

HL7/Healthcare Devices WG (Orlando, Florida)

NIST Tooling Activities

NIST
**National Institute of
Standards and Technology**
U.S. Department of Commerce

John Garguilo and Sandra Martinez
16-19 May, 2011

IHE-PCD Testing – Key Objectives

- Increase test comprehensiveness & quality
- Support both conformance & interoperability testing
- Support for pre- & virtual- connectathons, actual connectathon & enable year round testing
- Remain in alignment with IHE-PCD integration profile development road map and underlying standards (e.g. HL7,x73)
- Establish single framework for PCD covering increasing complexity and technologies over next 5 years
- Coordinate with IHE “Gazelle Project” and NIST’s HIT Test Infrastructure
- Generate work products that companies can use in their regulatory submissions or help in product evaluation

HL7 / Healthcare Devices WG (Orlando, Florida)

NIST Tooling: HL7 V2.6 Test Tool For Cycle 6 (2011-12)

NIST
**National Institute of
Standards and Technology**
U.S. Department of Commerce

17 May, 2011

Our Team and Project Web Sites...

Contacts

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Tools and Project Sites

- **NIST's IHE-PCD HL7 V2**
- **Pre-Connectathon**

Coming in August...

- **Connectathon Web site:**
<http://xreg2.nist.gov:8080/PCD-HL7WebCon/>
- **MDC Testing Web site:** www.nist.gov/medicaldevices

NIST Supported Test Tools Overview/Status Update

- HL7 V2 Validation (IHE-PCD)
 - Instance-type Environment (at message level)
 - <http://xreg2.nist.gov:8080/PCD-HL7WebCon/>
 - <http://hit-testing.nist.gov:8080/HL7Web/>
- Cycle 6 (2011-12)
 - Isolated-type Environment
 - Scenario based
 - Actor centric
 - One System Under Test (SUT)
- RTMMS – Rosetta Terminology Mapping Management System
 - No version available to public – yet...
- ICSGenerator (ICS = Implementation Conformance Statement)
 - ISO/IEEE 11073 device specialization/profile builder
 - ❖ Private Term implementation considerations being added to tool
- What's still needed
 - Envelope/Message wrappers (WS, SOAP, SAML?) validation
 - Web Services

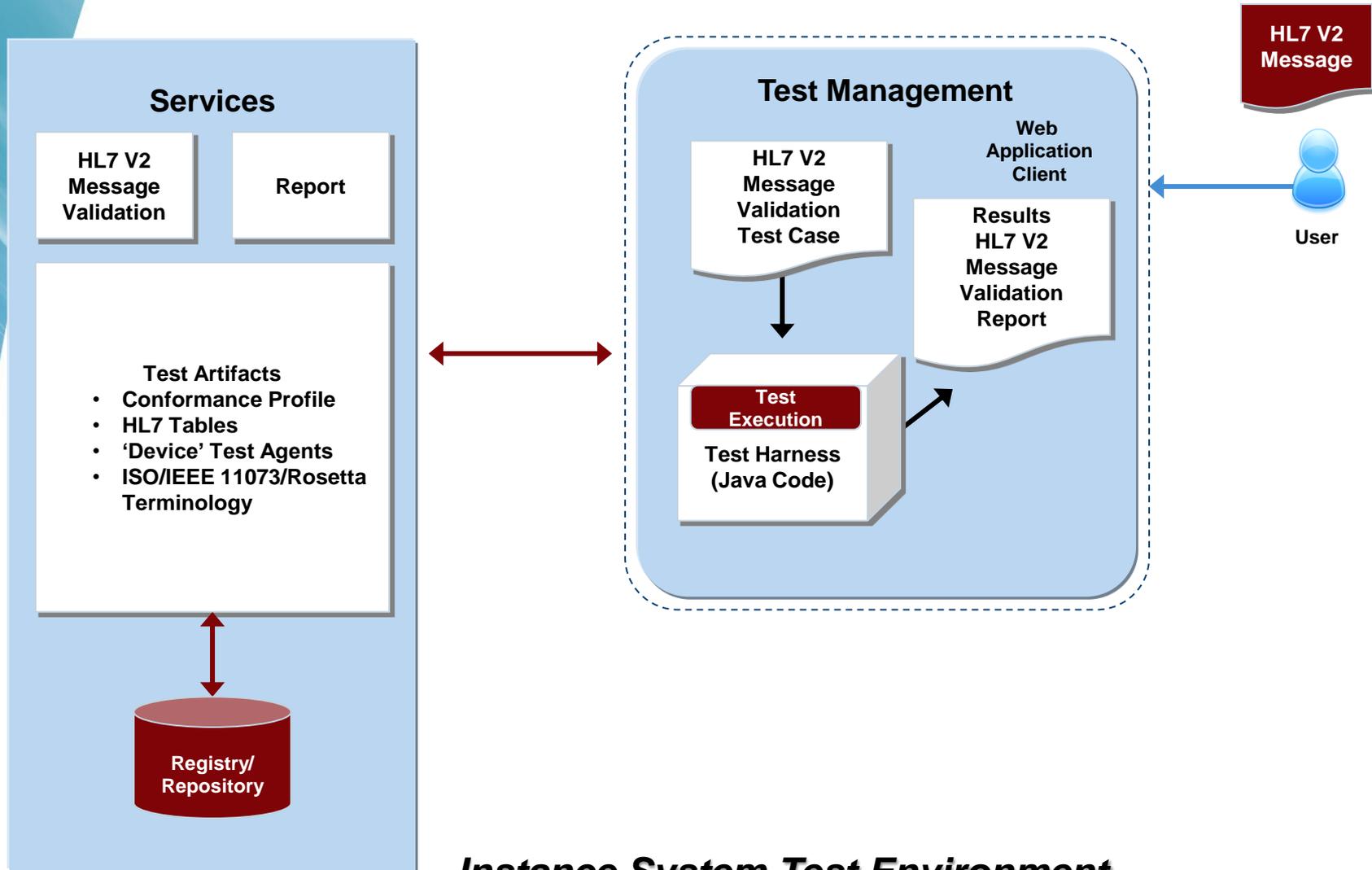
HL7 v2 Transaction Validation Process

- **HL7 v2 Syntax Validation**
 - Ensure the message structure is valid with respect to the HL7 v2 message definition and the HL7 v2 conformance profile
 - Ensure that the conformance requirements such as usage, cardinality, data type usage, etc. are valid with respect to the standard and the HL7 v2 conformance profile that constrains the message, in accordance with the IHE technical framework for a given transaction
- **Value Set Semantic Validation**
 - Ensure that elements that refer to a table are valid with respect to the value set it references. The value set is given by the HL7 v2 standard or as constrained by the IHE technical framework. An example includes confirming that the administrative sex element (PID.8) of the PID segment contains a value that is given in the HL7 v2 Administrative Sex table (HL70001).
 - Identify conformance violations of constraints implied by the IHE Integration Profile. These constraints are captured in a validation context file. An example of such a test includes an element that is fixed in the IHE integration profile (e.g., RCP.1 = I).
- **Terminology (and associated co-constraints) Semantic Validation (see RTM)**
- **Test Case Specific Validation**
 - Verify element content against a validation context file that captures test values as defined in the Pre-Connectathon test cases.
- **NEXT: HL7 v2 MLLP Validation**
 - Ensure the message is valid with respect to the HL7 v2 MLLP specification for wrapping and unwrapping HL7 v2 messages. This is an implied test.

Test Environments

- Instance Testing
 - Conformance (e.g., against HL7 V2.x or CDA)
 - Implementation conforms to Spec. on which it is based
- Isolated System Testing
 - Includes *Instance Testing* Activities
 - Protocol Conformance
 - Functional Behavior Conformance
 - Features and Operational behavior correspond to Specs.
- Peer-to-Peer System Testing
 - Includes *Isolated System Testing* Activities
 - Interoperability Testing
 - Testing complete application environment
 - May include interacting w/ Database, using Network Communications, or interacting w/ other hardware, apps, or systems if appropriate

Conformance Testing of an HL7 V2 Message



Instance System Test Environment

IHE-PCD Connectathon 2011 Test Tool

NIST HL7 V2 Tools

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[Validate](#) [Report](#) [View Errors](#) [Parse Message](#) [Configure](#)

➤ Select the IHE profile, the actor and the transaction corresponding to the message to validate (required)

IHE Profile	Sending Actor	Transaction
DEC	DOR	PCD-01 (ORU^R01^ORU_R01)
DEC SPD option	DOC	
PIV		
ACM		
IDCO		

➤ Select the test case corresponding to the message to validate (required)

Connectathon Test Case	Step	Test Case Description
DEC_DOR_DOC_One_Patient	1	Id: DEC_DOR_DOC_One_Patient Title: DEC DOR DOC One Patient (60001) Steps: Step 1: DOR sends data for patient in table 2010927 Step 2: DOC responds with ACK message (MSA-1 = "AA")
NIST_DEC_DOR_Standalone_DOF_D		

➤ Select the message to validate (required)

Browse for a message:

or Paste a message:

```
MSH|^~\&|NIST-Sender^0012210000000001^EUI-64|DOR|NIST-Receiver|DOC|20061215111821-0600||ORU^R01^ORU_R01|36|P|2.5|||NE|AL||ASCII|EN^English^ISO659||IHE_PCD_ORU-R01|2006^HL7^2.16.840.1.113883.9.n.m^HL7|PID|||BB2009001^^^NIST^PI||Bb^Albert^^^^L||19610101|M||
```

IHE-PCD Connectathon 2011 Test Tool

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[Validate](#) [Report](#) [View Errors](#) [Parse Message](#) [Configure](#)

Test Result: **Invalid Message (Errors: 4)**

Report Display: All Errors Warnings Alerts

Validation Parameters

Date: Wed May 11 23:41:16 EDT 2011

Profile	DEC
Actor	DOR
Transaction	PCD-01(ORU^R01^ORU_R01)
Test Case	DEC_DOR_DOC_One_Patient (Step 1)

IHE Supplement Syntax Validation Report

Summary

Errors	2
Warnings	0
Alerts	0

Validation Errors

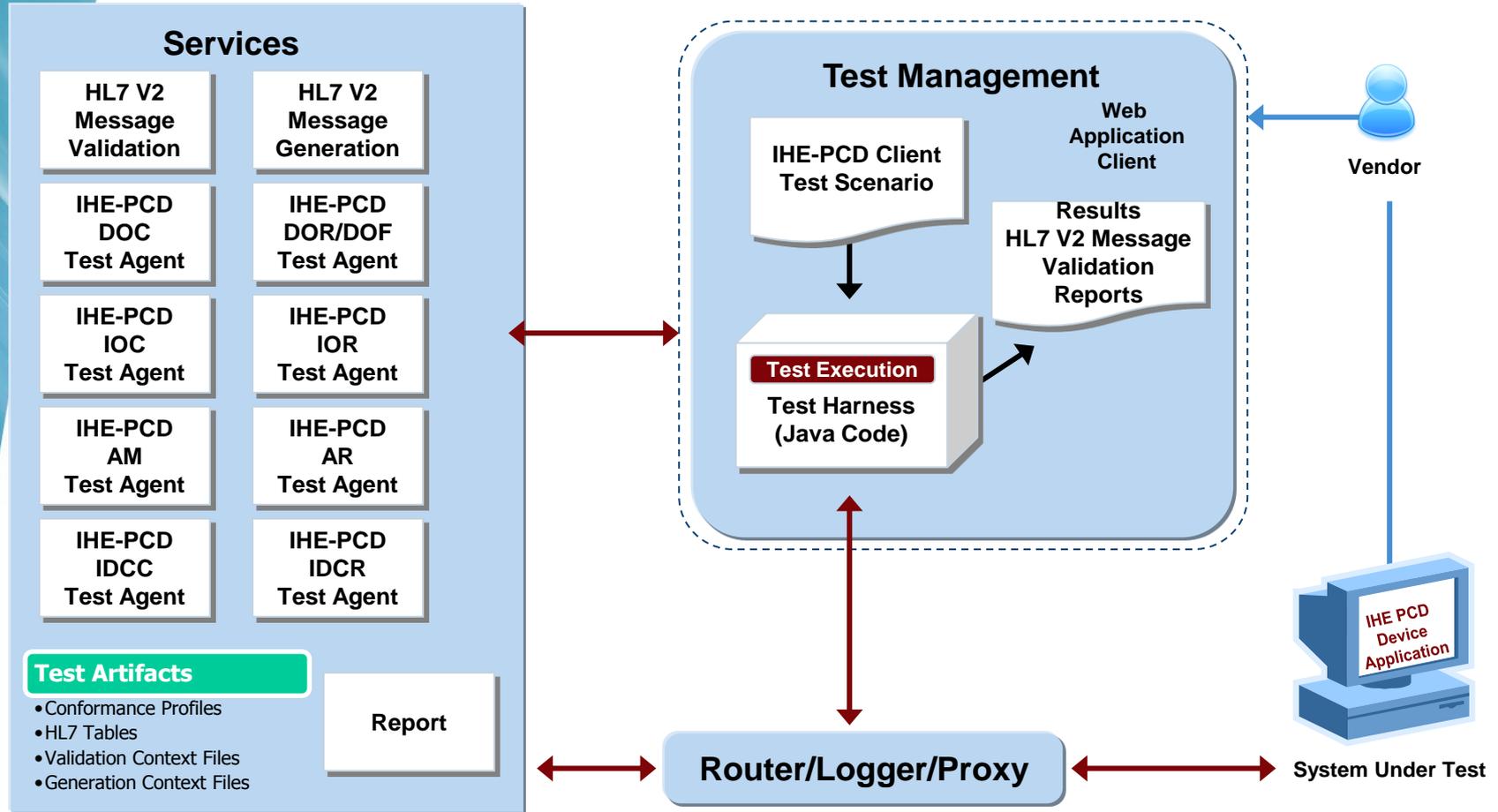
Error Details

1	Type:	Message Structure	
	Description:	The line " is not a valid segment This is a severe failure and validation has been terminated.	
	Location:	Line:	20
		Column:	1
2	Type:	Message Structure	
	Description:	The line 'Example 2' is not a valid segment This is a severe failure and validation has been terminated.	
	Location:	Line:	21
		Column:	1

Test Environments

- Instance Testing
 - Conformance (e.g., against HL7 V2.x or CDA)
 - Implementation conforms to Spec. on which it is based
- Isolated System Testing
 - Includes *Instance Testing Activities*
 - Protocol Conformance
 - Functional Behavior Conformance
 - Features and Operational behavior correspond to Specs.
- Peer-to-Peer System Testing
 - Includes *Isolated System Testing Activities*
 - Interoperability Testing
 - Testing complete application environment
 - May include interacting w/ Database, using Network Communications, or interacting w/ other hardware, apps, or systems if appropriate

IHE-PCD Testing using a Web Application Client



Isolated System Test Environment

Isolated / Scenario Testing

- Demonstration of DOC and DOR Test Agents

IHE-PCD HL7 V2 Isolated Test Tool

IHE PCD - Pre-Connectathon Test Tool - Dashboard

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Welcome to the Integrating the Healthcare Enterprise (IHE) Patient Care Device (PCD) 2011 Cycle Pre-Connectathon Test Tool.

This tool was developed by the National Institute of Standards and Technology (NIST) to support testing of the IHE PCD Pre-Connectathon Test Cases for Health Level 7 (HL7) Version 2 (v2).

User registration is not required; you can use the tool as a "guest" user. However registration is required to save and submit test reports to your Pre-Connectathon project manager. Click-on "Register" in the upper-right corner of this page for self-registration.

IHE PCD - Pre-Connectathon Test Tool - Dashboard

Overview Tests User Account Documentation About Contact us

Run Result

Select an actor to view the list of available Test Cases

HL7 Version v2 Actors

IHE-PCD HL7 V2 Isolated Test Tool DOR – select test case

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IHE PCD - Pre-Connectathon Test Tool - Dashboard

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Run Result

Select an actor to view the list of available Test Cases

HL7 Version v2 Actors

Test Cases

- DEC_DOR_DOC_One_Patient_(60001)
- NIST_DEC_DOR_Standalone_DOF_DOC_One_to_One_Communication_(60003)

IHE-PCD HL7 V2 Isolated Test Tool

Test Case and Step Descriptions

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Run | Result

Select an actor to view the list of available Test Cases

HL7 Version v2 Actors

Test Cases	
<input checked="" type="radio"/>	DEC_DOR_DOC_One_Patient_(60001)
<input type="radio"/>	NIST_DEC_DOR_Standalone_DOF_DOC_One_to_One_Communication_(60003)

Test Case Information

DEC_DOR_DOC_One_Patient_(60001)	
Pre-condition	None
Description	The purpose of this test is to check that your DEC Reporter can send a valid message (ORU^R01). Information for the patient are taken from table 2010927. Upon reception of the message, the NIST DEC Consumer validates the message and sends an acknowledgment back to your DEC Reporter.
Test Steps Description	Step 1: PCD-01 (ORU^R01^ORU_R01) DOR sends data for patient in table 2010927

Test Steps Information

Order	Actor	Description	Example of Message
1	IHE DEC Reporter	Sends a valid message (ORU^R01) to the NIST DEC Consumer	

Configuration Information
START TEST

IHE-PCD HL7 V2 Isolated Test Tool Configuration

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Run Result

Select an actor to view the list of available Test Cases

HL7 Version v2 Actors

Title	Date of Test	Result
<input checked="" type="radio"/> DEC_DOR_DOC_One_Patient_(60001)	May 12, 2011 9:29:58 AM	✘ Failed
<input type="radio"/> NIST_DEC_DOR_Standalone_DOF_DOC_One_to_One_Communication_(60003)		

Test Case Information

Pre-condition	None
Description	The purpose of this test is to validate the message information for the patient. The test sends a valid message (ORU^R01) to the NIST DEC Consumer. The NIST DEC Consumer validates the message.
Test Steps Description	Step 1: PCD-01 (ORU^R01) DOR sends data for patient ID: 20120127

Test Steps Information

Order	Actor	Description	Example of Message
1	IHE DEC Reporter	Sends a valid message (ORU^R01) to the NIST DEC Consumer	

Configuration Information START TEST

NIST Responder Configuration Information

Use the following configuration information:

Application Name: NISTManager_ADMIN

Facility Name: NIST

IP Address: 129.6.24.143

Port Number: Er7 Message (Non Secure: 9080)

OK

NIST
National Institute of
Standards and Technology

INFORMATION
TECHNOLOGY
LABORATORY

Date Created: 11-24-08 | Date Updated: 05/13/2011 09:46 AM

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IHE-PCD HL7 V2 Isolated Test Tool

Waiting for DOR/SUT...

IHE PCD - Pre-Connectathon Test Tool - Dashboard

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Run Result

DEC_DOR_DOC_One_Patient_(60001) Test

Transactions and Results

Order	Actor	Description	Result
1	IHE DEC Reporter	Sends a valid message (ORU^R01) to the NIST DEC Consumer	Waiting...

Console Log

```
5/13/11 10:00:39 AM - NISTManager_ADMIN / NIST configuration started  
5/13/11 10:00:39 AM - NISTManager_ADMIN / NIST configuration finished  
5/13/11 10:00:39 AM - Test: DEC_DOR_DOC_One_Patient_(60001) , Step: 1  
5/13/11 10:00:39 AM - Waiting for message...
```

IHE-PCD HL7 V2 Isolated Test Tool

Parse ORU^R01; Send ACK^R01

IHE PCD - Pre-Connectathon Test Tool -

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Dashboard

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Run Result

DEC_DOR_DOC_One_Patient_(60001) Test

Transactions and Results

Order	Actor	Description	Result
1	IHE DEC Reporter	Sends a valid message (ORU^R01) to the NIST DEC Consumer	Waiting...

Console Log

```

5/13/11 10:18:24 AM - Test: DEC_DOR_DOC_One_Patient_(60001) , Step: 1

5/13/11 10:18:24 AM - Waiting for message...

5/13/11 10:18:43 AM - message received from TF

5/13/11 10:18:43 AM - Incoming message received from NIST_DEC_Reporter 0012210000000001 EUI-64 / NIST

MSH|^~\&|NIST_DEC_Reporter^0012210000000001^EUI-64|NIST|NISTManager_ADMIN|NIST|20061215111014-0600||ORU^R01^ORU_R01|19|P|2.6|||NE|AL||ASCII|EN^English^ISO659||IHE PCD ORU-R01
2006^HL7^2.16.840.1.113883.9.n.m^HL7
PID||CD60002^^^IHE^PI||Darwin^Charles^^^^L|Emerine^^^^^^L|19620101|M
OBR|1|AB12345^HL7^ACDE48234567ABCD^EUI-64|CD12345^HL7^ACDE48234567ABCD^EUI-64|ServiceID^ServiceID||20061215111014-0600
OBX|1||69985^MDC_DEV_PUMP_INFUS_MDS^MDC|||||X||||N60002||X^A0001^BBRAUN
OBX|2||69986^MDC_DEV_PUMP_INFUS_VMD^MDC|1000001.1.0.0|||||X
OBX|3||126978^MDC_DEV_PUMP_INFUS_CHAN_DELIVERY^MDC|1000001.1.1.0|||||X
OBX|4||126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.2.0|||||X
OBX|5||126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.3.0|||||X
OBX|6|ST|184504^MDC_PUMP_MODE^MDC|1000001.1.1.101|pump-mode-nominal||||R||20061215111014-0600||||20061215111014-0600

5/13/11 10:18:43 AM - Processing validation...

5/13/11 10:18:50 AM - validation file received from TF

5/13/11 10:18:50 AM - Html report creation: started

5/13/11 10:18:52 AM - Html report creation: finished

5/13/11 10:18:52 AM - Waiting for message...

5/13/11 10:18:53 AM - message received from TF

5/13/11 10:18:53 AM - Incoming message received from NISTManager_ADMIN / NIST

MSH|^~\&|NISTManager_ADMIN|NIST|NIST_DEC_Reporter^0012210000000001^EUI-64|NIST|20110513101851||ACK^R01^ACK|NIST-110513101851238|P|2.6
MSA|AE|19
    
```

IHE-PCD HL7 V2 Isolated Test Tool Transaction Processing, with result

```
MDS|^~&|NIST_DEC_Reporter^0012210000000001^201-07|NIST|NISTManager_ADMIN|NIST|20061215111014-0600||ORU^R01^ORU_R01|19|P|2.6|||NE|AL||ASCII|EN^English^ISO659||IHE_PCD_ORU-R01  
2006^HL7^2.16.840.1.113883.9.n.m^HL7  
PID||CD60002^^^IHE^PI||Darwin^Charles^^^^^L|Emerine^^^^^^L|19620101|M  
OBR|1|AB12345^HL7^ACDE48234567ABCD^EUI-64|CD12345^HL7^ACDE48234567ABCD^EUI-64|ServiceID^ServiceID||20061215111014-0600  
OBX|1||69985^MDC_DEV_PUMP_INFUS_MDS^MDC|X||||N60002||X^A0001^BBRAUN  
OBX|2||69986^MDC_DEV_PUMP_INFUS_VMD^MDC|1000001.1.0.0||||X  
OBX|3||126978^MDC_DEV_PUMP_INFUS_CHAN_DELIVERY^MDC|1000001.1.1.0||||X  
OBX|4||126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.2.0||||X  
OBX|5||126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.3.0||||X  
OBX|6|ST|184504^MDC_PUMP_MODE^MDC|1000001.1.1.101|pump-mode-nominal||||R||20061215111014-0600||||20061215111014-0600
```

```
5/13/11 10:18:43 AM - Processing validation...  
5/13/11 10:18:50 AM - validation file received from TF  
5/13/11 10:18:50 AM - Html report creation: started  
5/13/11 10:18:52 AM - Html report creation: finished  
5/13/11 10:18:52 AM - Waiting for message...  
5/13/11 10:18:53 AM - message received from TF  
5/13/11 10:18:53 AM - Incoming message received from NISTManager_ADMIN / NIST  
MSH|^~&|NISTManager_ADMIN|NIST|NIST_DEC_Reporter^0012210000000001^EUI-64|NIST|20110513101851||ACK^R01^ACK|NIST-110513101851238|P|2.6  
MSA|AE|19
```

[Back](#) [Configuration Information](#)

 Failed with 2 error(s)

[Test summary](#)

IHE-PCD HL7 V2 Isolated Test Tool

Test Result Summary

IHE PCD - Pre-Connectathon Test Tool - Dashboard

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Run Result

Test Result Summary

Report not submitted will not be recorded

Result Summary	
Test Title	DEC_DOR_DOC_One_Patient_(60001)
Actor Tested	IHE DEC Reporter
Version	v2
Date of test	5/13/11 10:18:24 AM
Result of test	 Failed

Transaction 1	
Description: Sends a valid message (ORU^R01) to the NIST DEC Consumer	
 Failed	

Message ORU_R01

```
MSH|^~\&|NIST_DEC_Reporter^0012210000000001^EUI-64|NIST|NISTManager_ADMIN|NIST|20061215111017-0600||ORU^R01^ORU_R01|19|P|2.6|||NE|AL|ASCII|EN^English^ISO659||IHE PCD ORU-R01 2006^HL7^2.16.840.1.113883.9.n.m^HL7 PID||CD60002^IHE^PI||Darwin^Charles^L|Emerine^L|19620101|M
OBR|1|AB12345^HL7^ACDE48234567ABCD^EUI-64|CD12345^HL7^ACDE48234567ABCD^EUI-64|ServiceID^ServiceID||20061215111014-0600
OBX|1||69985^MDC_DEV_PUMP_INFUS_MDS^MDC| |||*|||OBX[1].4[1] is missing |BRAUN
OBX|2||69986^MDC_DEV_PUMP_INFUS_VMD^MDC|1000001.1.0.0|||||X
OBX|3||126978^MDC_DEV_PUMP_INFUS_CHAN_DELIVERY^MDC|1000001.1.1.0|||||X
OBX|4||126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.2.0|||||X
OBX|5||126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.3.0|||||X
OBX|6|ST|184504^MDC_PUMP_MODE^MDC|1000001.1.1.101|pump-mode-nominal|||||R|||20061215111014-0600||||20061215111014-0600
```

Message ACK_R01

```
MSH|^~\&|NISTManager_ADMIN|NIST|NIST_DEC_Reporter^0012210000000001^EUI-64|NIST|20110513101851|ACK^R01^ACK|NIST-110513101851238|P|2.6|MSA|AE|19
```

Validation Report for message ORU_R01

IHE Supplement Syntax Validation Report

Summary	
Errors	1
Warnings	0

IHE-PCD HL7 V2 Isolated Test Tool Validation Report

IHE Supplement Syntax Validation Report

Summary

Errors	1
Warnings	0
Alerts	0

Validation Errors

Error Details

1	Type:	Usage
	Description:	OBX[1].4[1] is missing
	Location:	Line: 4
		Column: 41
		Path: OBX[1].4[1]
		Segment: OBX
		Field: Observation Sub-ID

IHE Supplement Semantic Validation Report

Summary

Errors	0
Warnings	0
Alerts	0

hRTM Validation Report

Summary

Errors	0
Warnings	0
Alerts	1

Validation Alert

Alert Details

1	Type:	Message Validation Context
	Description:	The specified message element match location does not map to a message element. The data value at the specified match location can't be evaluated. Refine the message element match location. The provided path expression is 'OBX[6].5[1].2'.
	Location:	Path: OBX[6].5[1].2
	Assertion Declaration:	OBX[6].5[1].2 = pump-mode-nominal; pump-mode-drug-dosing; pump-mode-ramp-taper; pump-mode-multi-step; pump-mode-multi-dosing; pump-mode-bolus; pump-mode-loading-dose; pump-mode-multi-channel; pump-mode-pca; pump-mode-continuous; pump-mode-pca-and-continuous; pump-mode-piggyback; pump-mode-concurrent

IHE-PCD HL7 V2 Isolated Test Tool Validation Report, Continued

Alerts	0
--------	---

hRTM Validation Report

Summary

Errors	0
Warnings	0
Alerts	1

Validation Alert

Alert Details

1 Type:	Message Validation Context	
Description:	The specified message element match location does not map to a message element. The data value at the specified match location can't be evaluated. Refine the message element match location. The provided path expression is 'OBX[6].5[1].2'.	
Location:	Path:	OBX[6].5[1].2
Assertion Declaration:	OBX[6].5[1].2 = pump-mode-nominal; pump-mode-drug-dosing; pump-mode-ramp-taper; pump-mode-multi-step; pump-mode-multi-dosing; pump-mode-bolus; pump-mode-loading-dose; pump-mode-multi-channel; pump-mode-pca; pump-mode-continuous; pump-mode-pca-and-continuous; pump-mode-piggyback; pump-mode-concurrent	

Test Case Specific Validation Report

Summary

Errors	1
Warnings	0
Alerts	0

Validation Errors

Error Details

1 Type:	Data
Description:	'HO2009001; HO2009002; HO2009003; HO2009004; 2010001; 2010002; 2010003; 2010004; HO2010001; HO2010002; HO2010003; HO2010004; 2011001; 2011001; 2011001; 2011001; HO2011001; HO2011002; HO2011003; HO2011004; 2012001; 2012001; 2012001; 2012001; HO2012001; HO2012002; HO2012003; HO2012004; 2013001; 2013001; 2013001; 2013001' has not been found in the message at the location 'PID[*].3[1].1'

IHE-PCD HL7 V2 Isolated Test Tool Submit Report (to Test Management)

IHE PCD - Pre-Connectathon Test Tool - Dashboard

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Run Result

Test Result Summary

Report not submitted will not be recorded

Result Summary	
Test Title	DEC_DOR_DOC_One_Patient_(60001)
Actor Tested	IHE DEC Reporter
Version	v2
Date of test	5/13/11 10:22:46 AM
Result of test	Failed

Transaction 1	
Description:	Sends a valid message (ORU^R01) to the NIST D...
Result	Failed

Confirmation Dialog

Submit your report ?

Message ORU_R01

```
MSH|^~\&|NIST_DEC_Reporter^0012210000000001^EUI-64|NIST|NISTManager_ADMIN|NIST|20061215111017-0600||ORU^R01^ORU_R01|19|P|2.6|||NE|AL|ASCII|EN^English^ISO659||IHE PCD ORU-R01 2006^HL7^2.16.840.1.113883.9.n.m^HL7PID|||CD60002^AA|HE^P|||Darwin^Charles^AAAA|L|Emerine^AAAA|L|19620101|JM
OBR|1|AB12345^HL7^ACDE48234567ABCD^EUI-64|CD12345^HL7^ACDE48234567ABCD^EUI-64|ServiceID^ServiceID|||20061215111014-0600
OBX|1|69985^MDC_DEV_PUMP_INFUS_MDS^MDC| * |||||X||||N60002||X^A0001^BBRAUN
OBX|2|69986^MDC_DEV_PUMP_INFUS_VMD^MDC|1000001.1.0.0|||||X
OBX|3|126978^MDC_DEV_PUMP_INFUS_CHAN_DELIVERY^MDC|1000001.1.1.0|||||X
OBX|4|126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.2.0|||||X
OBX|5|126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.3.0|||||X
OBX|6|ST184504^MDC_PUMP_MODE^MDC|1000001.1.1.101|pump-mode-nominal|||||R|||20061215111014-0600|||||20061215111014-0600
```

Message ACK_R01

```
MSH|^~\&|NISTManager_ADMIN|NIST|NIST_DEC_Reporter^0012210000000001^EUI-64|NIST|20110513102255||ACK^R01^ACK|NIST-110513102255614|P|2.6MSA|AE|19
```

Validation Report for message ORU_R01

IHE Supplement Syntax Validation Report

Summary	
Errors	1
Warnings	0

IHE-PCD HL7 V2 Isolated Test Tool Test Management – Vendor Summary

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Account Reports History

Please select a Vendor, an Actor and a HL7 Version (v2 or v3) to view the vendor list of Test Cases

Vendors Summary

	Last name	First name	Organization name	V2 results	V3 results	Last test date
1.	Admin	Admin	NIST	2 (Passed: 1, Failed: 1)	0	Today May 13, 2011 10:23:49 AM

Actors Tested HL7 Version v2 v3

Tests List

Title	Date of Test	Result
DEC_DOR_DOC_One_Patient_(60001)	May 13, 2011 10:23:49 AM	Failed

Result Summary	
Test Title	DEC_DOR_DOC_One_Patient_(60001)
Actor Tested	IHE DEC Reporter
Version	v2
Vendor Name	Admin Admin
Vendor Organization Name	NIST
Date of test	May 13, 2011 10:23:49 AM
Result of test	Failed

Transaction 1

Description: Sends a valid message (ORU^R01) to the NIST DEC Consumer

Result: FAILED

Message ORU_R01

```
MSH|^~\&NIST_DEC_Reporter^001221000000001^EUI-64|NIST|NISTManager_ADMIN|NIST|20061215111017-0600||ORU^R01^ORU_R01|19|P|2.6|||NE|AL||ASC||EN^English^ISO659||IHE PCD ORU-R01 2006^HL7^2.16.840.1.113883.9.n.m^HL7 PID||CD60002^^^IHE^P||Darwin^Charles^L|Emerine^L|19620101|M OBR|1|AB12345^HL7^ACDE48234567ABCD^EUI-64|CD12345^HL7^ACDE48234567ABCD^EUI-64|ServiceID^ServiceID||20061215111014-0600 OBX|1|69985^MDC_DEV_PUMP_INFUS_MDS^MDC|||||X||||N60002|X^A0001^BBRAUN OBX|2|69986^MDC_DEV_PUMP_INFUS_VMD^MDC|1000001.1.0.0|||||X OBX|3|126978^MDC_DEV_PUMP_INFUS_CHAN_DELIVERY^MDC|1000001.1.1.0|||||X OBX|4|126977^MDC_DEV_PUMP_INFUS_CHAN_SOURCE^MDC|1000001.1.2.0|||||X
```

IHE-PCD HL7 V2 Isolated Test Tool Test Management – Vendor Dashboard

IHE PCD - Pre-Connectathon Test Tool - Dashboard

Welcome, Admin | Log out

Overview Tests **User Account** Documentation About Contact us

Account Reports History

Tool Management

➤ Vendors Management

	id	Username	First name	Last name	Organization name	Email	Role	Status
<input type="radio"/>	65	afrold	AFFO	Harold1	NIST	afrold@nist.gov	User	
<input type="radio"/>	56	bobvendor	Vendor	Bob	Imaginary Systems Inc.	bob.vendor@imaginary.com	User	
<input type="radio"/>	55	caro	Caroline	Rosin	NIST	caro.rosin@gmail.com	User	
<input type="radio"/>	51	crosin	Caroline	Rosin	NIST	caroline.rosin@nist.gov	User	
<input type="radio"/>	62	dummyVendor	DummyCaro	DummyCaro	DummyOrg	rosin@evc.net	User	
<input type="radio"/>	59	GSYD	Syd	Dummy	NIST	sydney.henrard@gmail.com	User	
<input type="radio"/>	63	harold	Harold	AFFO	NIST	affoharold@yahoo.fr	Manager	
<input type="radio"/>	4	nist	NIST	NIST	NIST	rsnelick@nist.gov	User	
<input type="radio"/>	50	NISTRob	Rob	Snelick	NIST	rsnelick@hotmail.com	User	
<input type="radio"/>	53	scerniglia	Cerniglia	Susan	Booz Allen	cerniglia_susan@bah.com	User	
<input type="radio"/>	52	sydney	H	Sydney	NIST	sydney.henrard@nist.gov	User	
<input type="radio"/>	57	test	Linan	Wang	NIST	linan.wang@nist.gov	User	
<input type="radio"/>	67	toto11	toto	toto	toto	toto@yahoo.fr	User	
<input type="radio"/>	68	toto12	toto	toto	toto	affoharold@yahoo.com	User	
<input type="radio"/>	54	Vendor	Vendor	Susan	Booz Allen	susan.cerniglia@gmail.com	User	



➤ TestCases Management

Load Test Cases Edit Test From UI Add Test From UI

IHE-PCD HL7 V2 Isolated Test Tool Validation Report

Validation Report for message ORU_R01

IHE Supplement Syntax Validation Report

Summary	
Errors	1
Warnings	0
Alerts	0

Validation Errors	
Error Details	
1 Type:	Usage
Description:	OBX[1].4[1] is missing
Location:	Line: 4
	Column: 41
	Path: OBX[1].4[1]
	Segment: OBX
	Field: Observation Sub-ID

IHE Supplement Semantic Validation Report

Summary	
Errors	0
Warnings	0
Alerts	0

hRTM Validation Report

Summary	
Errors	0
Warnings	0
Alerts	1

Validation Alert	
Alert Details	
1 Type:	Message Validation Context
Description:	The specified message element match location does not map to a message element. The data value at the specified match location can't be evaluated. Refine the message element match location. The provided path expression is "OBX[6].5[1].2".
Location:	Path: OBX[6].5[1].2
Assertion Declaration:	OBX[6].5[1].2 = pump-mode-nominal; pump-mode-drug-dosing; pump-mode-ramp-taper; pump-mode-multi-step; pump-mode-multi-dosing; pump-mode-bolus; pump-mode-loading-dose; pump-mode-multi-channel; pump-mode-pca; pump-mode-continuous; pump-mode-pca-and-continuous; pump-mode-piggyback; pump-mode-concurrent

IHE-PCD HL7 V2 Isolated Test Tool Validation Report, Cont

hRTM Validation Report

Summary	
Errors	0
Warnings	0
Alerts	1

Validation Alert	
Alert Details	
1 Type:	Message Validation Context
Description:	The specified message element match location does not map to a message element. The data value at the specified match location can't be evaluated. Refine the message element match location. The provided path expression is "OBX[6].5[1].2".
Location:	Path: OBX[6].5[1].2
Assertion Declaration:	OBX[6].5[1].2 = pump-mode-nominal; pump-mode-drug-dosing; pump-mode-ramp-taper; pump-mode-multi-step; pump-mode-multi-dosing; pump-mode-bolus; pump-mode-loading-dose; pump-mode-multi-channel; pump-mode-pca; pump-mode-continuous; pump-mode-pca-and-continuous; pump-mode-piggyback; pump-mode-concurrent

Test Case Specific Validation Report

Summary	
Errors	1
Warnings	0
Alerts	0

Validation Errors	
Error Details	
1 Type:	Data
Description:	"HO2009001; HO2009002; HO2009003; HO2009004; 2010001; 2010002; 2010003; 2010004; HO2010001; HO2010002; HO2010003; HO2010004; 2011001; 2011001; 2011001; 2011001; HO2011001; HO2011002; HO2011003; HO2011004; 2012001; 2012001; 2012001; 2012001; HO2012001; HO2012002; HO2012003; HO2012004; 2013001; 2013001; 2013001; 2013001; 2013001" has not been found in the message at the location "PID[*].3[1].1"

IHE-PCD Face-to-Face (Boca Raton, Florida)

“Rosetta Terminology Mapping Management System” (RTMMS)

NIST
**National Institute of
Standards and Technology**
U.S. Department of Commerce

12 May, 2011

NIST Contacts

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- Isabelle P. Barclay (Guest Researcher)

Project Web site:

www.nist.gov/medicaldevices

Discussion Topics

- Rosetta Terminology Mapping (RTM) Overview
- Rosetta Terminology Mapping Management System (RTMMS) Overview
- RTMMS DEMO
- Issues
 - IEEE copyright issues
 - Against NIST Policy to maintain proprietary data
 - Integration of LOINC Terms
 - We have no documentation on LOINC.
 - Mapping must be provided
 - PHD added new refIds under x73 Alert partition. The term codes assigned to these events are not in within the range specified in the alert block

IHE PCD Profile: RTM Overview

- RTM is an IHE PCD Profile that addresses the problem of medical device semantic interoperability by proposing a mapping to a standard nomenclature.
 - Identifies the core set of semantics appropriate for medical devices
 - Maps vendors terminology to standard terminology
 - Maps numeric parameters to their associated units-of-measure and enumerated values
- ftp://ftp.ihe.net/Patient_Care_Devices/TechnicalFrameworkforTrialImplementation/IHE_PCD_TF_Supplement_Rosetta_Terminology_Mapping_RTMTI_2008-08-22.pdf

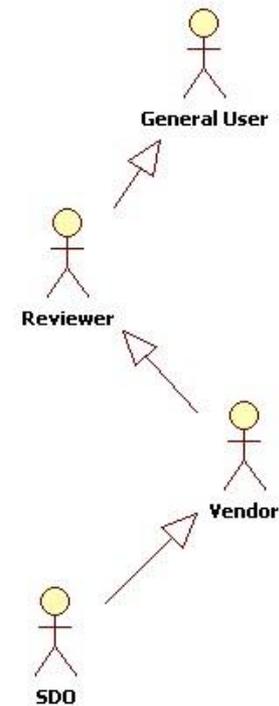
- Rosetta Table
 - Maps vendor supported observations, units and enumerations to ISO/IEEE x73 nomenclature
- Units Table
 - Defines allowed units-of-measure
 - Defines groups of related units-of-measure
- Enumerations Table
 - Defines groups of enumerated values
- hRTM Table
 - Generated from the original Rosetta

RTMMS was developed to support the IHE-PCD Rosetta Terminology Mapping (RTM)

- A web application that allows vendors and reviewers:
 - access, retrieval, and reporting of Rosetta Tables over the internet in conformance to IHE RTM Profile.
 - saving the data in the xml format as defined by RTM Profile/Appendix.
- Aids in The harmonization process by:
 - Identifying missing terms.
 - Automatic generation of the “Harmonized Rosetta Table”
 - Viewing and downloading latest hRTM table.
- Facilitates the proposal of New Terms to x73 Nomenclature

RTMMS Users

- General user
 - Views Rosetta Tables
- Reviewer
 - Participates in discussions
- Vendor
 - Modifies Vendor Rosetta Table
 - Suggests new terms
- SDO (Standard Development Organization)
 - Modifies Units and Enumerations Table
 - Register new terms
- Admin
 - Manages User Accounts
- Potential IEEE-Member User



RTMMS Features

- Access to NIST IEEE 11073 Nomenclature database
 - Appendix A terms
 - Appendix B terms
 - IDCO terms
 - PHD terms
- Access to RTM database
- Ability to proposed terms in Rosetta
- hRTM, units and enumeration download in XML format
- User registration
 - Email confirmation, approval...
- Filtering based on regular expressions
- Rosetta validation against hRTM
- Management capabilities for SDO users

RTMMS Updates (since last F2F in January)

- Integrated PHD nomenclature into the IEEE 11073-10101 NIST Nomenclature database
 - Provided by UL Chair (Jan W.) in January 2011 F2F.
 - PHD nomenclature includes; terms under new PHD partitions, terms already in the nomenclature and new terms under existing x73 nomenclature partitions.
 - New terms under PHD partitions were added to the IEEE 11073-10101 Nomenclature dbase:
 - MDC_PART_PHD_AI (aging independently)
 - MDC_PART_PHD_DM (disease management)
 - MDC_PART_PHD_HF (health and fitness)
 - Terms already in the existing X73 nomenclature partitions
 - Association done using the block and partition id
 - New terms (PHD) under existing X73 nomenclature partitions.
 - These terms are not captured yet we need some clarifications.
 - No association between specialization and terms – RTM dbase and X73 dbase does not handle these associations.

RTMMS Updates (since last F2F in January)

- Integrated PHD nomenclature into the IEEE 11073 Nomenclature database (Cont.)
 - **Need clarification:**
 - PHD added new refIds under x73 Alert partition. The term codes assigned to these events are not in within the range specified in the alert block :

MDC_PART_EVT MDC_EVT_PEF_MED 21106

Description	Current
Alerts/Events ^a	0000-6600
Device events	0000-0596
Pattern events	3072-3294
Status events	6144-6730
Private	61440-65535

Ongoing Work

- Implementing Backup cycle
- Developing XML2DB Module
 - Adding Import XML Rosetta Data feature
- Implementing synonym terms
 - Support synonyms in Nomenclature Database
 - Support synonyms in RTM Database
- Adding new data to hRTM table
 - Support Vendor_VMD, and Vendor Description in hRTM

Next Steps

- Update RTMMS database access/update mechanism.
- Add aECG into X73 Nomenclature Dbase.
- Edit hRTM Table
 - Add new entry
 - Edit an entry
 - Deprecate an entry
 - Support multiple versions
 - Ability to set current version to use for validation
- Implement versioning system
- Add logging history capabilities
 - To identify occurred changes, time they were made, users who made them...

Issues

- IEEE copyright issues
 - Against NIST Policy to maintain proprietary data
- Integration of LOINC Terms
 - We have no documentation on LOINC.
 - Mapping must be provided.

IHE-PCD Face-to-Face (Boca Raton, Florida)

***“ICSGenerator”* (Implementation Conformance Generator)**

NIST
**National Institute of
Standards and Technology**
U.S. Department of Commerce

12 May, 2011

NIST Contacts

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- Jing Gao (Guess Researcher)

Project Web site:

www.nist.gov/medicaldevices

ICSGenerator Overview

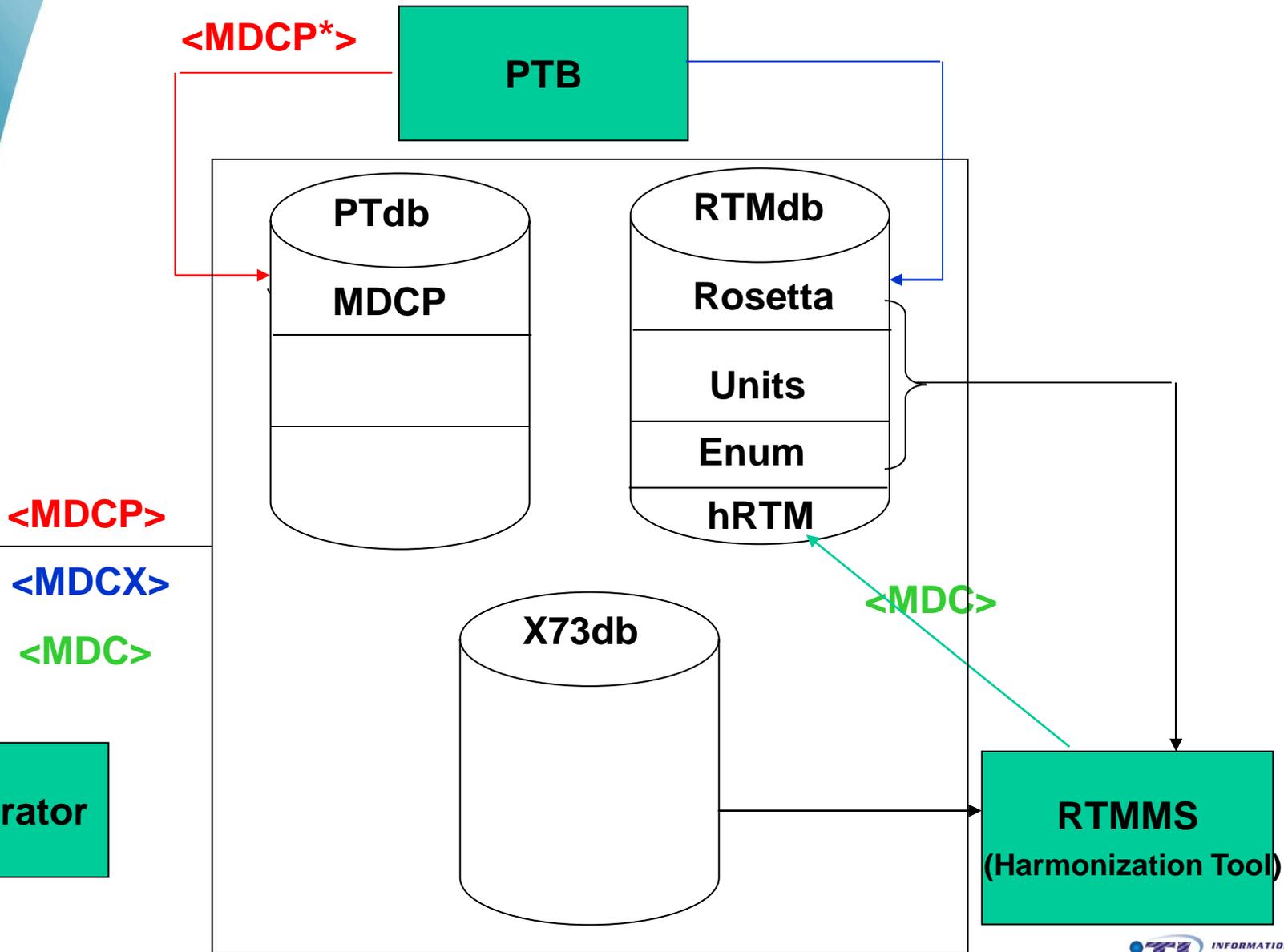
ICSGenerator was developed to:

- Support IEEE 11073 Conformance Testing.
 - Generate Implementation Conformance Statements (ICSs)
 - Build Device Profile (XML)
 - Provide validation against DIM Schema
 - Provide high level semantic interoperability
 - Ensures correct containment relationship and terminology at the object class and related attribute, notification, and behavior level
 - Provides access to Rosetta Dbase and X73 dbase

ICSGenerator Next Steps

- Working on the following enhancements:
 - Update ICSGenerator to have access to the latest X73 Nomenclature dbase version (containing IDC, PHD and Appendix B.)
 - Support PHD standards
 - Update specializations with published versions
 - Private Terms support

Private Term Support (Private Term Builder)



Private Term Builder Status

- Developed an initial “**Private Term Builder**” application (PTB) with the following goals:
 - Capture vendor private terms
 - Associate a private term to an x73 object – facilitating integration to the modeling tool (ICSGenerator)

- Initial PTB application includes the following features:
 - Imbedded database for private term storage.
 - Import/export capabilities in RTM xml formats.
 - Ability to enter **vendor** ref ids – not in compliance with x73 nomenclature
 - Ability to enter **vendor** term code – if available, nothing to do with x73 private space.
 - Ability to enter a common name (display name) – vendor name
 - Ability to enter a description for the term

Note: This is a private vendor application, vendor chooses to share terms for harmonization.

Private Term Builder Status

The screenshot shows the 'Private Terms Builder' application window. The title bar reads 'Private Terms Builder'. Below the title bar is a tab labeled 'Private Terms - NIST MDC'. A menu bar contains 'New Term', 'Remove', 'Save As...', and 'Import...'. Below the menu bar is a table with the following columns: Group, REFID, Description, Display Name, Vendor ID, and Vendor_VMD. The table contains one row with the following values: Group, Refid, Description, Display Name, Vendor ID, and Vendor_VMD.

Group	REFID	Description	Display Name	Vendor ID	Vendor_VMD
Group	Refid	Description	Display Name	Vendor ID	Vendor_VMD

A modal dialog box titled 'private term' is open in the foreground. It contains a text input field with the text 'private term'. Below this are six labeled text input fields: Group, REFID, Description, Display Name, Vendor ID, and Vendor_VMD. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.