsimony; Liz Johnson, Tenet Healthcare; and Ken McCaslin, Accenture. We would like to extend these individuals a sincere thank you for their contributions to HL7 over many years.

As previously announced, we are pleased to welcome five new directors to the HL7 Board of Directors, each serving two-year terms: Jennifer Covich Bordenick, eHealth Initiative; Austin Kreisler, Leidos; Line Saele, HL7 Norway; Walter Suarez, MD, Kaiser Permanente; and Andrew Truscott, Accenture. Also, Russell Leftwich, MD, InterSystems, was re-elected to serve a second term as the Treasurer of the Board. We look forward to working with the new Board members along with the entire 2018 HL7 Board of Directors (see page 34). On behalf of the entire HL7 organization, I thank each member of the HL7 Board for their ongoing leadership, contributions and dedication to HL7.

January Meeting Sets Attendance Record

We are pleased to report that an all time record of 624 attendees participated in our January Working Group Meeting held in New Orleans, Louisiana, January 27 – February 2, 2018, at the Hilton New Orleans Riverside Hotel. Fifty-five (55) HL7 work groups met in New Orleans, 24 of which conducted co-chair elections. Attendees also took advantage of 30 tutorials that week.

A special highlight of the week was HL7's networking reception that concluded with HL7 having its own "second line" and street parade led by a New Orleans brass band that started in the hotel ballroom, went throughout the French Quarter and near Bourbon Street. Our HL7 second line street parade was enjoyed by hundreds and quickly became one of HL7's most memorable networking events.

Meeting Sponsors

I am also pleased to recognize the following organizations that sponsored key components of our recent January Working Group meeting in New Orleans:

• Corepoint Health

• iNTERFACEWARE

• 3M

The sponsorship support provided by these organizations is much appreciated.

Woody Beeler Memorial Scholarship

During the New Orleans WGM, Dave Shaver and Lloyd McKenzie shared their perspectives on Woody Beeler's invaluable contributions to HL7 and to them personally.

They encouraged attendees to consider contributing to the scholarship in his name via the IRS sanctioned 501c3 tax exempt charitable HL7 Foundation for Interoperability.

The scholarship supports individuals who, like Woody, demonstrate strong commitment for healthcare interoperability through concrete action and results above and beyond commercial interest. The scholarship builds on Woody's vision by enabling committed individuals with limited financial means to attend HL7 working group meetings and fully participate in the HL7 International community with an objective of building that community and improving patient care through interoperability.

We are also very grateful for Dave Shaver's commitment to match up to $20,000 of other donations that are received this year. Please consider donating. To learn more about contributing to the Woody Beeler Memorial Scholarship, please visit: http://hl7.me/rememberWoody.

Standing room only at the HL7 HIMSS18 booth during the HL7 FHIR Solutions Showcasing Real-World Implementations Panel discussion.

HIMSS 2018

For almost 30 years, HL7 has exhibited each year at the annual conference of the Healthcare Information and Management Systems Society (HIMSS). This year's HIMSS convention convened in Las Vegas during the week of March 5th. HL7's Director of Communications, Andrea Ribick, once again was exceptional at developing a new booth for HL7 and producing 30 presentations on HL7 standards and relevant topics. Most of the presentations attracted crowds that filled the theater area and led to standing room only. Presentations on HL7 FHIR as well as the Da Vinci Project were particularly well attended.

Andrea Ribick, HL7 Director of Communications

Invaluable Volunteers

For 30 years, HL7 has been blessed with incredibly dedicated volunteers and their support with the HL7 booth at HIMSS is no exception. For example, former Board Chair Stan Huff, MD, provided several presentations in our booth wearing different hats, such as: Argonauts, HL7 FHIR Foundation, CIMI, CIIC, as well as CIMI's work in creating detailed clinical models to support HL7 FHIR interoperability. Stan received the hardest booth worker award that week.

Another prime example of the incredible contributions from HL7's volunteers occurred when the audio speakers in our booth stopped working on the morning of our third day at HIMSS. Since our theater presentations attracted so many attendees in seats and standing in the aisles, without speakers we were in big trouble. Fortunately, Janet Campbell from Epic was a speaker on our panel that day and she quickly arranged for her team to bring two floor standing speakers to our booth that we used for the rest of the day. Therefore, special thanks goes to Epic's Janet Campbell, Roman Jahnke and Travis Jordan for rescuing us at HIMSS that day.

Finally, I wish to express our appreciation and sincere thanks to the many individuals who volunteered to staff our booth and/or make presentations in our HL7 booth at the HIMSS convention, including:

Calvin Beebe	Floyd Eisenberg	Ben Hamlin
Michael Brody	Richard Esmond	Ed Hammond, PhD
Joshua Budman	John Garguilo	Laura Heermann Langford
Hans Buitendijk	Brad Genereaux	Stan Huff, MD
Janet Campbell	Berne Gibbons	Chuck Jaffe, MD PhD
Durwin Day	Mark Gingrich	Robert Jenders, MD
Gay Dolin	Dan Gottlieb	Jocelyn Keegan
	Grahame Grieve	

Benefactors and Gold Members

We are very appreciative of the organizations for their ongoing support of HL7 through their membership at the HL7 Benefactor and Gold member levels (see page 18). 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. A special thank you is extended to the list of firms that represent our 2018 HL7 Benefactors and Gold members.

Organizational Member Firms

As listed on pages 18-21, HL7 is very proud of the impressive number of HL7 organizational member companies. We sincerely appreciate their ongoing support of HL7 via their organizational membership dues.

In Closing

As I write this column, I am reflecting on the crazy weather that we are witnessing in the USA. For example, this week Southern California is facing flash floods from up to 10" of rain leading to flooding and mud slides, and the Northeastern portion of the US is getting hit with 12"-15" of wet and heavy snow. We are facing all of these extreme weather conditions, despite the calendar showing that in the Northern hemisphere Spring is the current season. May you be blessed with conditions that more typically reflect Spring, such as sunny skies and flowers blooming. Remember to smell the roses.

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

OCTOBER 2017
Trevor Castillo

NOVEMBER 2017
John Tracy
Shivam Chauhan
Sri Krishna Chaitanya Butanapalli

DECEMBER 2017
Anthony Wang
Robert Adams
Abderrazek Boufahja
Mahipal Singh
Arjun Kumar
Jeroen de Poorter
Banalaxmi Boruah
Akash Patil
S Sumanth
Monali Panchal
Hitesh Panchal
Pranav Shah
Prashant Mascarenhas
Sai Sravan Kondaka

JANUARY 2018
Pablo Gioda
Walter Maniás
Pilar Rey Nores
Emanuel Perroud
Denis Montaña
Mary Yost-Daljev

FEBRUARY 2018
Pedro Almeida
Ujjal Das

Certified HL7 CDA Specialist

NOVMBER 2017
Scott Rappoport

JANUARY 2018
Aniruddha Mandale

HL7 FHIR STU Proficient Certified

JANUARY 2018
Sebastian Bojanowski
Roman Radomski

FEBRUARY 2018
Amina Shaikh
Jeffrey Danford
Bret Heale
Alexander Henket

Dennis Patterson
Ron Shapiro
Jungyub Woo
Anupama Krishnan

MARCH 2018
Sebastian Bojanowski
Roman Radomski

WELL DONE

Member Spotlight on Brad Genereaux

Career Background and HL7

Brad Genereaux began his journey in healthcare IT in 2001 as a custom apps developer for the Ottawa Regional Cancer Centre in Canada, while concurrently studying software engineering at university. It was there that his passion was kindled for using technology to improve the lives of patients and their families.

His first experiences with HL7 involved working with lab interfaces to improve communication of results at the point of care. During his time at the Cancer Centre, he created, deployed and supported nearly 100 apps for clinicians of all roles, to improve the efficiency and effectiveness of delivery of care.

From there, Brad joined The Ottawa Hospital, one of the largest systems in the country, and worked on reporting transcription interfaces, ADT feeds, intranets and portals.

Eventually he left and joined a small rural hospital undergoing immense redevelopment including a $60 million-dollar expansion, which included moving an all-paper system into an electronic one. During his tenure, he started out as a one-person IT department doing not only HL7 integrations, but also supporting all desktops, servers, peripherals, training and more.

Brad was involved in the provisioning, deployment, configuration and training for many systems, including HIS/EMR, LIS, RIS/PACS, nurse call, networking and VOIP telephony, HL7 integration, document management and web portals. He worked with the Local Health Integration Network and Province of Ontario for electronic consultation and referral proofs of concept and interoperability using HL7 Version 3 (which was when Brad became certified in the Version 3 Reference Information Model) and laid the technical framework for the BASE project for regional eConsult.

During his spare time, he also worked with the University of Ottawa medical school for innovative learning solutions, and his team won a national award for interdisciplinary collaboration in medicine for a project called Total Pain.

In 2011, Brad left public healthcare and Eastern Ontario. He moved westward to Waterloo to join a medical imaging company, Agfa HealthCare, as an integration developer. His role was to take his knowledge of being a consumer of vendor APIs and translate that to meaningful requirements. He quickly became passionate about APIs and the power they have to transform and expedite change in the delivery of healthcare. Brad became involved in developer community evangelism and hackathons locally, becoming a peer champion for web development in the tech accelerator in Waterloo.

By happenstance, Brad crashed a DICOM working group meeting in Orlando at the Society for Imaging Informatics in Medicine in 2012 for web technologies and started to contribute to the development of medical imaging web standards of WADO. He became involved in the IHE community, co-authored several papers for SIIM and co-wrote several IHE profiles. In addition, he began publicly speaking and evangelizing the use of standards for ever-growing use cases in healthcare.

Brad became industry co-chair of DICOM WG-27 on Web Technologies and through that community started attending joint sessions with DICOM WG-20 on the Integration of Imaging and Information Systems held jointly with the HL7 Imaging Integration (II) Work Group. He was eventually elected co-chair of HL7 II Work Group where he helped develop imaging HL7 FHIR® resources and workflows.

Over time Brad's role within Agfa changed from architect, then product management, and finally on to web and mobile technologies. His role then grew again from web and mobile, to clinical analytics, informatics, augmented intelligence and machine learning. In addition to these roles, Brad leads a team of product managers, regularly speaks at conferences, participates in hackathons and strives to inspire and mentor whenever he can."
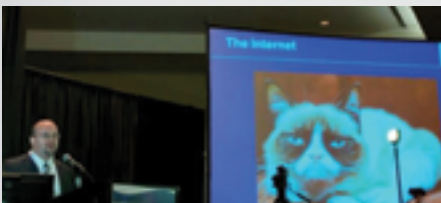
Snapshots of Brad Genereaux in his many life roles.

Personal Life

Brad is unapologetically Canadian through and through—he enjoys maple syrup and watching hockey. He is an API and gadget geek even in his spare time, including multiple Raspberry Pis and Bluetooth powered kitchen devices. He also competes in hackathons.

Brad is an adventurer and is always trying new things. In an effort to see the world more while traveling, he took up running and that has evolved over time. He started out in a trade show fun run, where he was second to last—only to the groundskeeper cutting the grass—at one HL7 meeting in Phoenix climbing the Piestewa Peak to catch the breathtaking sunrise from the summit.

Recently, Brad has taken up open water kayaking. He also supports local farms and enjoys craft brews of all persuasions. He is most certainly a cat person and has even used them for demonstrating aspects of healthcare standards.

Finally, Brad strongly supports the #pinksocks tribe, a group of people with a common belief to make a positive impact on the world and change it for the better. ◼

By Wayne
Kubick, CTO, HL7
International

Tooling Update

Provisioning the Journey

HL7 community,

In order to keep you better informed of the latest news in HL7 tooling, I have created a new Confluence and JIRA Updates page that I plan to update on at least a monthly basis in the future.

You can access this page even if you don't have a Confluence/JIRA account. But if you don't, please do set one up by following the directions posted at confluence.hl7.org. We're going to be doing a lot more using these collaboration tools in the future, and you won't want to miss out.

We've made a lot of improvements to the environment and default Confluence configuration.

New Confluence Features Now Available from JIRACON Project Team:

- Improved instructions on setting up an account and getting started at confluence.hl7.org
- Work group quick start package of default templates (boiler plates) now available
- Confluence working group meeting (WGM) attendance log streamlined for use at WGMs

System Updates Completed in April by Webmaster:

- Host reconfiguration completed—no longer requires specification of port number 8080 on URL. Check that your links point to the new official URLs:
    - confluence.hl7.org
    - jira.hl7.org
- Server upgrades to improve performance
- Confluence System Update to Version 6.8.1
- JIRA System Update to Version 7.9
- PostGres Database update to Version 9.5
- Setting up development environment for both products.

Work on online PSS, JIRA balloting and unified terminology projects continues

Chat.hl7.org Ready for Use

On another note, if you're not using chat.hl7.org, you should be. Now that we've had time to pilot Zulip, we've eliminated the requirement that you receive an invitation before joining a stream. Now you can elect to join any public stream. You can register by going to chat.hl7.org.

Remember, chat.fhir.org remains for the HL7 FHIR community. Chat.hl7.org is for the rest of the HL7 community to discuss other topics. The Zulip client allows you to access both streams.

Thanks to the Electronic Services and Tooling Work Group, and especially Lorraine Constable, David Johnson, Tony Julian, Ted Klein, Patrick Loyd, and Lloyd McKenzie who have been most instrumental in making all this happen.

Stay tuned for further updates! ▪

New High-Level TSC Structure

- FHIR
- CDA
- CIMI
- V2

TSC

Product Management

Governance

- SGB
- ARB
- PLA
- HTA
- US Realm

Clinical

Administrative

Infrastructure

Organizational Support

Interest Groups
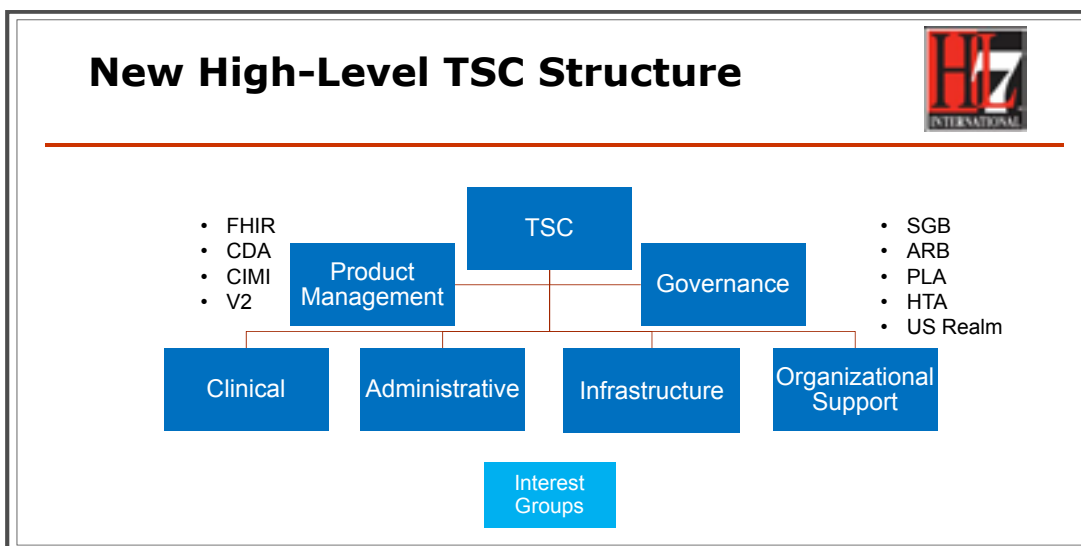
Announcement of New Product Families and Management Groups

The Standards Governance Board (SGB), in conjunction with the Product Line Architecture Group (PLA), is in the process of establishing new product families. As part of that process, several product family management groups are currently being established. These management groups provide day-to-day oversight of the processes related to specific products throughout their lifecycle. This includes ensuring product quality, monitoring scope and consistency with Standards Governance Board (SGB) principles, and aiding in the resolution of product family related intra- and inter-work group issues.

- Product family management groups are responsible for the following:
- All planning aspects of product line/family changes
- Assessing and approving product line-specific project proposals for submission to the TSC
- Assessing and approving publishing requests for submission to the TSC
- Creating product recommendations
- Ensuring that quality assurance criteria are in place and applied
- Escalating unresolved issues to the TSCv
- Defining priorities within the priority management criteria which the Governance Board has created
- Supporting activities such as education and Connectathons

- Guiding the development of products following the product family methodology

Management Group Charters

The management groups will focus their energy on enabling and ensuring the following:

- Product development is coordinated and consistent across the organization
- Work groups have timely feedback and guidance and their development products are aligned with the broader goals of HL7 and its constituent communities
- Work groups act in a coordinated manner with quick resolution of disputes
- Work groups understand what is expected of them and have the breadth of domain knowledge, skills and tools necessary to perform their work
- Known product family risks are recorded, managed, and reviewed regularly per the SGB precept on vitality assessment

Groups established so far include the FHIR Management Group and the CDA Management Group. Learn more at HL7.me/FHIRMG and HL7.me/CDAMG . Management groups in the process of being established include CIMI and Version 2.

Please watch for more updates on new product families and management groups in the coming weeks and months. ■

Promoting Standards for Secure and
Consumer-Friendly Health App Development

By Nathan Botts, PhD,
David Tao, Frank Ploeg,
Gora Data, and Matthew
Graham, Co-Chairs, HL7
Mobile Health Work Group

HL7 CMHAFF: New Standard for Health Apps

The HL7 Consumer Mobile Health Application Functional Framework (CMHAFF) standard for trial use (STU) was balloted and approved for publication in January of 2018. CMHAFF is primarily directed at developers of mobile health applications (apps) to assist them in appropriately educating and protecting consumers in relation to aspects of the app, including their privacy and security, data access, and disclosure of product risks that are impacted when personal health data is gathered and disseminated at various levels through use of these health apps.

The Age of Health Apps

As of 2018, there are literally thousands of consumer health applications (apps) which run on smartphones, watches, tablets, fitness trackers, medical devices and countless other mobile devices. In part, their proliferation is spawned from the opportunities provided by the Internet of Things (IoT) and hardware miniaturization that allow us to effectively mobilize and network just about any size of device.

These health apps are available for download from platform-specific application stores such as the Apple App Store (iOS) and Google Play (Android). Consumer acceptance and use of these apps is primarily based on recommendations—either personal recommendations through individual contacts or social media or app store ratings. While this information is important in understanding the relevance of an app to one's life and the design and usability of an app, it is insufficient in communicating how an app secures and protects the personal information of its users.

This poses a problem both for consumers and clinicians, who may be considering or prescribing use of an app to help track and improve health behaviors and conditions. We need look no further than the news which is currently inundated by stories involving unwarranted (or at the best ill-advised) appropriation and misuse of clinical, behavioral and social health data that these apps so easily collect from consumers.

Setting a Standard

Guidance and regulation are under development, but, as usual, it is difficult for governance bodies to keep pace with the advancement of these technologies.

The FDA refers to health apps as "mobile medical apps" and is focusing on the subset that meet the regulatory definition of "device" and that: 1) are intended to be used as an accessory to a regulated medical device, or 2) transform a mobile platform into a regulated medical device. The health apps that fall outside that range are otherwise not regulated, certified, or monitored by a distinct organization that health app developers can easily be directed toward when developing health apps.

There are a number of efforts both in the United States and abroad working to develop certifications and regulations that can help better advise developers and consumers. A key aspect of the HL7 CMHAFF STU is its work to synthesize the recommendations from these efforts that include national and international policies (e.g., HIPAA, GDPR), standards (e.g., ISO TC 215), and best practices (e.g., SMART on FHIR) in order to effectively guide health app development depending on the type of application, the types of data collection and sharing it involves, and the types of users it is targeted toward.

The consumer Mobile Health Application Functional Framework (CMHAFF) team would like to acknowledge the members of the HL7 Mobile Health Work Group who developed this Standard for Trial Use. In addition, acknowledgements are due to the HL7 EHR Work Group, the HL7 Security Work Group and the Community Based Care and Privacy (CBCP) Work Group, which also provided valuable guidance.

Many other mobile health initiatives in the European Union and USA influenced CMHAFF as well, as referenced throughout the specification.

In conclusion, CMHAFF is on the way to becoming the first international standard adopted through an ISO consensus-based process with the potential to improve consumer health apps for the benefit of consumers, their families, and those who provide healthcare to them. ■

IHIC 2018

July 11-12, 2018
Richmond Building
University of Portsmouth
Portsmouth, United Kingdom

Featuring:

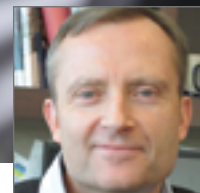- **Keynote Presentations**
- **Use Case Reports**
- **Panel Discussions**
- **Poster Sessions**
- **Tutorials**
- **Networking Reception & Dinner aboard the historic HMS Warrior**

Mastering the Interoperability Challenge

http://ihic.info/

Enabling the Exchange of Medical Images for Research

Using HL7 FHIR and DICOMweb to Support Imaging Research

By Christopher Carr,
Director of informatics,
Radiological Society of
North America (RSNA)

Collecting health information is a painstaking and expensive process for medical researchers. Combing through records for relevant information, getting internal approvals, obtaining patient consent retrospectively, de-identifying, aggregating and normalizing data all take time, cost money and present significant barriers to progress. In research based on medical imaging, these problems are compounded by the fact that radiology systems are still partly discrete silos of data, adherent to their own set of standards and not fully integrated with electronic health record (EHR) systems.

It won't surprise HL7 members to hear that work is in progress to address these issues and achieve a more efficient model for research. Part of the motivation for developing HL7 FHIR has been to enable an exchange of data elements that could support a continuous cycle of research and quality improvement, the "learning health system." That is a grand vision that will require years to attain, but initial steps are being taken that justify the excitement surrounding emerging standards.

The Sync for Science (S4S) project (http://syncfor.science), a collaboration of the Harvard Medical School Department of Biomedical Informatics, EHR vendors and federal agencies (the Office of the National Coordinator for Health IT and the National Institutes of Health), is pursuing the goal of making it easier for patients to share their medical records for research.

At sites that implement S4S, patients can use the EHR portal to give consent to share their

information with researchers. Research organizations with authorized applications can query a standard interface to find records relevant to their research protocols. The secure exchange of information is based on the SMART on FHIR authentication and transaction model. The project is designed to support the goals of the Precision Medicine Initiative, allowing patients to benefit directly from advances in research enabled by the use of their data.

Meanwhile, the Radiological Society of North America (RSNA) has been working for a number of years to expand access to medical images for patients and researchers. Collaborating with a consortium of research institutions under a contract from the National Institute of Biomedical Imaging and Bioengineering (NIBIB), RSNA developed tools that connect radiology systems to the Image Share Network, enabling secure patient-focused sharing of images and reports through personal health record accounts.

In March 2017, NIBIB extended RSNA's contract for one year to integrate Image Share with the S4S model. Working closely with the S4S team, the RSNA team developed an open source reference implementation (https://github.com/rsna) that accepts queries from research apps using the S4S model and returns a list of available relevant imaging studies the research app can retrieve. The image exchange is based on the DICOM web standards (managed by the HL7 Imaging Integration Work Group/DICOM WG20), which share the same RESTful Services architecture that is the foundation of HL7 FHIR.

The project shows the feasibility of using these two sets of standards in tandem to facilitate the exchange of medical images and diagnostic reports. David S. Mendelson, MD, Professor of Radiology at the Icahn School of Medicine at Mount Sinai and Principle Investigator of the RSNA Image Share project, observed that "The RSNA Image Share project provides an extensible standards-based platform for varied use cases of image exchange. The integration with S4S shows that the platform was built to evolve along with the technical standards."

A simple initial demonstration of the reference model was given at the HL7 FHIR Connectathon in New Orleans in January. A more detailed interactive demonstration will be featured at the Hackathon hosted by the Society for Imaging Informatics in Medicine (SIIM) at its meeting in National Harbor, Maryland in May.

The Image Share team is currently working on making a web-based version of the components available a responsive endpoint for researchers and implementers. ■

SAVE THE DATE

HL7® FHIR®
APPLICATIONS
R O U N D T A B L E

September 27-28, 2018
Amphitheater of the Ronald Reagan Building
Washington, DC

Come see for yourself how implementers are using FHIR. This event features dozens of rapid-fire 15-minute presentations and demos from providers, vendors, academic institutions, and start-ups.

http://www.hl7.org/events/fhirapps.cfm

News from the HL7 Project Management Office

ONC Grant Project Updates

By Dave Hamill,
Director, HL7 Project
Management Office

Work continues on the projects funded by the ONC's $875,000 grant for Maturing the Consolidated Clinical Document Architecture (C-CDA) and the HL7 Fast Healthcare Interoperability (FHIR®) standards.

As of late Q1, 2018, efforts underway included the following:

1. Creating a Unified Terminology Governance (UTG) process and working prototype

2. Migrating FHIR issue/project tracking and ballot reconciliation to JIRA

3. Improving, developing and implementing FHIR build and release tools and then integrating them with the FHIR registry

4. Providing support for FHIR Release 4 (R4) STU balloting via ballot facilitators and a coordinator

5. Supporting FHIR Connectathons by providing an administrator

6. Upgrading existing FHIR reference server implementations to more effectively support "bulk access and push" applications

7. Continuing C-CDA Implementation-A-Thons (IAT)

Details regarding each project follow.

The Unified Terminology Governance project will develop a working UTG prototype that includes the following capabilities:

• Creation of sample complete harmonization proposals

• Editing existing draft harmonization proposals

• Submitting harmonization proposals for consensus approval or abandonment

• Auto and manual validate proposals

• Integration with confluence for consensus discussions

• Ability to gather votes for approval/rejection

• Ability to triage submitted proposal as per consensus decision

• Ability to process approved proposal into the terminology store

• Enabling on-demand extract of any value set

• Output of terms in Version 3, C-CDA and Version 2 vocabulary in publishable form

• Management of active proposals

• Management of permissions for submitters and consensus pool

The HL7 FHIR ballot, tracking and tooling work will leverage Confluence and Jira to implement a new ballot management and reconciliation process as well as tooling to support that process. Primary tasks include:

- Gather requirements, create a detailed process and prepare a working prototype of the required technical infrastructure

- Support and monitor the outcome of the ballot and subsequent reconciliation to check for problems and identify future improvements

- Prepare a final report at the end of the process to identify what worked well and what didn't

The ballot facilitator and a ballot coordinator will support the STU balloting and reconciliation of HL7 FHIR R4. The HL7 Ballot facilitator is a part-time position with internal responsibilities for facilitating the reconciliation of high priority product ballots, including clarification of content before work group discussions, proposing block votes, documenting discussions, decisions and actions related to ballot reconciliation and management of change proposals. The HL7 ballot coordinator will oversee and administer the ballot facilitator as well as have close interaction with all work groups contributing to the HL7 FHIR specification with a goal of removing bottlenecks and obstacles to publishing HL7 FHIR R4 in order to release it to the HL7 FHIR community as soon as reasonably possible.

The HL7 FHIR Connectathon administrator role was created to support the growing needs of HL7's FHIR Connectathons. The primary objective of the administrator is to maximize the participant's experiences and outcomes at the Connecthaton. Responsibilities include.

- Work with the track leads, the FHIR Management Group, and the FHIR product director to ensure that participants can be properly prepared for the Connectathon

- Administer pre- and post-Connectathon questionnaires for participants to help with preparation and continuous improvement

- Provide on-site support to Connectathon participants, including facilitating interactions and issue resolution, recording problems and suggestions for improvement

- Provide a report to the product director at the conclusion of the wrap-up of the Connectathon

A fifth C-CDA Implementation-A-Thon (IAT) was held in New Orleans just prior to HL7's January Working Group Meeting. Discussion topics focused on medication scenarios, the C-CDA Scorecard, clinical notes, discharge summary document, VSAC update process, care plan and the ever popular 'Ask the ONC'. A virtual IAT will be held on June 28, 2018. Please visit www.hl7.org/events/c-cda/implementation/2018/06/ for more information and to register.

HL7 appreciates ONC's continued support of C-CDA and FHIR for 2018 and beyond. ◼

HL7 Welcomes New Members

Benefactor

- UnitedHealthcare

Gold

- American Medical Association
- Asymmetrik Ltd.
- Hospital privado centro medico de Cordoba S.A.
- MaxMD
- Northrop Grumman
- New York City Department of Health and Mental Hygiene
- UHIN (Utah Health Information Network)

Organizational

- By Light Professional IT Services LLC
- CAQH
- CENS
- Ciitizen
- Dignity Health
- eClinicalWorks
- EMR Direct
- Great Lakes Health Connect
- Idaho Health Data Exchange
- Mathematica Policy Research
- MD Land International
- Medecision
- Nebraska Health Information Initiative (NeHII)
- Pennsylvania Dept of Health
- Physicians Compass
- Public Health Informatics Institute
- Redox
- Republican Center for Medical Technologies
- Roji Health Intelligence LLC
- Salesforce
- San Diego Health Connect

"Methodology to manage data quality risk by standardizing data" In accordance with 21st Century Cures Act, TEFCA and USCDI

Healthcare IT Computable Interoperability Strategy

HL7 (CIC, PHER, EHR, CQI, CDS, CIMI) Work Groups, with Steve Hufnagel as Facilitator

The 2016 21st Century Cures Act provides the healthcare IT (HIT) industry with definitions for *interoperability* and *information blocking*. It outlines a penalty system for those who fail to ensure the free flow of patient healthcare data. *Computable interoperability* implies improved patient value (safety, quality, cost) from consistent quality-data available to learning health systems.

In January 2018, the Health and Human Services (HHS) Office of the National Coordinator (ONC) released the Trusted Exchange Framework and Common Agreement (TEFCA) and U.S. Core Data for Interoperability (USCDI) draft policy documents. They promise profound impact on the activities and priorities of Health Information Networks (HINs), provider organizations that participate in HINs and HIT vendors and service providers. TEFCA and USCDI will define U.S. policy for interoperability, when finalized around December 2018.

- TEFCA strives to establish a single Healthcare Information Exchange (HIE) "on-ramp" to enable providers, hospitals and other healthcare stakeholders to join within the nationwide health information exchange (NHIN). TEFCA establishes "Qualified HINs" (QHINs) as a vehicle to facilitate a standardized methodology for NHIN connectivity. This methodology is managed by a Recognized Coordinating Entity (RCE).

- USCDI begins with the Common Clinical Data Set (CCDS) required by ONC's 2015 Certification Criteria; where USCDI adds classes

(data modules) for structured-and-unstructured clinical notes and for provenance (who, what, when, where, why, how). USCDI outlines a roadmap to include additional classes and data elements categorized as:

- Mature where established standards exist that become USCDI inclusion candidates.

- Immature where terminology, controlled vocabularies and code sets are evolving.

The problem is clinicians prefer pre-coordinated electronic health record (EHR) data entry terminology forms while analysts prefer post-coordinated EDW analytic terminology forms. There is an EHR, enterprise data warehouse (EDW) and HIE data quality conundrum. The conundrum is that data must be optimized for clinician data entry, EDW analytics and HIE exchanges with bidirectional mappings, without loss of information. Data quality mapping risk is exasperated by the following:

- Clinical findings that have multifaceted workflow context, provenance and intended use and

- Differing terminology granularities and ontology-categorizations across and within standards.

HL7 work groups and product-line management groups are striving to address this data quality conundrum with standards, technologies, methodologies and model driven development (MDD) tools. MDD tools are intended to efficiently and effectively specify interoperable HL7 Version 2 messages, FHIR profiles, C-CDA templates, etc. with consistent implementation guides, APIs, components, controlled vocabularies and code sets.

Figure 1 summarizes an emergency response scenario where healthcare data moves with the patient. Disaster management requires computable-interoperability among ad-hoc partners collaborating with heterogeneous systems during patient-movement episodes across disparate continuums of care. Figure 1's "ABC Stabilization and Decon." refers to emergency responders' essential steps of airway, breathing, and circulation stabilization plus biological and chemical decontamination.

a. Emergency responders inform hospitals using the

OASIS EDXL-TEP/HL7 XML standard containing patient condition, treatment and physical tracking information.

- TEP uses NEMSIS/HL7 data elements transformable into HL7 ADT messages.

- OASIS EDXL-Distribution Element (DE) "envelope" wraps and routes data packages, like NIEM Information Exchange Package Documentation (IEPD), across a continuum of care

b. Hospitals' inform emergency responders using the OASIS EDXL-HAVE/HL7 XML standard containing hospitals' resource availability information.

c. NDMS coordinates among federal agencies using NIEM IEPDs.

Example: Pre/post-coordinated data representation forms.

1. In a pre-coordinated clinical entry form, multiple concepts are brought together into one term. Here, entry order is relevant for disambiguation of concept relationships. For example:

   - Clinicians text notes: "Closed displaced-fracture of the right leg at the neck of the femur"

   - ICD-10-CM billing form: Femur fracture type III

- In a post-coordinated data analytic form, concepts are broader and searched with Boolean operators.

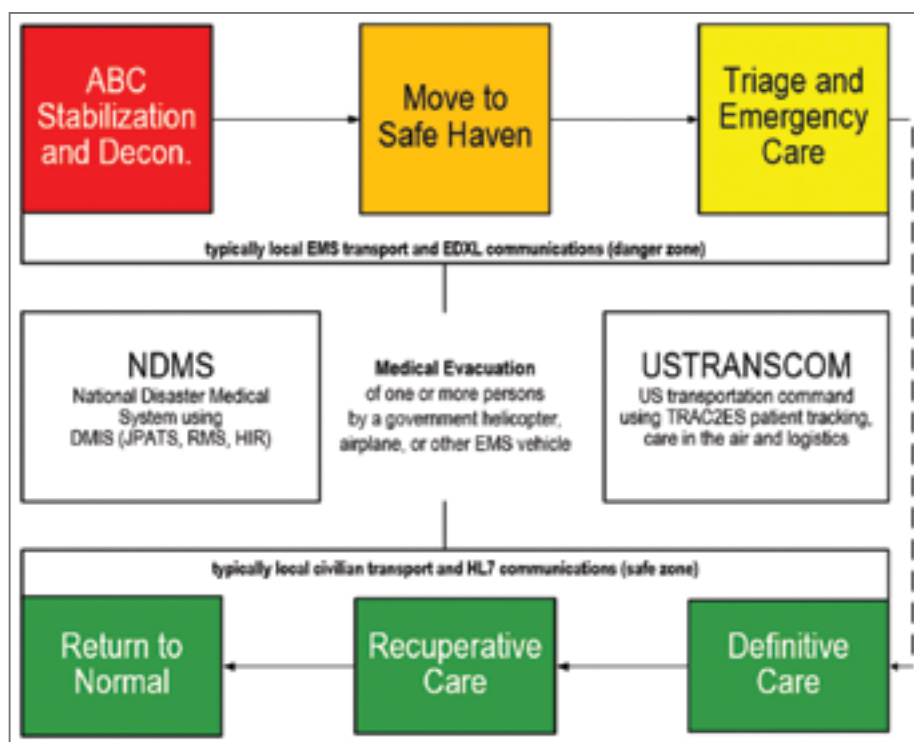- A post-coordinated representation might be "fracture AND femur AND neck AND displaced AND

Figure 1: Emergency-Response Patient Movement Continuum-of-Care Scenario

right AND closed" where order is irrelevant.

- SNOMED CT analytic form: fracture (morphologic abnormality), structure of neck of femur (body structure), right (laterality), plus primary procedure (qualifier value), etc.

Recommendation: The 21st Century Cures Act's Health Information Technology Advisory Committee (HITAC) suggests that the RCE methodology align standards, technologies, tools and RCE Certification Criteria by including USCDI, FHIM, DCM and SOLOR stewardship, governance, configuration management and standardization processes to achieve efficient and effective MDD computable interoperability including bidirectional pre/post coordinated mappings, without loss of information; where:

- FHIM is Federal Health Architecture's (FHA) Federal Health Information Model

- DCM is HL7 Clinical Information Model Initiative's (CIMI) Detailed Clinical Models

- SOLOR is US Realm SNOMED CT extension including LOINC and RxNorm

TEFCA-USCDI should build upon areas of agreement in a decentralized way that percolates consensus up, gradually extending and scaling data use agreements and data interoperability conformance criteria, as consensus and standards mature. Vendor system conformance testing should be voluntary and QHIN compliance certifications should have periodic updates. This is key to evolving standards adoption and enhanced QHIN interoperability on the path to learning healthcare systems. The success metric is scalability among healthcare

Healthcare IT Computable-Interoperability Strategy

domains, sub-domains and stakeholder uptake. Figure 2 shows a suggested RCE methodology where product use case scenarios are as follows:

1. Organized into EHR-S FM clinical domain functional conformance criteria

2. Aligned with USCDI-FHIM clinical domain architypes and patterns for findings, orders, procedures, etc.

   a. Where USCDI data elements and classes are harmonized within FHIM

3. Constrain FHIM architypes and patterns into logical DCMs which specify Version 2, FHIR and C-CDA, etc. structure-definitions bound to SOLOR vocabularies and code sets

4. Resulting in interoperable OASIS, HL7, NIEM etc. implementation guides, APIs, components and services

5. Used for data sharing among learning systems' analytics, reasoning and decision support

This suggested RCE methodology has no impact on deployed EHR systems. It positively impacts inconsistent extraction, transfer
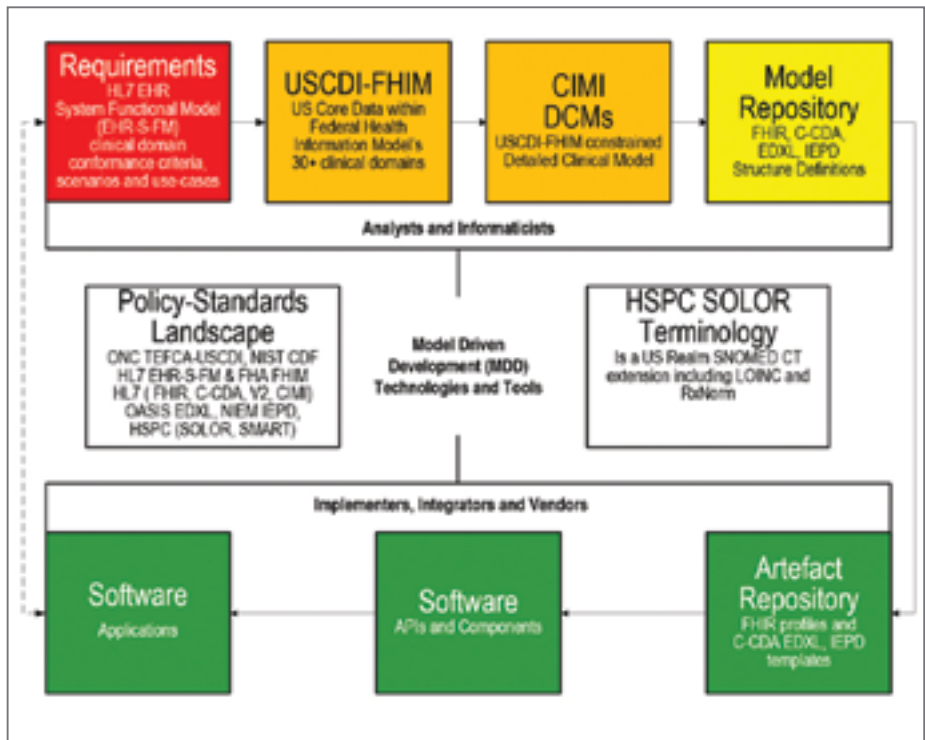
Figure 2: Suggested RCE Interoperability Methodology

and load (ETL) processes that put QHIN data at risk. Federal agencies, partners, QHINS, venders and contractors should incorporate these modern best practice (standards, methodologies, technologies and tools) to enhance interoperability.

Conclusion

Computable interoperability among QHINs ensured by the suggested RCE methodology and certification processes can positively influence NHIN patient value (safety, quality, cost) by empowering better learning healthcare systems' analytics, reasoning, decision support and outcomes measurements. ◼

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Upcoming International Events

May 27-29, 2018 **HIMSS Europe Conference and Exhibition**	www.himsseuropeconference.eu/barcelona/2018 Barcelona, Spain
May 27-30, 2018 **e-Health 2018 Canada**	www.e-healthconference.com Vancouver, BC, Canada
June 19-21, 2018 **HL7® FHIR® DevDays 2018**	www.fhirdevdays.com/ Boston, Massachusetts
July 11-12, 2018 **IHIC 2018**	www.ihic.info/ Portsmouth, UK

July 29–August 1, 2018 **HIC 2018**	www.hisa.org.au/hic/ Sydney, Australia
September 11-12, 2018 **Swiss eHealth Summit 2018**	www.ehealthsummit.ch Bern, Switzerland
November 5-7, 2018 **HIMSS AsiaPac18 Conference & Exhibition**	www.himssasiapacconference.org Brisbane, Australia
November 13-14, 2018 **EHiN 2018**	www.ehin.no/en/ Oslo, Norway

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HL7 Standards Approved by ANSI, Since Decmber 2017

APPROVED

Name	Designation	Date
1. HL7 Version 2: XML Encoding Rules, Release 2	ANSI/HL7 V2 XML, R2-2012 (R2017)	12-14-17
2. HL7 Version 3 Standard: Common Product Model CMETs, Release 4	ANSI/HL7 V3 CPM CMET, R4-2018	2-27-18
3. HL7 Version 3 Standard: Structured Product Labeling, Release 8	ANSI/HL7 V3 SPL, R8-2018	2-27-18
4. HL7 Version 3 Standard: Care Provision; Care Record Topic, Release	ANSI/HL7 V3 PC CAREPLAN, R1-2013 (R2018)	4-20-18
5. HL7 Version 3 Standard: Care Provision Domain Information Model, Release 1	ANSI/HL7 V3 PCDIM, R1-2013 (R2018)	4-20-18
6. HL7 Version 3 Standard: XML Implementation Technology Specification - V3 Structures, Release 2	ANSI/HL7 V3 XMLITSSTR, R2-2013 (R2018)	4-20-18
7. HL7 Version 3 Standard: XML Implementation Technology Specification R2; ISO-Harmonized Data Types, Release 1	ANSI/HL7 V3 ISODT, R1-2013 (R2018)	4-20-18

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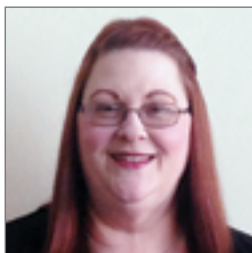
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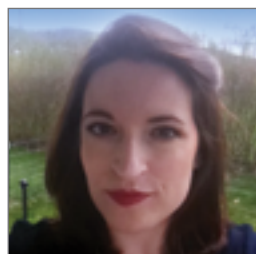
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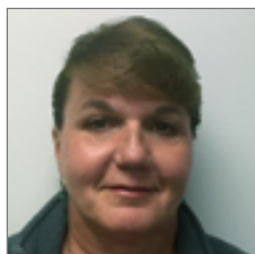davidj@HL7.org

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Upcoming Working Group Meetings

September 29-
October 5, 2018
**32nd Annual Plenary &
Working Group Meeting**

Hyatt Regency
Baltimore Inner Harbor

Baltimore, Maryland

January 12-18, 2019
Working Group Meeting

Hyatt Regency San Antonio on
The Riverwalk

San Antonio, TX

May 4-10, 2019
Working Group Meeting

Sheraton Le Centre

Montreal, Quebec,
Canada

September 14-20, 2019
**33rd Annual Plenary &
Working Group Meeting**

Atlanta Marriott Marquis

Atlanta, GA

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