NIST
Medical Device Communication Testing

Semantic interoperability of Medical Devices

Test Tool Update
Joint IEEE / HL7 September WG Meeting @ Baltimore, MD

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National Institute of Standards and Technology
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NIST MDC Testing Staff

- John J. Garguilo, NIST, john.garguilo@nist.gov
- Michael Faughn, NIST, michael.faughn@nist.gov
  - RTMMS – New Version Coming in October!
  - UTG, Terminology, HL7 V2+
  - 11073-10201 MDC Domain Information Model
    - DIM Modeling + “DIM Editor/Medical Device Profiler”

- Nicolas Crouzier(Contractor-Dakota)
  - RTMMS – 11073-10101 MDC Nomenclature
  - HL7 V2 Tools (IGAMT + TCAMT support) – IHE Device Domain

- Note: As part of US Federal Government, all NIST work products are freely and publically available
Key Discussion Topics

- Work Area & Status Updates
- Health Information Technology – Test Infrastructure - End-to-End Platform
- HL7 V2 IHE-PCD Tooling Status & Updates
- MDC Tooling and Harmonized Medical Device Nomenclature
- DIM Editor – Device Profile Builder

*NIST Tools publicly available 24 (hours) x 7 (days) x 365 (days/year)*
Conformance Tooling Suite

- **HL7 V2 (2.6) IHE-DEV (PCD Program) Validation Tools**
  - IHE-PCD Connectathon, [IHE DEV V2 Message Validation Tooling](https://hl7v2tools.nist.gov)
- **Rosetta Terminology Mapping Management System (RTMMS)**
  - [https://rtmms.nist.gov](https://rtmms.nist.gov)
  - **New System Coming Soon!**
- **DIM Work** - ‘DIM Editor/Profiler’ and ISO/IEEE 11073 UML Model
  - Development Tool: [dim.prometheuscomputing.com](http://dim.prometheuscomputing.com)

- **NIST HL7 V2 Portal**: [https://hl7v2tools.nist.gov/portal/#/tools](https://hl7v2tools.nist.gov/portal/#/tools)
  - IGAMT – Implementation Guide Authoring Management Tool
  - TCAMT – Test Case Authoring Management Tool

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**Conformance Tooling Portal:** [http://hl7v2tools.nist.gov/portal/#/tools](http://hl7v2tools.nist.gov/portal/#/tools)
Work Areas & Status Updates

HL7 V2 (2.6) IHE-PCD Validation Tools

• Enhancements to Pre-Connectathon (“Context-Based”, Connectathon Tools (“Context-Free”) support IHE-PCD Cycle17; CPs + new PCIM Integration Profile

• Key test events
  – Supported IHE-North American + European Connectathon (September 2022)
  – Supporting IHE-Korea and Japanese Connectathons

• IHE-PCD Cycle 17 ended at last week’s (September 16, 2022) at IHE Connectathon Test Event

• Accepting new work and CPs for Cycle 18 - 2022-23 (targeting IHE Connectathon Test Event in February 2023 + HIMSS 2023)
IHE North American (NA) Connectathon 2022

IHE Global Connectathon 2022

Are you working to fine-tune product interoperability? Complete months of development in minutes at the IHE Global Connectathon testing event and collaborate with your industry colleagues at one of the largest health IT testing events in the world. IHE-Europe and IHE USA will host their first face-to-face joint IHE Connectathon September 12-16, 2022. Ready to join us? Register here!

Connectathon Participants can find all the essential information here.

IHE Experience and Standards Acceleration Programming Schedule

What is the Connectathon?
IHE ‘Connectathons’
September 12-16, 2022

North America: Atlanta
European: Montreux

Benefits of IHE Connectathon Testing

• Reduce Development Costs and Time to Market
• Debug systems and product capabilities within minutes leveraging a broad cross-section of industry partners on-site including:
  • Electronic medical record (EMR) vendors, public health agencies, device vendors and key infrastructure components that support health information exchange including Patient Identity Managers, Document Registries and Repositories, Cross Community Gateways
  • Leverage 20+ years of standards development experience and test tools developed in partnership with IHE International, IHE USA and National Institute of Standards and Technology (NIST)
  • Learn, collaborate, and network with 450+ of the industry’s top professionals at the largest interoperability testing event in the world
IHE North American September 12-16, 2022 ‘Connectathon’

By the numbers...

IHE Connectathon: Atlanta + Montreax

- Patient Care Device
  - 14 Organizations
  - 22 Applications (18 US; 4 Montreux)
  - 6 Integration Profiles
    1. DEC – Device Event Communication
    2. ACM – Alert Communication Management
    3. PIV – Pump Infusion Verification
    4. IPEC – Infusion Pump Event Communication
    5. MEMDMC – Med Equip Mgmt – Device Mgmt Comm
    6. PCIM – New! – Patient Connected Identity Management
  - 150 Test Instances verified
  - 4 DEV/PCD monitors

Organizations Tested:

Almaviva SpA
Baxter Healthcare
B. Braun Medical
Connexall
Enovacom
Epic
Fresenius Vial SAS
GE Precision Healthcare LLC
ICU Medical
IRM, Inc.
Innovision Medical Technologies
Mindray
Philips Medical Systems Nederland B.V.
Spok Inc.
Example of New V2 Validation Tool: Used at NA Connectathon
https://ihe-pcd.nist.gov/pcdtool/#/home
Rosetta Terminology Mapping Management System (RTMMS) ISO/IEEE 11073-10101

• RTMMS Deployment Update and service status
  – -10101a added + harmonized co-constraints (e.g., units, enums, body sites): 590 LOINC mappings to MDC terms!
  – -10101b Work underway, 10101c (future TBD)
  – NIST-IEEE Royalty Free Agreement makes available the “Works” (5 key nomenclature attributes) – \textit{perpetual agreement}
  – Latest numbers…
  – Many thanks to lead Paul Schluter, retired Principal Engineer! 😊

• \url{https://rtmms.nist.gov}