

## HIEA Technical Forum: *Information Models: Foundation to Semantic Interoperability*

### Day 1:

Wednesday, August 17, 2016		8:30 am to 4:45 pm
8:30 – 8:45	Arrival/Check-in	
8:45 – 8:55	Welcome and Agenda Review	Ms. Yvonne Cole (DoD/VA IPO)
8:55 – 9:00	Logistics Review	Ms. Gwen Williams (DoD/VA IPO Support)
9:00 – 9:30	HIEA Overview and JET Updates	Ms. Yvonne Cole (DoD/VA IPO) Mr. Chris Hills (DoD/VA IPO) Mr. Russ Ott (DoD/VA IPO Support)
9:30 – 9:45	Setting the Stage & Perspectives from our Sponsors	Dr. Lauren Thompson (DoD/VA IPO) Mr. Steve Posnack (ONC/OST) Ms. Gail Kalbfleisch (FHA)
9:45 – 10:00	BREAK	
10:00 – 11:00	Goals and Attributes of Success and Guiding Principles	Ms. Nona Hall, BSN, MA (DoD/VA IPO)
11:00 – 11:30	Current State of DoD and VA Information Modeling	DoD: Mr. Bart Bartholomew (DHA), Ms. Nancy Orvis (DHA) VA: Mr. Bob Bishop (VHA), Mr. Robert Crawford (VHA)
11:30 – 12:30	LUNCH	
12:30 - 3:00	Logical Information Models: Current State/Analysis of Similarities and Differences across Clinical Data Models <ul style="list-style-type: none"> <li>• SOLOR</li> <li>• CIMI</li> <li>• FHIM</li> <li>• CQF</li> </ul>	Dr. Keith Campbell, MD (VHA) Dr. Stan Huff, MD (InterMountain) Mr. Steve Wagner (FHA Support) Dr. Julia Skapik, MD (ONC/OST)
3:00 - 3:15	BREAK	
3:15 - 4:15	Recommendations for an Integrated Approach	Dr. Steve Hufnagel (FHA Support), Dr. Stan Huff, MD (InterMountain), Dr. Keith Campbell, MD (VHA), Mr. Galen Mulrooney (VHA Support)
4:15 – 4:45	Closing Remarks/Recap <ul style="list-style-type: none"> <li>• Parking Lot Interests/Questions for Day 2</li> <li>• Action Item Review</li> </ul>	Ms. Nona Hall, BSN, MA (DoD/VA IPO) Ms. Veronica Kwok (DoD/VA IPO Support)
4:45 - 6:30	Networking Hour (Optional)	Continental Pool Bar and Lounge

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**Day 2:**

Thursday, August 18, 2016		8:45 am to 4:30 pm
8:45 – 9:00	Arrival/Check-in	
9:00 – 9:10	<b>Recap &amp; Agenda Overview</b>	Ms. Yvonne Cole (DoD/VA IPO)
9:10 – 10:30	<b>Interests &amp; Recommendations for an Integrated Approach, Cont'd</b> <ul style="list-style-type: none"> <li>• Parking Lot Prioritization/Disposition of Questions / Interests from Day 1</li> <li>• Summary of Integration Plan Recommendations from day 1: Discussion of challenges &amp; issues to be addressed</li> </ul>	Ms. Nona Hall, BSN, MA (DoD/VA IPO) Dr. Steve Hufnagel (FHA Support), Dr. Stan Huff, MD (InterMountain), Dr. Keith Campbell, MD (VHA), Dr. Jay Lyle (FHA Support), Mr. Richard Esmond (PenRad), Mr. Claude Nanjo (Cognitive Medical Systems)
10:30 – 10:45	BREAK	
10:45– 12:15	<b>Lessons from Implementers</b> <ul style="list-style-type: none"> <li>• Discussion of Implementer experiences with information models. <ul style="list-style-type: none"> <li>• InterMountain</li> <li>• ONC/OST</li> <li>• Cerner</li> <li>• DaVita</li> </ul> </li> </ul>	Dr. Stan Huff, MD (InterMountain) Dr. Julia Skapik, MD (ONC/OST), Dr. Floyd Eisenberg, MD., Mr. Richard Esmond (PenRad) Dr. Marc Overhage, MD (Cerner) Mr. Matt Braunschweig (DaVita)
12:15 – 1:15	LUNCH	4 <sup>th</sup> Floor Cafeteria
1:15 – 2:15	<b>Tooling &amp; Implementer Support</b> <ul style="list-style-type: none"> <li>• Unique contributions; gaps addressed; capability/functionality that supports information modeling <ul style="list-style-type: none"> <li>• MDHT/MDMI</li> <li>• VSAC</li> <li>• SOLOR related</li> </ul> </li> </ul>	Dr. Dave Carlson (FHA Support), Mr. Sean Muir (FHA Support) Mr. Steve Emrick (NLM) Dr. Keith Campbell, MD (VHA)
2:15 – 2:30	BREAK	
2:30 – 4:00	<b>Reporting Out and Next Steps</b> <ul style="list-style-type: none"> <li>• Summary of Recommendations from the 2 days</li> <li>• Discussion of Pilot Project Options to support Organizational Adoption</li> </ul>	Ms. Nona Hall, BSN, MA (DoD/VA IPO) Dr. Keith Campbell, MD (VHA), Dr. Stan Huff, MD (InterMountain), Dr. Julia Skapik, MD (ONC/OST), Mr. Steve Wagner (FHA Support) <b>Co Sponsors/Leadership</b> Dr. Lauren Thompson (DoD/VA IPO) Mr. Steve Posnack (ONC/OST) Ms. Gail Kalbfleisch (FHA)
4:00 – 4:30	<b>Recap/Closing/Acknowledgements</b> <ul style="list-style-type: none"> <li>• Upcoming Related Activities</li> <li>• Action Item Review</li> </ul>	Ms. Nona Hall (DoD/VA IPO)/Core SMEs, as needed Ms. Veronica Kwok (DoD/VA IPO Support)

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## HIEA Technical Forum - *Information Models: Foundation to Semantic Interoperability*

### Presenter Biographies

**Ms. Nona G. Hall, BSN, MA** with over 36 years in healthcare is a member of the DoD/VA Interagency Program Office having served since its inception in 2009. The immersion into DoD/VA data sharing interests has been longstanding beginning in 1997 as she served as Service Advocate and ultimately Deputy Program Manager to the Executive Information/Decision Support IT Program Office serving the modernization of the Military Health System IT. Within the DoD/VA Program Coordination Office, she continued with the standup of the DoD/VA Joint Incentive Fund programs, progression of DoD/VA Demonstration Projects and furthering DoD/VA Joint Venture Site interests. Supporting both the MHS and VA IT realignment programs, Ms. Hall has supported the evolution to the current standards-based interoperability focus serving DoD, VA and its partners successfully coordinating the initial use of ONC's Nationwide Health Information Network and C32 Summary of Care standard, as DoD and VA increased their data sharing with the private sector via the Virtual Lifetime Electronic Record (VLER) Program. This experience also influenced the Transition of Care interests and the release of the initial C-CDA. As a clinical informaticist, Ms. Hall currently serves as the IPO's ONC Liaison detailed at the ONC. In this role, she has promoted opportunities for increased collaboration among the DoD, VA, IPO, FHA federal partners and the ONC with specific contributions in the release and maturation of ONC's Interoperability Standards Advisory. Most recent efforts have been in bringing together communities focused on increasing the utility and integration of information modeling and associated tooling to further interoperability opportunities.

**Mr. Bart Bartholomew** is Chief Enterprise Architecture Branch at the DoD's Defense Health Agency, Health Information Technology Directorate where he provides direction and oversight of all aspects of Military Health System Enterprise Architecture. He has a Master's in Pharmacy Practice and Administration. He is FEAC Certified with fourteen years Enterprise Architecture (EA) model development experience with Air Force Medical Service and Defense Health Agency. He has 25 years Federal service to include 20 years as an Air Force Pharmacist and other healthcare management and healthcare delivery leadership roles. Current high focus areas include leadership in the Zero-based Budget Review of DHA, Co-Chair for the Data team in support of the E-HR Synchronization between DHA and PEO DHMSM and collaboration with IPO and Federal Health Architecture initiatives.

**Ms. Nancy Orvis** is Chief of Business Architecture, Standards & Interoperability at the DoD's Defense Health Agency, Information Management. She has a Master's in Health Services Administration, with a concentration in operations research and management information systems. She has trained and worked in the area of health business process improvement, health data standards, vocabularies, data models, enterprise architecture, and HIT benefits realization, for the past 25 years. She currently provides oversight of the Military Health Business Architecture, AS-IS and To-BE, for the scope of Military Health System Health IM/IT Systems. She is the DoD ex officio member of the HIT Standards committee, the DoD Lead Business Architect to the Federal Health Architecture, original co-sponsor of the FHIM, MHS Lead for Health Standards Engagement, lead for MHS projects with LOINC, SNOMED CT, RxNorm. MHS HL7 Benefactor key member since 2007. At HL7 she maintains DoD membership on committees to include: Structured Documents, CIC, Attachments, SOA, EHR, Vocabulary, Patient Administration; supporter of UDI task force, CIMI. She serves as Vocabulary Facilitator for Patient Administration.

**Mr. Robert (Bob) Bishop** is Chief Health Segment Architect in VHA's Business Architecture Services group. During his 10 years with VHA he has also held positions as Lead of VA Health Data Architecture, and as Program Architect for VHA Standards and Terminology Services. Prior to joining the federal government he held HIT management positions with Kaiser Permanente and with Ernst & Young. He is a U.S. Air Force Veteran, holds an MBA from Emory University, a BS from George Washington University, and is a Certified Enterprise Architect, Project Management Professional, Information Systems Auditor, and Software Architect.

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**Mr. Robert Crawford** is a System Architect employee of Lockheed Martin Information System and Global Services (IS & GS). He is the Lead Information Architect (Contractor) for VHA 's Business Architecture Services Business Information Architecture unit (BIA) and has been in that role for the last 7 years. During his engagement with the VHA Robert has been instrumental in the development and direction of the Business Information Architecture and the standards and guidelines implemented to achieve that vision. Prior to his work at the VHA he held numerous Data Architecture positions in the healthcare sector including positions at: Kaiser Permanente, Millenium Healthcare Systems, Emory Healthcare, Medaphis, Medstat, Pediatric Services of America, and ACS State Medicaid Clearinghouse. He is a graduate of the University of Georgia with a BBA and is a Certified Enterprise Architect, Database Administrator, and Data Architect

**Dr. Keith E. Campbell, MD, PhD** is Director of Informatics Architecture for the Veterans. Health Administration department of Veterans Affairs (VA). He has more than twenty years of experience in the field of medical informatics, with an emphasis on terminologies for encoding clinical data. He is actively involved with SNOMED-CT development, and is currently a member of the IHTSDO technical committee, and actively works on development of the IHTSDO terminology workbench. He has a PhD in medical informatics/computer science from Stanford University, and received his MD from the University of Southern California. He completed residency training in internal medicine, and has cared for patients for five years at Santa Clara Valley Medical Center prior to leaving practice to focus exclusively on medical informatics. He has worked with and for large and small medical organizations and companies in a variety of areas including: organizational productivity, developing a strategic technology road map, providing design and architecture reviews, and developing software products that increase healthcare quality. Prior to joining the Veterans Administration, he was the Chief Technology Officer for Informatics, Inc. His past experience also includes Chief Technology Officer and Chief Information Officer for Inoveon, Assistant National Director of Informatics for Kaiser Permanente, and he also has significant experience as an independent consultant.

**Dr. Stanley Huff, MD** is Professor (Clinical) of Biomedical Informatics at the University of Utah, and the Chief Medical Informatics Officer at Intermountain Healthcare. He is board certified in Clinical Pathology, and in Clinical Informatics. He has worked in the area of medical vocabularies and medical database architecture for the past 25 years. He is currently a fellow of the American College of Medical Informatics, a co-chair of the LOINC Committee, a co-chair of the HL7 Clinical Information Modeling Initiative (CIMI), the Chair of the Healthcare Services Platform Consortium (HSPC), and the immediate past Chair of HL7. He is a former member of the ONC HIT Standards Committee. He teaches a course in medical vocabulary and data exchange standards in the Department of Biomedical Informatics at the University of Utah.

**Mr. Steve Wagner** is a senior enterprise architect with over 20 years of knowledge and experience in the practice of enterprise architecture and 27 years of experience with health standards. He also has 41 years of healthcare industry and 40 years of government experience in developing software, managing projects and implementing information technology. He has demonstrated expertise in development and implementation of enterprise architecture at multiple large government healthcare organizations. He has also authored chapters in two books on standards and architecture. Currently Mr. Wagner provides program and project management support to the Federal Health Architecture Office for the Federal Health Information Model (FHIM) project. This effort is focused on supporting the interoperable exchange of health information. Mr. Wagner holds bachelor and master's degrees in business administration.

**Mr. Galen Mulrooney** has over 30 years of system development experience, specializing in Health Information Technology (HIT) and Enterprise Architecture. He currently serves as a Standards Architect for the Office of Information and Analytics of the Veterans Health Administration (VHA). Mr. Mulrooney is active in several US Federal initiatives, including serving as the lead modeler for the Federal Health Information Model project. Mr. Mulrooney has held leadership positions at several Health Information Technology-related Standards Development Organizations, including serving as chair of the HL7 Clinical Information Modeling Initiative Work Group and as chair of the NCPDP Modeling and Methodology Task Group. His past healthcare IT experience includes efforts at the US Navy, National Institutes of Health, Indian Health Service, tribal governments, and in the private sector.

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**Dr. Julia Skapik, MD M.P.H.** is a board-certified Internist and Medical Officer at the Office of the National Coordinator for Health Information Technology, where she has worked on electronic clinical quality measures (eCQMs) in the EHR Incentive Program since 2012. She led ONC's role in the creation of the Value Set Authority Center at the National Library of Medicine, including content harmonization, governance, and quality assurance processes. She currently co-leads the ONC-CMS Tacoma contract to harmonize data elements, models and expression language standards across clinical decision support and eCQMs. She looks forward to ongoing opportunities with health IT stakeholders working toward common data elements, modularization of eCQM specifications and certification, a national testbed for health IT data, continuing to LEAN out federal business processes, and improvements in federal health IT regulations that enable innovation and usability in the private sphere. She came to ONC from an AAAS Science & Technology Policy Fellowship at the National Science Foundation and first experienced HIT policy during a Mirzayan Policy Fellowship at the Institute of Medicine in 2007. She completed her M.D. and M.P.H. in Epidemiology and Biostatistics at the Johns Hopkins University, her residency in general internal medicine at the University of Pittsburgh Medical Center, and currently moonlights at Inova Mount Vernon Hospital in Virginia as a hospitalist.

**Mr. Claude Nanjo** is Chief Scientist at Cognitive Medical Systems. In addition to leading a number of R&D projects in the area of Clinical Decision Support (CDS), Claude has been actively involved in a number of ONC-sponsored standard development initiatives at HL7 and is an active Health Services Platform Consortium (HSPC) participant. He was a main contributor to the Health eDecision (HeD) S&I initiative (currently known as the Clinical Decision Support Knowledge Artifact Specification, Release 1.3) and has led modeling efforts for the Virtual Medical Record (Virtual Medical Record (vMR) Logical Model, Release 2 Version 3). At this time, Claude is participating in the Clinical Information Model Initiative (CIMI), leading a modeling effort aimed at consolidating the modeling efforts of the CDS, CQI, and FHIM group under a single umbrella. He is also actively involved in the Clinical Quality Framework (CQF) initiative.

**Dr. Floyd Eisenberg, MD, MPH, FACP,** is a consultant in quality measurement and clinical decision support (CDS). An Infectious Diseases internist with clinical practice and managed care quality experience, Dr. Eisenberg served as a Senior Key Expert at Siemens Medical Solutions Health Services. At National Quality Forum, he led development of the Quality Data Model to enable electronic measurement from EHRs, coordinating measure conversion to enable the transition. He is currently a Board member of HL7 International and a co-chair of the HL7 Clinical Quality Information Workgroup. He is also a member of the Health IT Standards Committee (HITSC). Current activities include development and testing of immunization-related workflow requirements for EHRs (CDC), development of an outcome measurement framework (AHRQ), and support for the CMS electronic clinical quality measurement (eCQM) program and related eCQM and CDS standards.

**Mr. Bryn Rhodes,** Database Consulting Group LLC, USA, has been a software developer for 20 years, with most of his career focusing on information and database management systems and applications for a broad range of industries. Bryn has been involved in architecture and implementation of everything from hospital payroll systems to web scale real-time clinical decision support systems. He has spent the last several years as a member of the Health eDecisions and Clinical Quality Framework Initiatives (CQF) working on the problem of sharing executable clinical knowledge, and is currently working on bringing the standards that have been developed in the CQF initiative to FHIR.

**Mr. Kensaku Kawamoto, MD, PhD, MHS** is Associate Chief Medical Information Officer, Director of Knowledge Management and Mobilization, and Assistant Professor of Biomedical Informatics at the University of Utah. Dr. Kawamoto earned his B.A. in biochemical sciences from Harvard University, and he earned his M.D., Ph.D. in biomedical engineering with a focus on biomedical informatics, and M.H.S. in clinical research from Duke University. At the University of Utah, Dr. Kawamoto chairs the Clinical Decision Support committee and is a leader of the University's Interoperable Apps and Services (IAPPS) initiative, which is a multi-stakeholder effort to enable standards-based, interoperable applications and software services to improve health and health care. Dr. Kawamoto is also engaged in the development and leveraging of predictive models to address important health care needs, and he is a co-solution architect of the Value Driven

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Outcomes (VDO) framework for analyzing and improving care value. Beyond the University of Utah, Dr. Kawamoto co-chairs the Clinical Decision Support Work Group of Health Level 7 International (HL7), the primary standards development organization in health IT. He also serves as co-Initiative Coordinator for the Clinical Quality Framework initiative ([www.cqframework.info](http://www.cqframework.info)), which is a public-private partnership sponsored by the Office of the National Coordinator for Health IT and the Centers for Medicare & Medicaid Services to develop and validate a harmonized set of interoperability standards for clinical decision support and electronic clinical quality measurement. Dr. Kawamoto also founded and directs OpenCDS ([www.opencds.org](http://www.opencds.org)), which is a multi-institutional initiative to enable advanced, standards-based, and open-source clinical decision support and electronic clinical quality measurement at scale.

Dr. Steve Hufnagel received his PhD from the University of Texas at Austin in Computer Science in 1987 and he became an assistant Professor at The University of Texas at Arlington, Department of Computer Science and Engineering; where, he taught software engineering, including the formal specifications of systems for about ten years. During this time he participated in the following DARPA sponsored projects:

- Trauma Care Information Management System (TCIMS) Project
- Military Medical Training and Evaluation (MMT&E) Project
- Computer Aided Training Initiative (CATI)
- Since 1998 he has been a DoD, VA, IPO and FHA contractor supporting the
- following
- 1998-2000 MHS Enterprise Information & Decision Support Program
- (EIDS)
- 2001-2003 MHS PEO Lead Architect
- 2004-2006 MHS Theater Medical Information System (TMIP) Lead
- Architect
- 2006-2009 MHS rep. to HITSP (Health Information Standards Panel)
- 2010-present MHS, VA, IPO and FHA Standards And Interoperability Information Architect and Interoperability Engineer

**Mr. Richard Esmond**, Chief Technical Officer and Lead Architect for PenRad, Inc. who has been in the Structured Radiology Reporting market for over two decades. 20+ years of experience as Chief Technical Officer of four different software companies, three of which he founded personally. He has spent the last 8 1/2 years as the chief architect of the Clinical Pathways Tooling project which brings together Speech Recognition, Computational Linguistics and Decision Support into a single platform that is completely model-driven. And our modeling platform is centered around CIMI, FHIR and CQL. The key standards that are about to reshape our world. He is a very active member of the Clinical Information Modeling, Clinical Decision Support and Clinical Quality Improvement groups within HL-7.

**Dr. Jay Lyle** is a terminologist with JP Systems and a co-chair of the HL7 Patient Care workgroup. After a first career in comparative literature, he worked as a project manager and business architect for Computer Sciences Corporation and for the boutique portal firm Enterpulse. Current projects include managing the FHIM terminology project, supporting VA semantic interoperability initiatives including participation in CIMI, authoring specifications for the emergency medical services and trauma domains, and developing classes to support terminology education.

**Dr. Robert McClure**, MD trained in Internal Medicine and Pediatrics and practiced for ten years before devoting his career fully to clinical informatics. As an informatician for over 25 years, he has authored numerous publications with activities that range from developing clinical terminologies, creating on-line electronic learning systems and building clinical guideline environments to authoring international terminology standards, risk management assessment tools, and clinical practice systems. Currently Dr. McClure is President of MD Partners, Inc., a health care terminology and clinical modeling company. He is an active

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participant in health care standards development (ONC S&I framework, HL7, IHE, FHIM, LOINC, NCPDP, USP, NQF, and Canadian Health Infoway). He is currently a vocabulary co-chair for HL7 and serves on the HL7 Terminology Authority committee; he has previously served on the HIT-SC Clinical Quality Work Group, and IHTSDO as an elected US representative to the Implementation and Innovation committee. He is currently a consultant on terminology for the US National Library of Medicine (NLM) on the development of the Value Set Authority Center (VSAC) and the ONC on terminology standards including those needed for Meaningful Use Clinical Quality Measures. He is also a terminology SME for the FHA FHIM.

**Dr. J. Marc Overhage**, MD, PhD is Vice President and Chief Medical Informatics Officer at Cerner Corporation. He has more than 30 years of experience in medical informatics. He completed medical school, his doctorate in Biophysics and residency at the Indiana University School of Medicine. He served as Chief Medical Resident at Eskenazi Health and completed a residency in Internal Medicine at and fellowship in Health Services Research. He then served as faculty at Indiana University where he taught, provided clinical care and led research teams for 25 years. He served as director of Medical Informatics for the Regenstrief Institute before transitioning to Siemens Health services and then Cerner. His research has covered a broad range of topics including clinical decision support, clinical big data, user experience, clinical information standards and health information exchange. He led the creation and implementation of the Indiana Health Information Exchange which is the largest and most successful health information exchange in the world. At Cerner, Dr. Overhage provides leadership for Intelligent HIT efforts and the New and Emerging eXperiences (NEXT) group.

**Mr. Scott Stuewe**, Director Cerner Network has advocated for open, interoperable systems within the healthcare industry, leading numerous efforts to standardize system connections and physician outreach strategies at Cerner Corporation for 22 years. Stuewe has a history of collaboration working with third parties that want to connect with or leverage the Cerner platform to improve the flow of clinical data. Today, he is also the chair of the CommonWell Health Alliance Utilization Committee which is working to connect all CommonWell members' clients to this national clinical network.

**Mr. Matthew Braunschweig** has 30 years of experience with architecture and systems development primarily focused on data design and modeling. He is currently on the Enterprise Architect team at DaVita and operates as the Enterprise Data Architect. He has served as enterprise architect for the last 10 years and has lead the data definition and modeling side of projects, including efforts on patient direct care systems, health care reporting systems, financial reporting, and reporting tools for enterprise architecture programs.

**Dr. Dave Carlson, Ph.D.**, is author of the book 'Modeling XML Applications with UML' published by Addison-Wesley in 2001 and has over 25 years of experience with conceptual modeling, object-oriented design, and knowledge engineering. Since 2006 Dave has worked in healthcare informatics as a consultant to Veterans Health Administration, Mayo Clinic, and Intermountain Healthcare creating a better solution for designing and implementing healthcare interoperability standards. Dave initiated formation of the Model Driven Health Tools (MDHT) open source project in 2008 and is continuing evolution of this platform to support design of FHIR profiles using UML, plus integration with SNOMED CT terminology services. Dave is currently working with VHA Knowledge Based Systems organization to support development of FHIR standards and use of Model Driven Architecture (MDA) for healthcare standards, and also with the ONC Federal Health Architecture (FHA) to support semantic interoperability using MDA.

**Mr. Sean Muir** has over thirty years of software development and management experience on both large and small scale projects implemented using a variety of technologies and methodologies such as UML, Java, MDA and Agile development with the last ten years focusing on electronic health records. Recent highlights include:

- Represented US VHS at several health related standards organizations. Was co-Editor of HL7 Implementation Guide for CDA® Release 2: IHE Health Story Consolidation designated in Meaningful Use Stage 2 and the primary modeler of National Council for Prescription Drug Programs, Script (ePrescribing Standard) version.

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- Provided technical leadership to the latest NCPDP Structured and Codified Sig Format including the introduction of a Sig Grammar built using ANTLR and restructured xml structure.
- Developer and committer on MDHT and MDMI open source projects.
- Providing tooling and modeling leadership to Federal Health Information Model.

**Mr. Ken Lord** is a graduate of MIT and has over 30 years of experience focused on data integration and semantic interoperability in distributed environments. For the past 6 years, Mr. Lord has focused on applying the Object Management Group's Model Driven Message Interoperability (MDMI) Standard to address semantic interoperability in healthcare. Recent highlights include:

- Project Lead for the open source MDMI Project.
- Led and participated in interoperability solutions for healthcare organizations such as SAMHSA, the FHA, Partners Healthcare Research, Beth Israel and others.
- Co-author of the HL7 Cross-Paradigm Immunization Implementation Guide.
- Co-author of "Interoperability in the 21st Century: Cost Effective Solutions and Guidelines for Interoperable Electronic Health Records" published for the International Healthcare Interoperability Conference 2016.
- Acknowledgement in "Taking advantage of continuity of care documents to populate a research repository", Jeff Klann and others, JAMIA 2014
- Member of the Object Management Board.

**Mr. Steven Emrick** Since November 2011, Steve has directed the Terminology Quality Assurance and User Services Unit at the National Library of Medicine. He oversees 6 Full Time Employees and 2 contract staff who are in charge of user support, training, quality assurance, and documentation of NLM Terminology products such as the Unified Medical Language System (UMLS), SNOMED CT, RxNorm/DailyMed, the Value Set Authority Center (VSAC), MeSH Linked Data, and AccessGUDID. Steve works closely with implementers of our terminology products in both the public and private sectors on a various issues that have a wide range of complexity such as licensing, content, tooling, and policy. He is in constant contact with our partners at the Office of the National Coordinator of Health IT (ONC), Centers for Medicare/Medicaid (CMS), and the Food and Drug Administration (FDA), and the International Health Terminology Standards Development Organization (IHTSDO) to respond to future needs as they relate to NLM vocabulary standard products and tooling. Steve holds a B.Sc. in Molecular Biology from Juniata College in Huntingdon, PA (1998), and is a veteran of the United States Army, where he served for 5 years in Signals Intelligence.

**Dr. Jason Lee**, on behalf of The Open Group is a health services researcher, health policy expert, and group facilitator. He worked on Capital Hill for 10 years, culminating as Health Policy Counsel for the House Energy and Commerce Committee. He also worked for ASPE during the ARRA funding period. Dr. Lee is widely published and has both reviewed and received numerous grants, from RWJF and AHRQ in particular. For the past decade his work has focused on health information technology and, as Director of The Open Group's Healthcare Forum, on health information interoperability.

**The Open Group** The Open Group is a global consortium that enables the achievement of business objectives through IT standards. With more than 500 member organizations, The Open Group has a diverse membership that spans all sectors of the IT community – customers, systems and solutions suppliers, tool vendors, integrators, and consultants, as well as academics and researchers – to:

- Capture, understand, and address current and emerging requirements, establish policies, and share best practices
- Facilitate interoperability, develop consensus, and evolve and integrate specifications and open source technologies
- Offer a comprehensive set of services to enhance the operational efficiency of consortia

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