HL7 International Conformance Testing Pilot - Lessons Learned and Next Step Recommendations

Version 0.3

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CHANGE LOG

Version	Author	Date	Notes
0.1	Duteau Design	February 28, 2014	Initial Draft
0.2	Duteau Design	March 7, 2014	Added content from Dave Hamill
0.3	Duteau Design	March 10, 2014	Added additional content from Duteau Design Team

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1 Introduction

1.1 Overview of Project

HL7 International is actively seeking to improve the value added services provided to its membership by offering a 24/7 365 service that allows vendors to test their systems against the HL7 specifications. To make this happen, HL7 International contracted with qualified personnel to analyze an initial pilot HL7 specification, V2.5.1 Implementation Guide for Immunization Messaging to create written test profile artifacts against it.

This project analyzed the HL7 Version 2.5.1 Normative Edition 2012 standard and the Implementation Guide for Immunization Messaging, Release 1.4. A Conformance Profile and related test profile artifacts based on three Use Cases from the Implementation Guide - Use Case 1 (Send Immunization History); Use Case 8 (Acknowledge Receipt); and Use Case 9 (Report Error) was developed. Specifically, requirements for initiator responsibilities were included in the Conformance Profile.

The Conformance Test Profile developed consists of set of test cases, both "mandatory" and "optional", covering a reasonable set of paths as determined in association with the Public Health and Emergency Response (PHER) Work Group, Domain Experts and the HL7 Implementation Team. The test cases cover both the exchange of the message, i.e. field and behavior requirements, and the transport of the message. Some test cases have been identified as "for future development" as they were identified as edge cases.

Test Case 1 of the Conformance Profile was demonstrated as a proof of concept at the HIMSS 2014 Conference in Orlando, FL February 24-26, 2014.

1.2 Purpose of Document

This document describes lessons learned, next phase recommendations and future testing recommendations identified during this project, the Proof of Concept demonstration and subsequent pilot. This document has been compiled using input from all teams participating on this project – Duteau Design Inc (DDI), Aegis, Domain Experts and HL7 International.

Section	Purpose
Lessons Learned	Tabulates lessons learned, including what worked well during the project and the Proof of Concept demonstration as well as specific areas for improvement and possible mitigations for future development.
Next Step Recommendations	Provides a set of recommendations for any next Conformance Test phases that might be needed or be considered.

Section	Purpose
Future Testing Recommendations	Provides recommendations on future tests that might be added to the profile that were deemed out of scope for the purposes of this specific project.

2 Lessons Learned

The following lessons learned were identified during the project:

Category	Lesson Learned	Mitigation in Future Work
HL7 Expertise	• HL7 International contracted with "Domain Experts" for this project, but they were "HL7 Experts"	• See Lesson Learned re: Domain Experts
	• Experts engaged provided HL7 V2.x expertise	• Need engagement with HL7 experts in addition to domain experts but need to be clear on the type of expertise to be provided
	• Timelines for this project were very short and the project overlapped an HL7 International Working Group Meeting	• Ensure there is enough time in the project cycle to get adequate engagement. Engagement needs to be extended to allow for adequate review and feedback.
Engagement of Domain Experts	• Domain expertise for reviewing Project Team deliverables not readily available. The Project Team engaged the PHER Work Group to provide necessary business/domain knowledge during the development of the conformance profile.	• Engage Domain Experts that have business knowledge of the domain need to be engaged to: o Provide guidance on implementation guide o Review test data and validation rules developed
	• Contractually obligated Domain expertise for reviewing Project Team deliverables not readily available. During this project, PHER Work Group resources responded to questions on a volunteer basis	• Domain Experts should be contracted resources rather than volunteer resources since not all Work Groups will have interest and/or bandwidth to provide timely responses

Category	Lesson Learned	Mitigation in Future Work
	• Timelines for this project were very short and the project overlapped an HL7 International Working Group Meeting	• Ensure there is enough time in the project cycle to get adequate engagement. Engagement needs to be extended to allow for adequate review and feedback.
V2.5.1 Immunization Messaging Immunization Guide	• Implementation Guide is not fully constrained and therefore is not an implementable guide	• The Implementation Guide needs to be constrained to be implementable. This should be done as part of the development of the conformance profile and then fed back to the appropriate Work Group/Organization to allow the Implementation Guide to be updated in the next cycle.
	• For the purposes of this project, the scope was limited to the published implementation guide and therefore was not fully constrained	• Need to be clear about the scope of the engagement for further work – work with existing implementation guide as published OR constrain in conformance profile
	• Assumptions, and therefore additional conformance statements were included in the Send Immunization History Conformance Profile	• Future conformance profiles should be developed based on implementable implementation guides. Additional conformance statements should be included in the Conformance Profile where not defined in the Implementation Guide and fed back to the appropriate HL7 International Work Group to be included in a new release of the Implementation Guide.
	• Implementation Guide is under specified. Many Implementation Guides are developed to specify 40-50 core components that are 'fully specified' for the named scope and use case. Non-core components are defaulted to requirements defined in the base HL7 Specification – leaving hundreds of components	• Future work needs to ensure the business case for each interoperability conformance profile test suite is as complete and specified as possible.

Category	Lesson Learned	Mitigation in Future Work
	under specified and therefore difficult to implement and test in a consistent manner.	
HL7 V2.x Standard	• The HL7 Standard is under specified. Chapters 2 and 2b do not include instructions for applying conformance to data type components although some Implementation Guides include this.	• Update HL7 V2.x Chapter 2b to add conformance for data type components.
Conformance Profile Artifacts	• There were no templates available to use for a conformance profile and test artifacts. Templates were created for this project	• Propose that future projects use the templates developed in this project as the basis of a Conformance Profile and Test Artifacts
HL7 International Status and Maintenance of Conformance Profiles	• The status of Conformance Profiles and Test Artifacts is not defined within HL7 International • Process for maintenance of Conformance Profiles and Test Artifacts is not defined in HL7 International	• Engage the HL7 International Technical Steering Committee (TSC) to establish the status of Conformance Profiles going forward including balloting requirements • Engage the HL7 International Technical Steering Committee (TSC) to define process for Conformance Profiles and Test Artifacts ○ Engage Conformance Guidance and Implementation Testing (CGIT) Work Group
Engagement with the Implementation Team	• There could have been some time and effort savings if the conformance artifacts fed directly into the DIL	• Work with the AEGIS team to develop a suitable technical artifact that can be produced as part of the conformance profile and consumed by the DIL
Scope of the Profile	• There was some debate whether the RFP indicated that both initiator and responder requirements and test cases were in scope for development. DDI indicated that only initiators were	• Responder requirements and test cases will be critical for upcoming work. All future RFPs shall contain clear statements about initiators and responders. In return all proposals shall visibly identify work necessary for initiators and responders since they

Category	Lesson Learned	Mitigation in Future Work
	requested in the RFP and hence that is what their response to the proposal stated.	are clearly identified as a requirement.
Contract/Statement of Work (SOW)	• The work done by AEGIS for the proof of concept was based on a verbal agreement, as both parties never signed the SOW created. As this was a small endeavor for a proof of concept, there was no issue with this approach.	• For any further work, HL7 International and AEGIS shall sign an SOW that has a clear, documented understanding of each company's expectations and responsibilities.
Milestones during conferences	• Two conferences impacted the following milestones o The artifact review task fell right during the WGM in San Antonio. o Resources from organizations who expressed interest in participating in conformance testing weren't available due to HIMSS preparation.	• When creating the project schedule, ensure that major conferences or other conflicts are not occurring at the same time as milestone tasks. Request participation by organizations earlier in the project.
Project Management	• Project Management is key to keeping all deliverables on track	• Ensure that a Project Manager is assigned from each team engaged.

3 Next Steps

The following are recommendations for next steps for the HL7 Conformance Testing Pilot:

1. Send Immunization History Conformance Profile
    a. Continue development of all test cases identified for Send Immunization History Conformance Profile – some test cases were identified for future development and there are other edge cases that could be considered
    b. Develop conformance profile for responder systems for "Send Immunization History Message (i.e. Immunization Information System)
        i. Engage with PHER Work Group and American Immunization Registry Association (AIRA)
        ii. Develop requirements for how a receiving system deals with the data
2. Develop additional Conformance Profiles for other use cases/messages included in Immunization Implementation Guide (for example, queries)
    a. Engage TSC, PHER WG and AIRA to determine priorities
3. Select additional Implementation Guide(s) and determine priorities for development of conformance profiles
    a. Engage with TSC to identify opportunities and priorities
        i. Suggestions include a high profile Implementation Guide that is part of Meaningful Use such as Lab Results Interface (LRI) or Electronic Laboratory Reporting (ELR)
    b. Consider Implementation Guides developed in non-US Realms
4. Standardize HL7 International artifact templates for a Conformance Profile, test cases and test data using the artifacts developed in the Pilot Project
5. Determine the status HL7 Conformance Profiles within HL7 International (i.e. are they balloted?)

4 Future tests

As part of the development of the "Send Immunization History" Conformance Profile, a number of test cases were identified for future development. These include:

Test Case No.	Description	Scenario
CPIZ-001-09	Include Immunization History Evaluation and Forecast	For Future Development
CPIZ-001-10	Delete an Immunization Record	For Future Development
CPIZ-001-13	Send demographic information	For Future Development
CPIZ-001-14	Modify an Immunization Record	For Future Development

In addition, additional test scenarios and test data should be considered to exercise the inclusion of optional segments and attributes.