



Interoperability Specifications and Conformance Testing Services Made Available on the Tukan Platform

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Challenges of Polish health IT community



- National eHealth agenda
 - pilot of central ePrescription and eDispensation system,
 - development of central eReferral system,
 - official recommendation of IHE profiles use
 - cross-enterprise document exchange based on IHE XDS.b profile,
 - continuous development of the Polish National Implementation Guide for HL7 CDA.
 - planned releases of other national localizations of HL7 standards and IHE profiles
 - draft specification of IHE XDS.b metadata
 - draft HL7 v3 templates for IHE PIXV3 and IHE PDQV3
 - draft HL7 FHIR Profiles for eScheduling
- Regional projects concerning cross-enterprise document exchange.
- Existing mature implementations of HL7 CDA standard.
- Growing interest in HL7 FHIR® standard.

Objectives



- Establish a community around HL7 interoperability standards and IHE integration profiles with health IT vendors, medical providers and public authorities for the purpose of boosting standards adoption and implementation.
- Provide tooling for specification publication and implementation validation
 - open and easily accessible for HL7 Poland members,
 - available for the rest of interested parties in some extent.
- Collaborative effort to build a trusted environment for regional, nation-wide and international interoperability testing.
- Use of globally approved tooling, configured to local requirements.
- Support especially those vendors, who are not able to participate in official events like connectathons organized by IHE or HL7.

- Online platform dedicated to Polish healthcare IT community, where national specifications for interoperability are published together with a set of testing tools supporting their implementation.
- Realized by members of HL7 Poland, with no direct external funding.
- Covers selection of HL7 standards and IHE profiles, that are most interesting from Polish perspective.
- The platform is ready to be used as an environment supporting peer-to-peer testing in connectathon-like events.



- The Tukan platform is based on software components originating from various sources:
 - open source release of IHE Gazelle components,
 - development tooling of Polish National Implementation Guide of HL7 CDA,
 - ART-DECOR platform software components,
 - HAPI FHIR reference implementation for FHIR STU3 standard,
 - Central Authentication Server (CAS) software components.
- All Tukan platform services are deployed as isolated, Docker-based containers in the Linux environment.
- The platform itself is the main repository of the container images.
- Any service can be easily replicated to many computing nodes if needed, and effortlessly deployed to other infrastructure, including various cloud service providers.

- PL CDA validation tool
 - tooling created during development process of Polish National Implementation Guide of HL7 CDA,
 - based on validation artifacts generated from ART-DECOR environment,
 - deployed on the same eXist XML database engine as DECOR services,
 - support for different versions of the Polish specification.
- IHE XDS.b conformant endpoints simulator
 - created using NIST XdsTools 4 tooling (also used in IHE Connecathons),
 - TLS and non-TLS endpoints published for all major IHE XDS.b transactions.
- FHIR server
 - STU3-conformant reference server instance built using HAPI FHIR implementation,
 - R4-conformant instance developed during FHIR Connecathon in Cologne,
 - Terminology Services
 - terminology resources for base v2 code tables, v3 vocabulary domains and FHIR value sets imported,
 - several coding systems and value sets from Polish National Implementation Guide of HL7 CDA represented as FHIR resources,
 - LOINC and SNOMED-CT will be published soon (work in progress).



- Several Tukan services are based on IHE Gazelle platform (tooling used extensively during connectathon events organized by IHE Europe).
- IHE Gazelle Security Suite
 - component that enables secure communication as described in IHE ATNA profile,
 - public key infrastructure (PKI) management,
 - SSL certificates generation,
 - TLS endpoint simulator,
 - audit record messages (DICOM 15.3 conformant) validator.
- IHE Gazelle Proxy
 - peer-to-peer testing support tooling,
 - exchanged messages recording and validation invocation.
- IHE Gazelle Test Management
- IHE Gazelle External Validation Services Frontend (EVSCClient)

- ART-DECOR environment
 - continuously updated version of ART frontend application and DECOR backend services,
 - placeholder for current release version and minor draft versions of Polish National Implementation Guide of HL7 CDA (as well as on global ART-DECOR instance),
 - sandboxes for vendors created on demand.
- FHIR server
 - base resource structure definitions imported,
 - placeholder for Polish realm specific FHIR profiles developed on national, regional and local levels.

- The project started in June 2017 and the first Tukan services have been made available online in September 2017.
- Pilot phase (6 weeks):
 - 28 organizations
 - mostly software vendors, but also some medical providers, universities and local authorities,
 - HL7 CDA validator attracted most teams,
 - several hundreds of test CDA documents were validated.
- Now 45 organizations use Tukan platform
- National government eHealth agency (CSIOZ) recommends Tukan platform as an independent validation tool for conformance verification
- Two regional projects in Poland have declared to use Tukan.

First Polish connectathon



- HL7 Poland is organizing the first Polish connectathon-like event, that will take place in Warsaw, November 2018.
- The Tukan platform as the trusted testing environment.
- Cooperation with national and regional projects
 - event will be coupled with Polish central ePrescription, eDispensation and eReferral pilot system services projectathon.
- Focus on peer-to-peer testing of conformance to Polish localizations of HL7 standards and IHE profiles.
- Focus on demonstration and trial, not on assessments.
- Our competence:
 - two major Polish vendors (and HL7 Poland members) have participated in IHE Connectathon 2018,
 - two members of our team worked as monitors at that Connectathon
 - Tukan FHIR server took part in FHIR Connectathon in Cologne.

Conclusion



- The pilot phase of Tukan platform has shown that there is a significant interest in testing services
 - especially when there are official specifications of interoperability standards published.
- Providing trusted testing environment is the best way to improve the quality of implementations and to increase maturity of the specifications.
- We have established Polish community interested in interoperability standards and integration profiles.
- The Tukan platform will expand to provide increasing number of validation services, with collaborative effort of HL7 Poland members.