NIST
National Institute of Standards and Technology

Software and Systems Division

HL7 / Healthcare Devices WG
(San Diego, California)

NIST Tooling Activities

John Garguilo and Sandra Martinez

11-16 September, 2011

Our Team and Project Web Sites…

Contacts

- **John Garguilo** (john.garguilo@nist.gov)
- **Sandra Martinez** (sandra.martinez@nist.gov)

Tools and Project Sites

NIST's IHE-PCD HL7 V2

- **Static '*Instance Testing*'**
  Pre-/Connectathon Web site:
  http://xreg2.nist.gov:8080/PCD-HL7WebCon/
- **Pre-Connectathon Cycle 6 (2011-12)**
  'Isolated Testing' Coming in October…
  (URL coming soon…)

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)
- Next Steps and What's still needed...
  - Envelope/Message wrappers (WS, SOAP, SAML?) validation
  - Web Services

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

13 September, 2011

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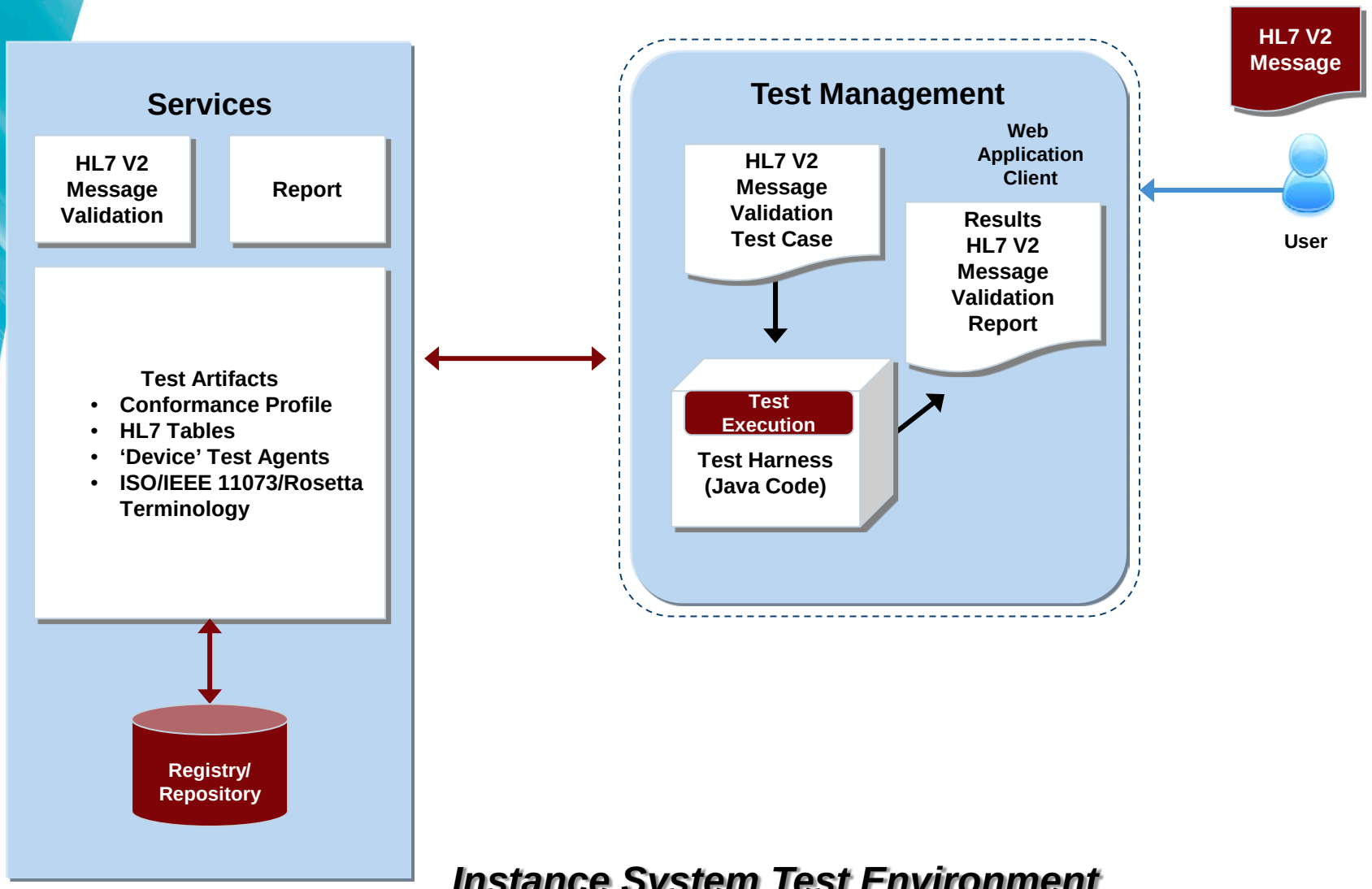
Test Environments

- 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

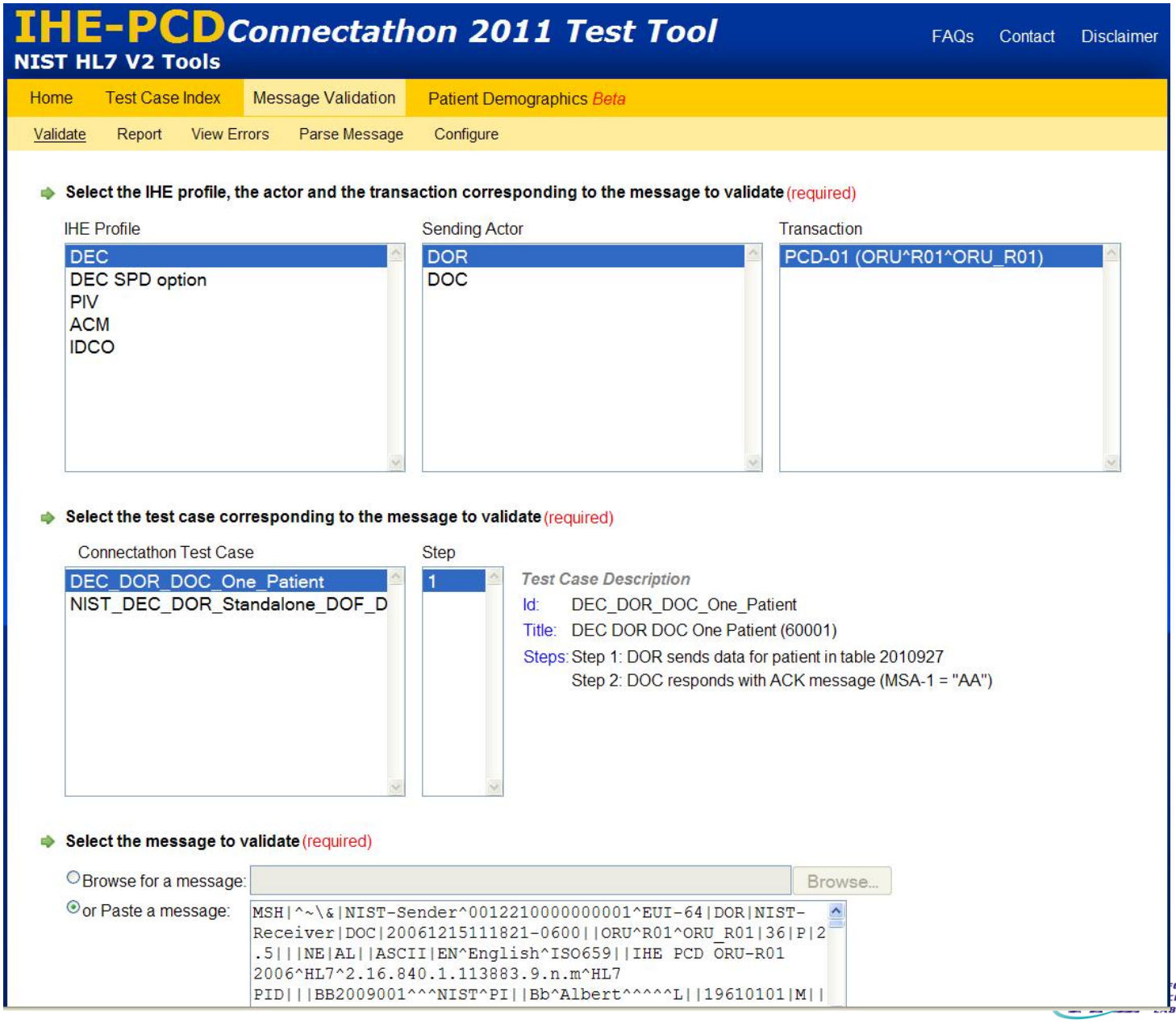
Conformance Testing of an HL7 V2 Message



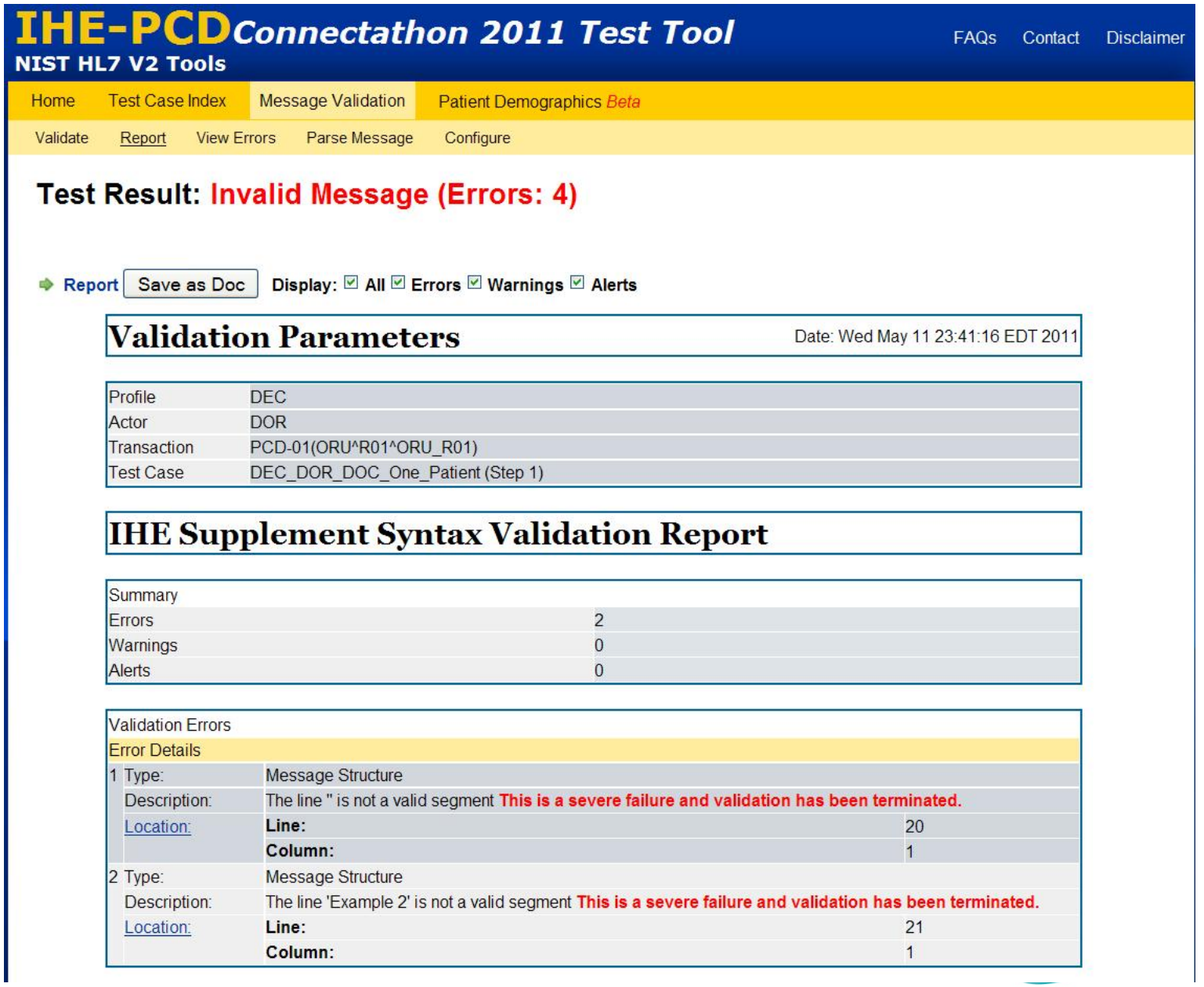
Instance System Test Environment

IHE-PCD Pre- and -Connectathon Tool

http://xreg2.nist.gov:8080/PCD-HL7WebCon/



Validation Report (Example)



IHE-PCD Connectathon 2011 Test Tool
NIST HL7 V2 Tools

FAQs Contact Disclaimer

Home | Test Case Index | Message Validation | Patient Demographics *Beta*

Validate | Report | View Errors | Parse Message | Configure

Test Result: Invalid Message (Errors: 4)

Report | Save as Doc | 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
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  - Interoperability Testing
    - Testing complete application environment
    - May include interacting w/ Database, using Network Communications, or interacting w/ other hardware, apps, or systems if appropriate

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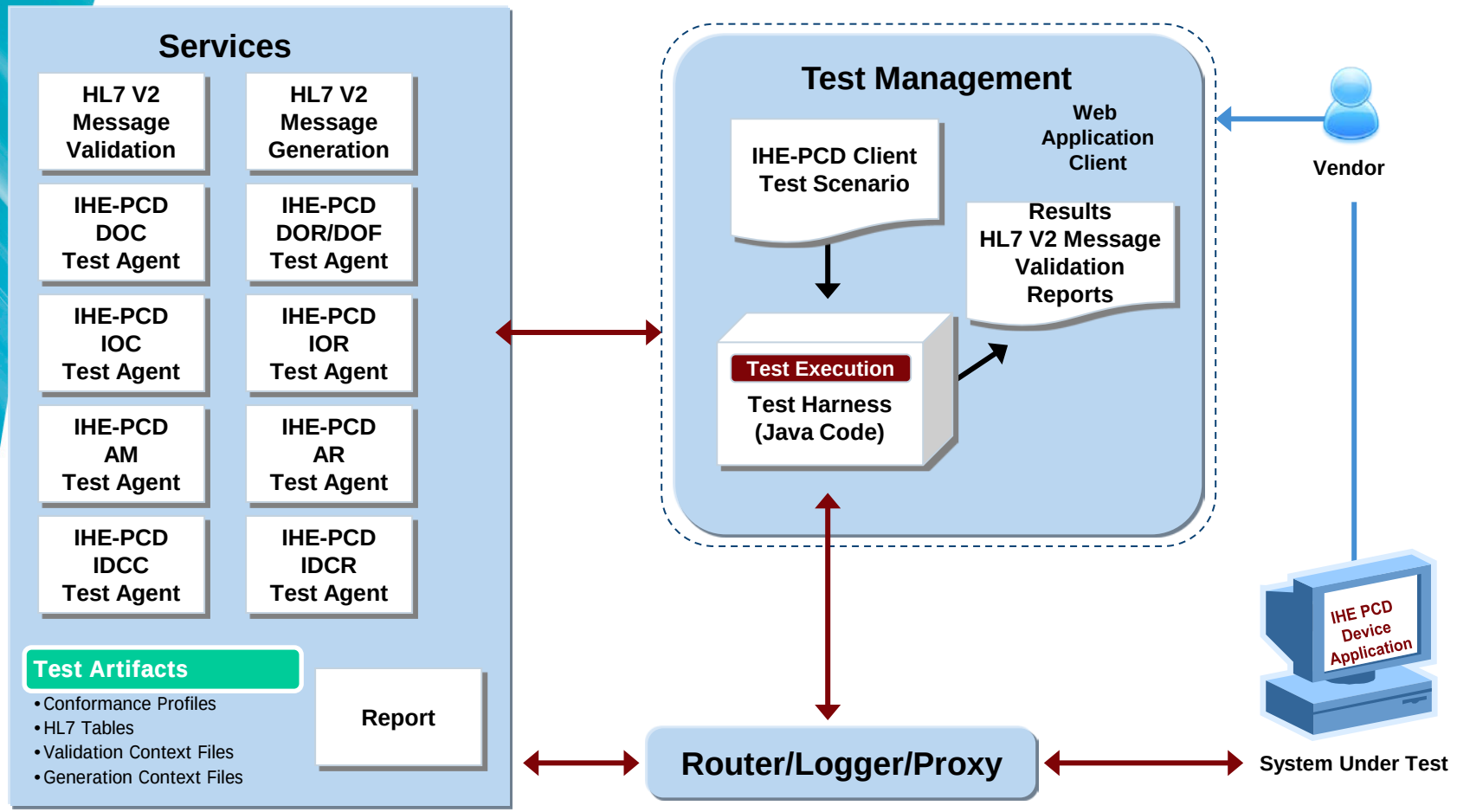
IHE-PCD Testing using a Web Application Client



Isolated System Test Environment

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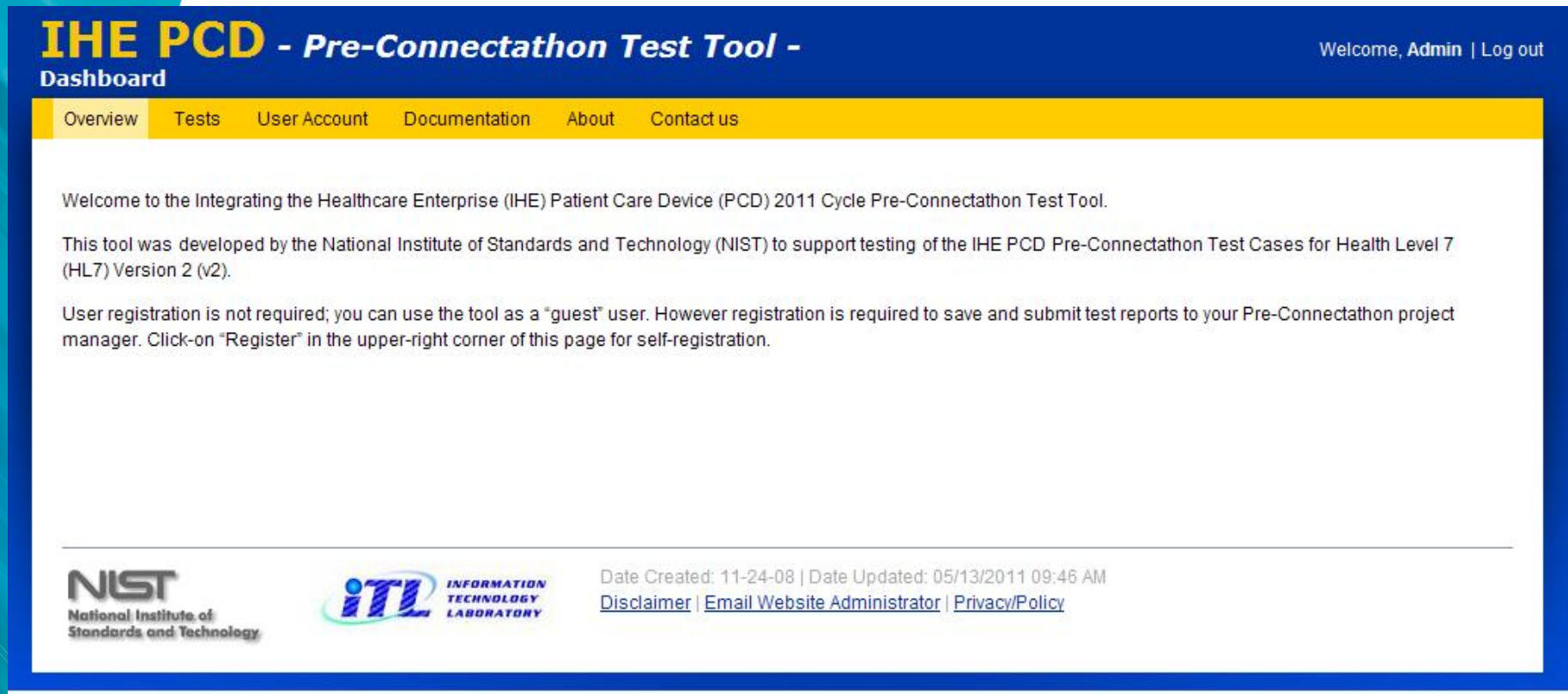
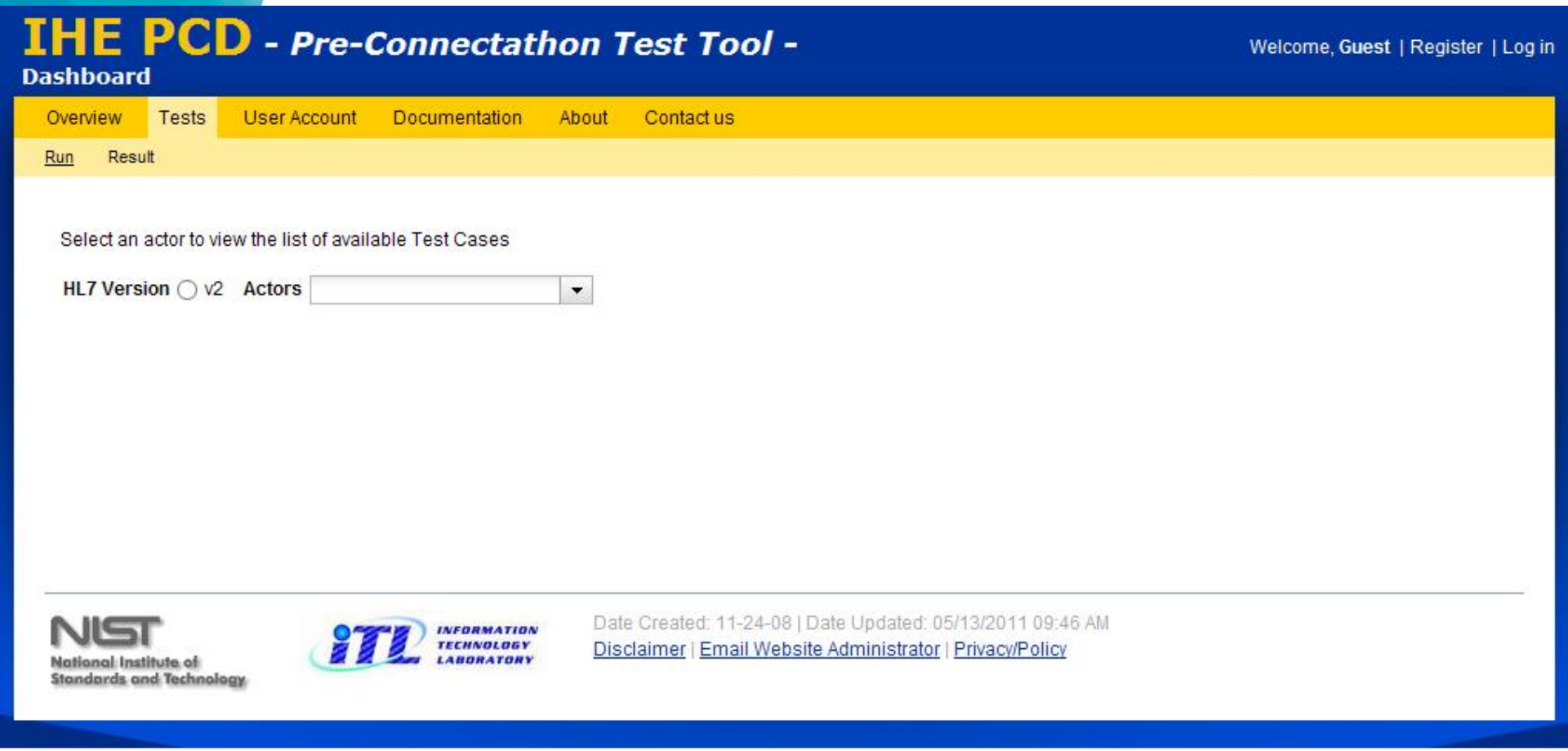
Isolated / Scenario Testing

- Demonstration of a ‘user’ or System Under Test (SUT) [acting as a device observation reporter – DOR] interacting with the NIST Test System [acting as a device observation consumer – DOC] ‘*Test Agent*’

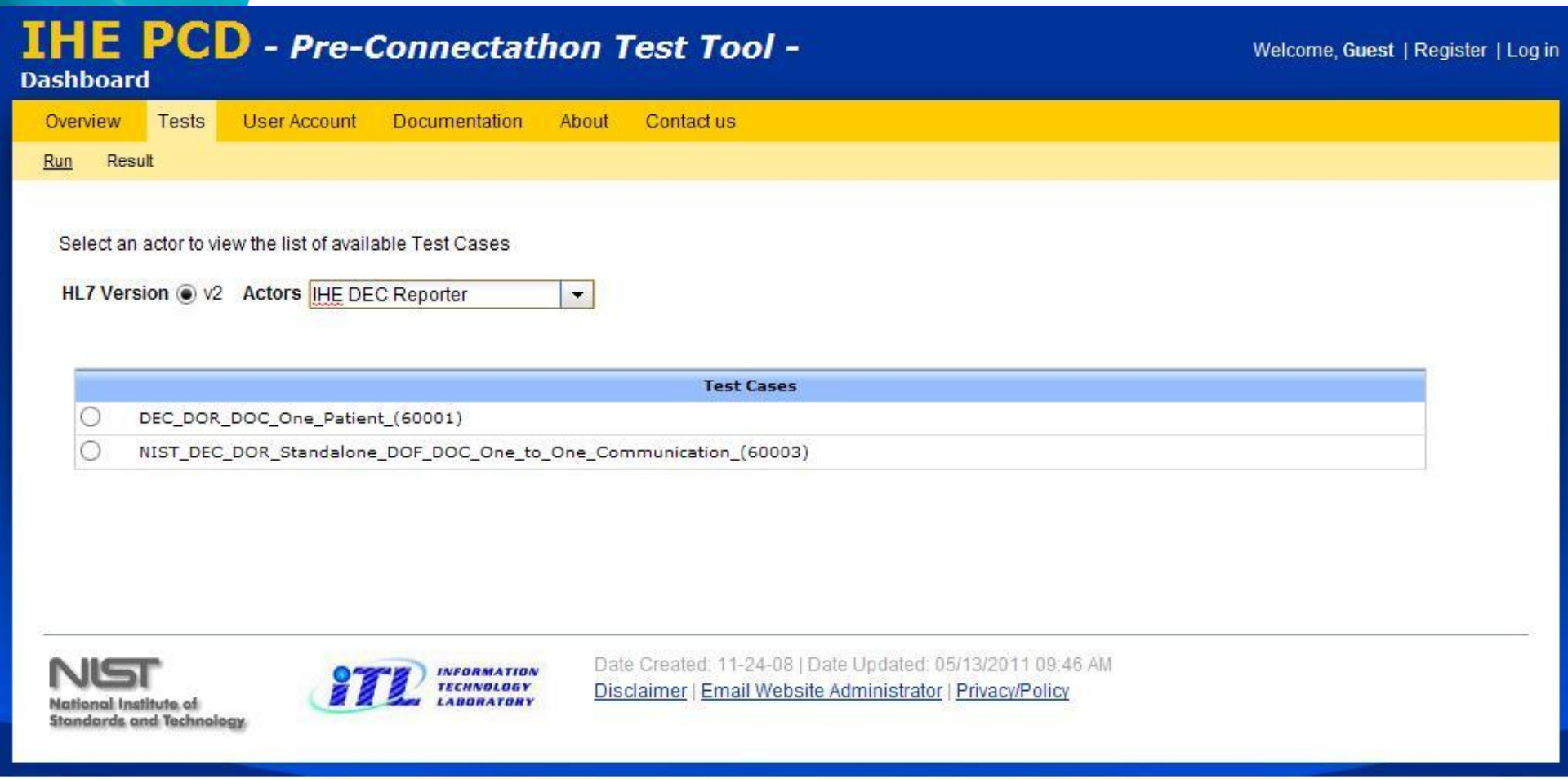
IHE-PCD HL7 V2 Isolated Test Tool



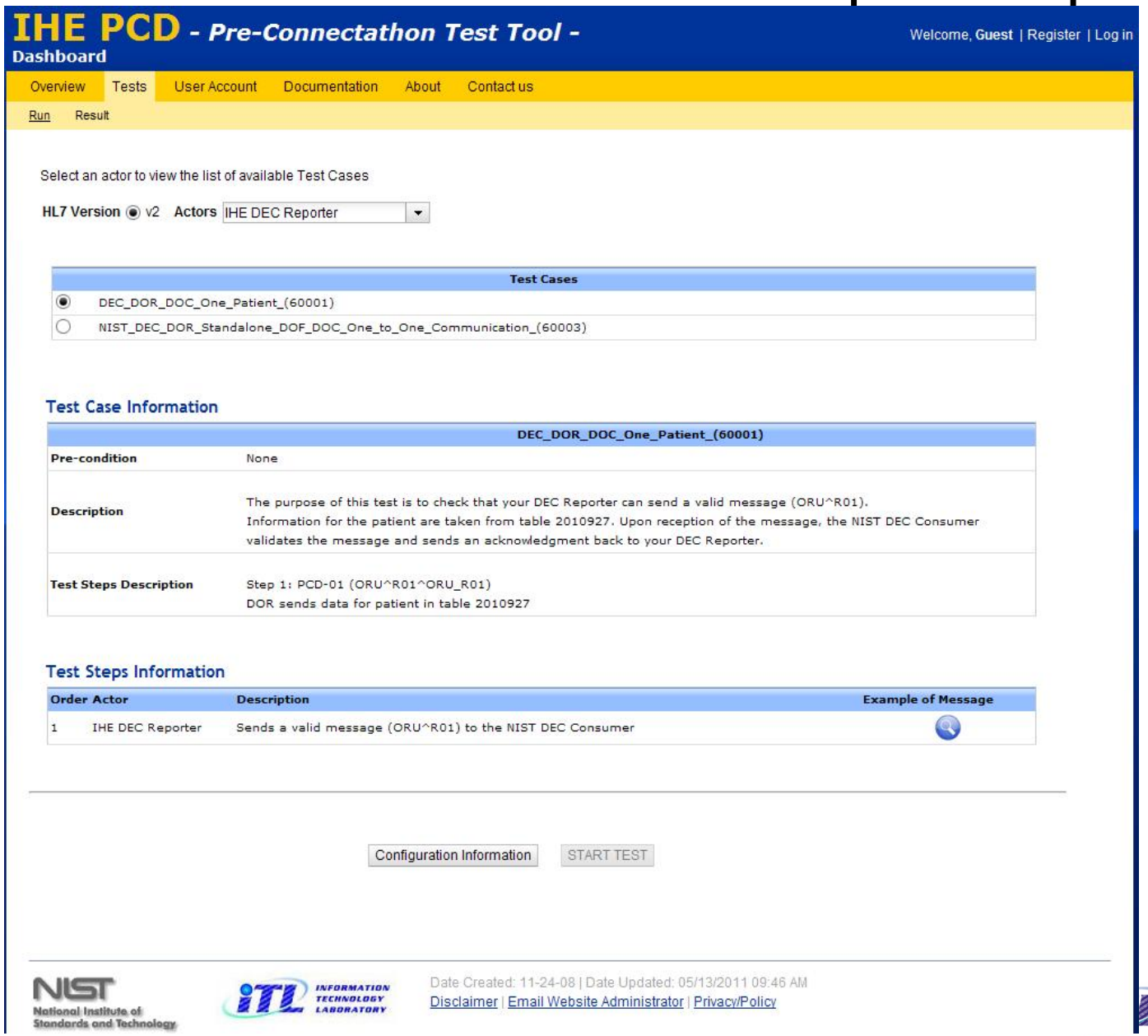
IHE-PCD HL7 V2 Isolated Test Tool
Select Version and Actor



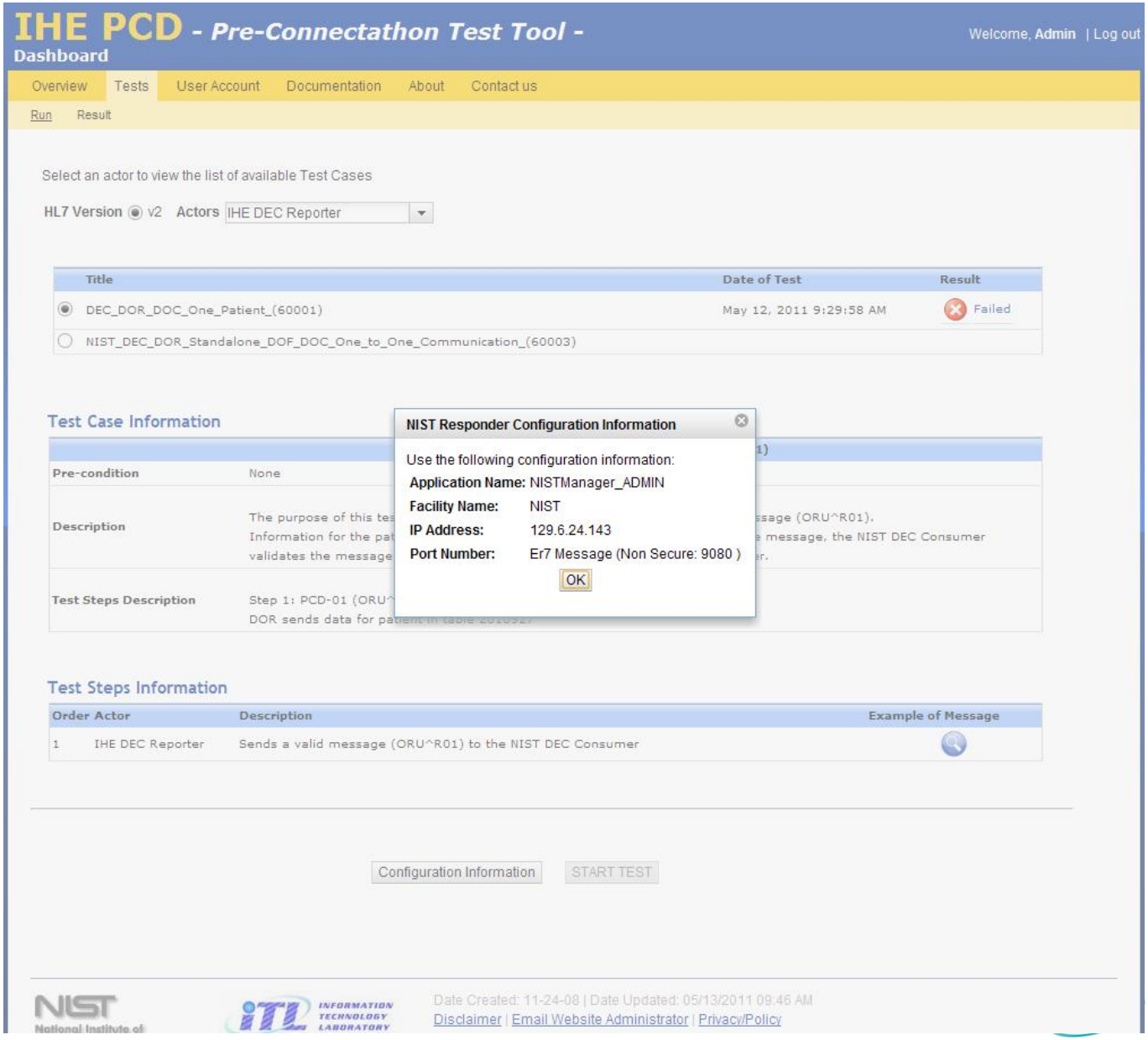
IHE-PCD HL7 V2 Isolated Test Tool DOR – select test case



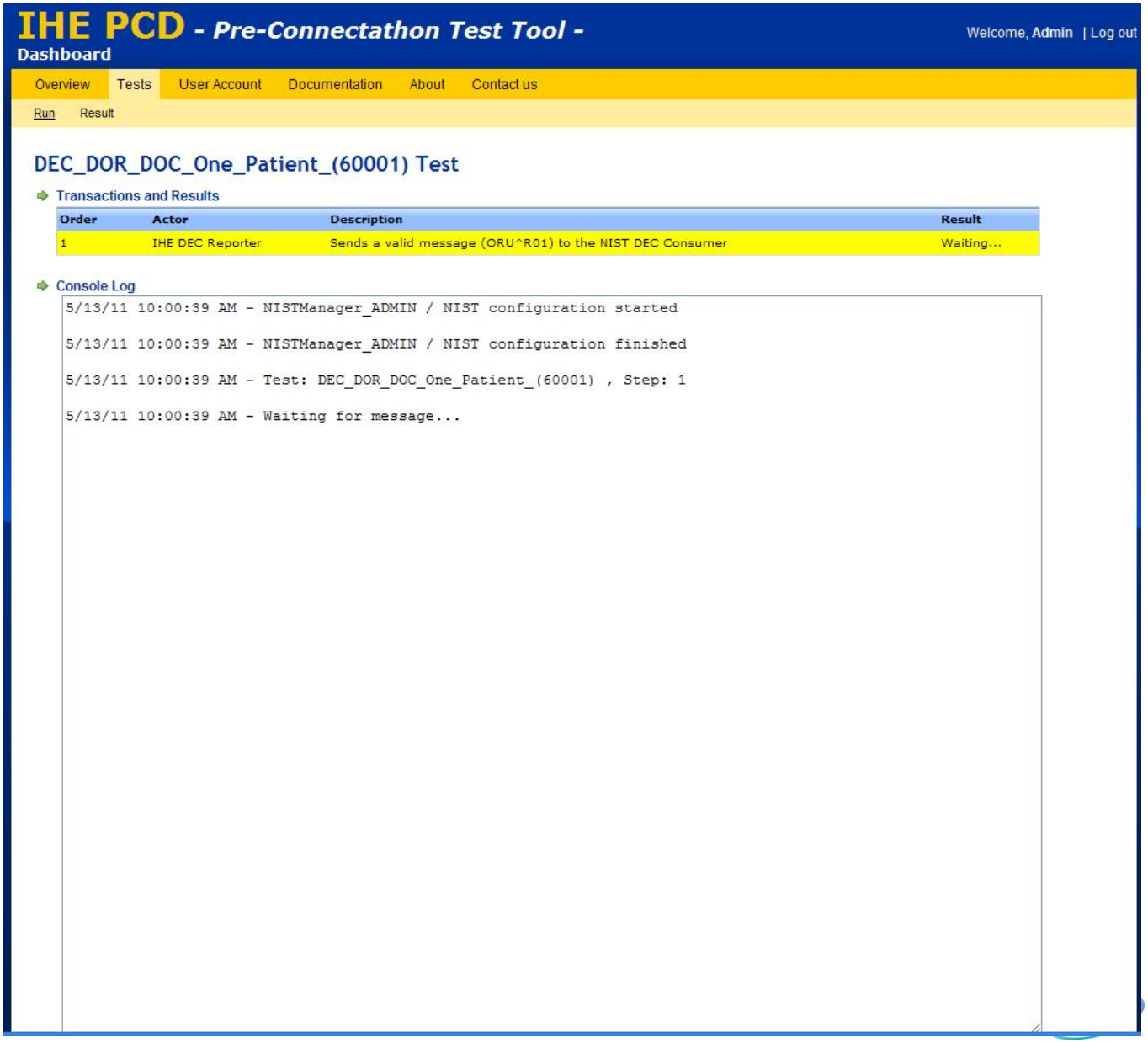
IHE-PCD HL7 V2 Isolated Test Tool Test Case and Step Descriptions



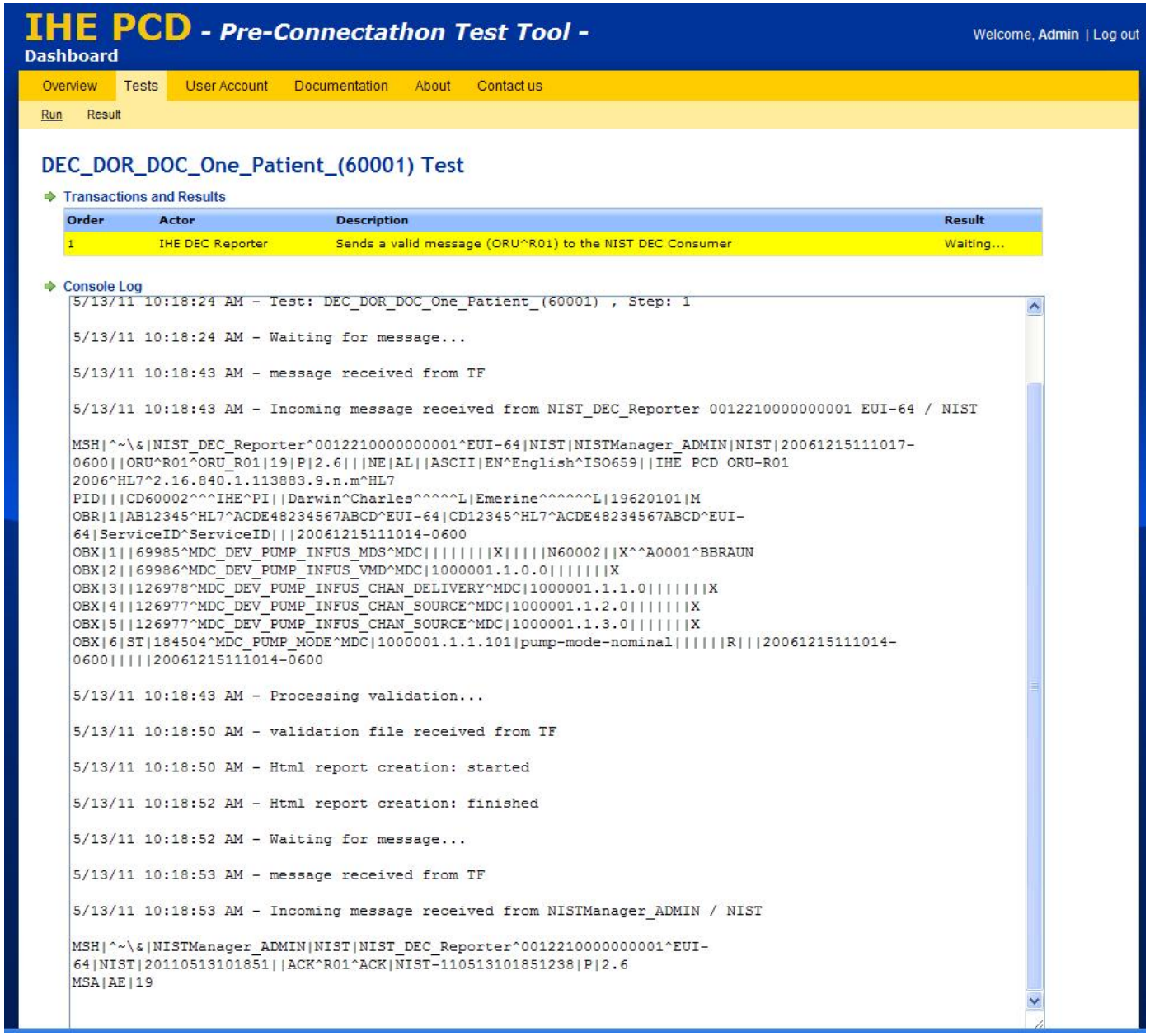
IHE-PCD HL7 V2 Isolated Test Tool Configuration



IHE-PCD HL7 V2 Isolated Test Tool Waiting for DOR/SUT...



IHE-PCD HL7 V2 Isolated Test Tool
Parse ORU^R01; Send ACK^R01



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

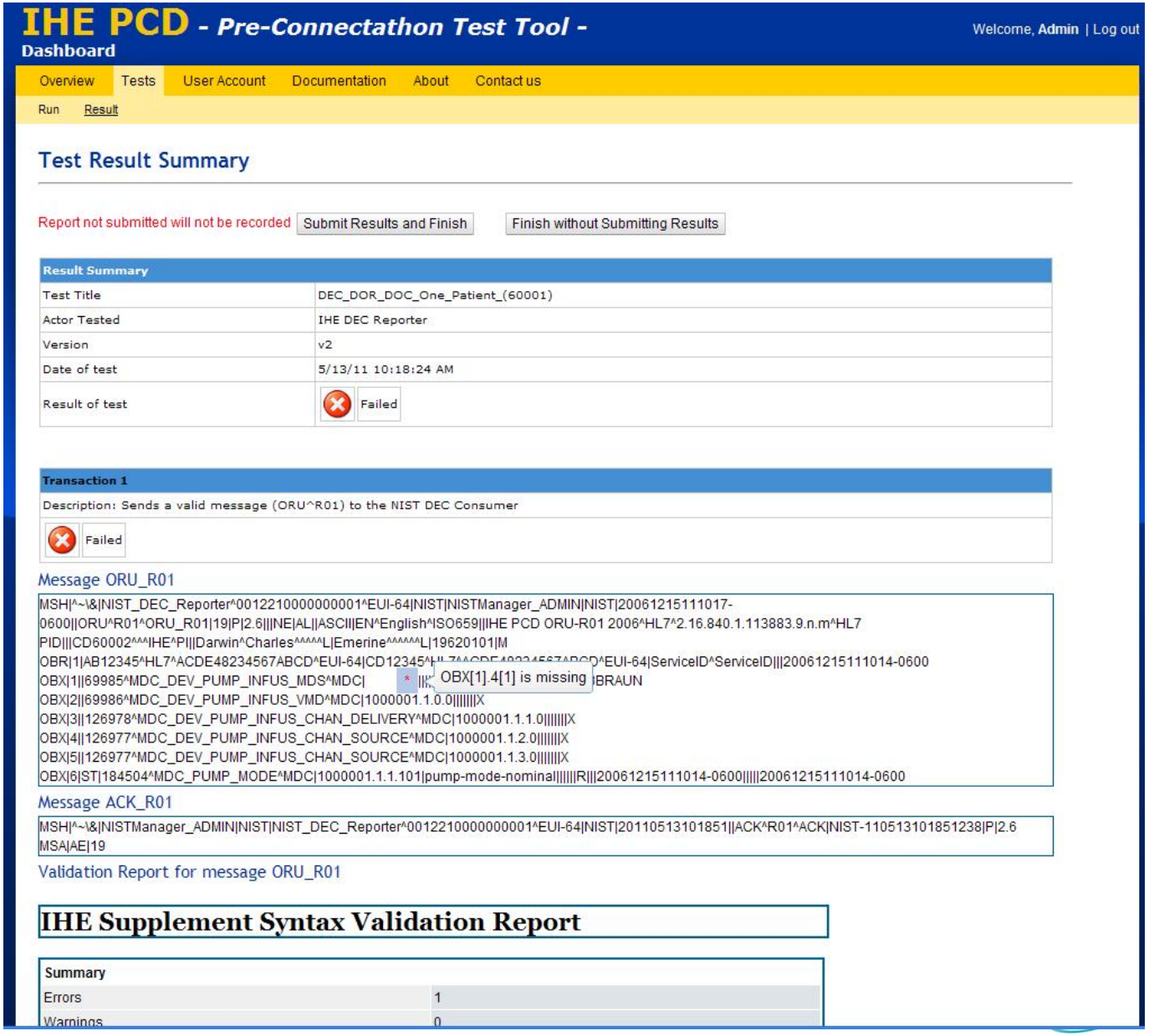

```
MSH|^~\&|NIST_DEC_Reporter|0012210000000001^EUI-64|NIST|NISTManager_ADMIN|NIST|20061215111017-
0600||ORU^R01^ORU_R01|19|P|2.6|||NE|AL||ASCII|EN^English^ISO659||IHE PCD ORU-R01
2006^HL7^2.16.840.1.113883.9.n.m^HL7
PID|||CD60002^^^IHE^PI||Darwin^Charles^^^^^L|Emerine^^^^^^L|19620101|M
OBR|1|AB12345^HL7^ACDE48234567ABCD^EUI-64|CD12345^HL7^ACDE48234567ABCD^EUI-
64|ServiceID^ServiceID|||20061215111014-0600
OBX|1||69985^MDC_DEV_PUMP_INFUS_MDS^MDC|||||||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



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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

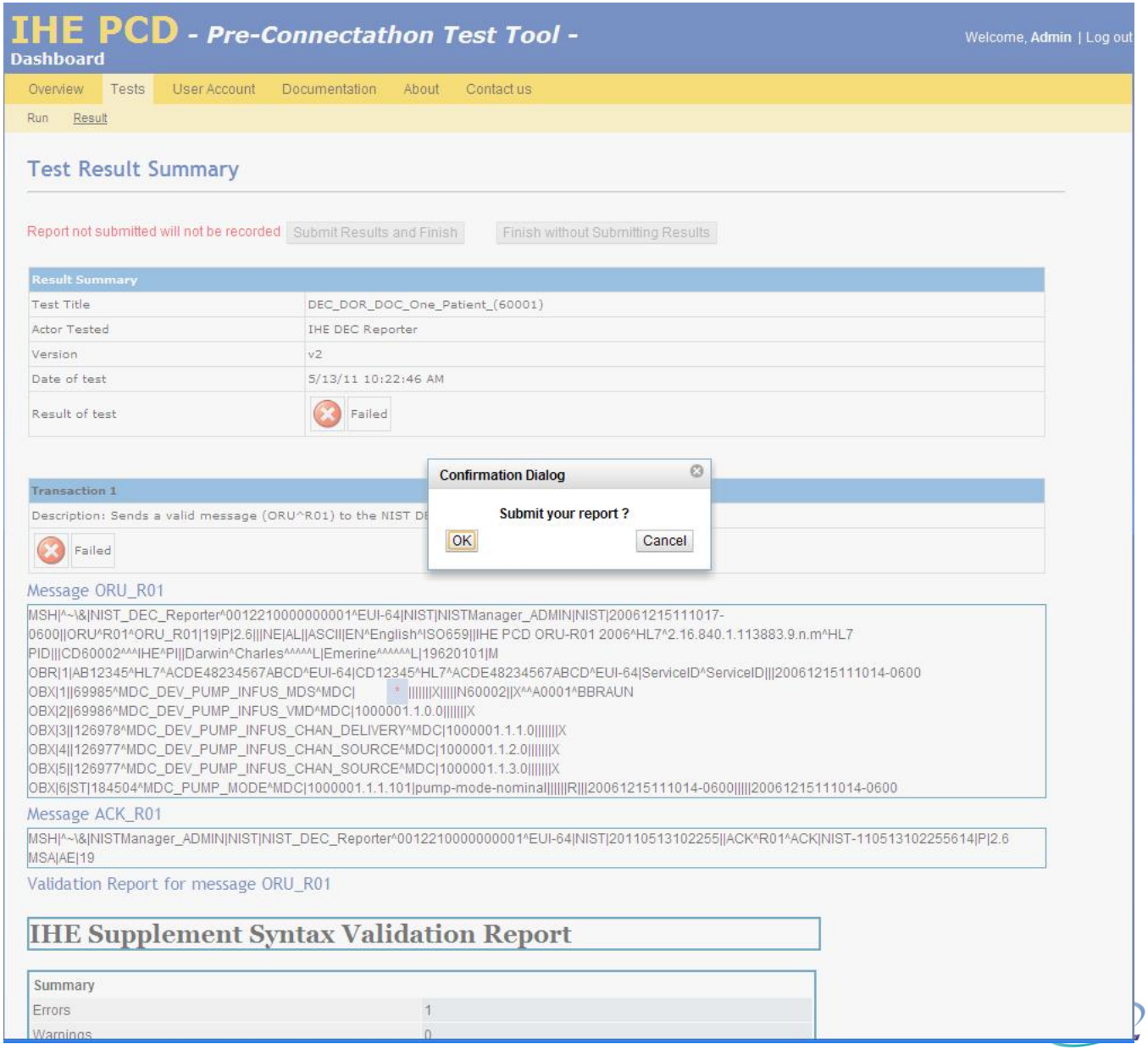
Validation Alert			
Alert Details			
1	Type:	Message Validation Context	
	Description:	The specified message element match location does not map to a message element. The data value at the specified match location can't be evaluated. Refine the message element match location. The provided path expression 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)



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

IHE PCD - *Pre-Connectathon Test Tool* -

Dashboard

Welcome, **Admin** | Log out

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

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: IHE DEC Reporter 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

XML Result | HTML Result

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^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|||||||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
```

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

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

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" has not been found in the message at the location "PID[*].3[1].1"

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Software and Systems Division

HL7 / Healthcare Devices WG
(San Diego, California)

"Rosetta Terminology Mapping Management System"
(RTMMS)
Activities

John Garguilo and Sandra Martinez

11-16 September, 2011

iTL INFORMATION TECHNOLOGY LABORATORY

NIST Contacts

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  301-975-4248
  john.garguilo@nist.gov
- Sandra Martinez
  301-975-3579
  sandra.martinez@nist.gov
- Isabelle Barclay (Guest Researcher) – term ends this month
- Nicolas Crouzier (Guest Researcher)

Project Web site:
www.nist.gov/medicaldevices

RTMMS Overview

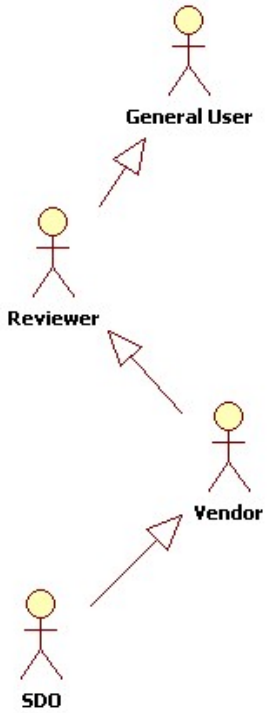
- RTMMS was developed to support the IHE-PCD Rosetta Terminology Mapping (RTM) :
  - A web application that allows vendors and reviewers:
    - access, retrieval, and reporting of Rosetta Tables over the internet in conformance to IHE RTM Profile.
    - saving the data in the xml format as defined by RTM Profile.
  - 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

Database

- Models RTM data and relationships
- Stores RTM data
  - Rosetta table
  - Units and Unit Groups
  - Enumerations and Enumeration Groups
  - hRTM table
- Uses IEEE 11073 Nomenclature database
  - REFIDs
  - Term codes
  - Partition numbers

RTMMS Users

- General user
  - Views Rosetta Tables
- Reviewer
  - Participates in discussions
- Vendor
  - Modifies Vendor Rosetta Table
  - Suggests new or mapped terms
- SDO (Standard Development Organizatior
  - Modifies Units and Enumerations Table
  - Register new or mapped 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
- Download in XML format hRTM, units and enumerations tables
- User registration
  - Email confirmation, approval...
- Filtering based on regular expressions
- Rosetta validation against hRTM
- Management capabilities for SDO users

RTMMS Updates (since May 2011)

- Database management capabilities implemented.
- Versioning system implemented.
  - Possibility for the SDO to view previous Rosetta versions.
- Logging history capabilities implemented.
  - To identify occurred changes, time they were made, users who made them...
- New menu on top of login screen for the user guide
- Differentiation between mapped terms and new terms
- Access to Vendor, Groups and Rules tables.
- Harmonized Rosetta is now generated in real time from Rosetta table
- Import directly Paul's XML files

Ongoing Work

- RTM database re-structuring to facilitate management.
- Implementing synonym terms
  - Support synonyms in Nomenclature Database
  - Support synonyms in RTM Database
- SNOMED interface.
- Resolved bugs identified in functionality testing exercise.
  - Add unit filtering
  - Improve registration e-mail content
  - Allow to add units or enumeration, not both at the same time.

Next Steps

- Add aECG into X73 Nomenclature Dbase.
- hRTM table updates
  - Support Vendor_VMD, and Vendor Description
- Populate X73 Nomenclature dbase systematic name, common term, acronym and term description tables.
  - Waiting for electronic files, if available.
- SDO ability to set Rosetta versions.

Issues

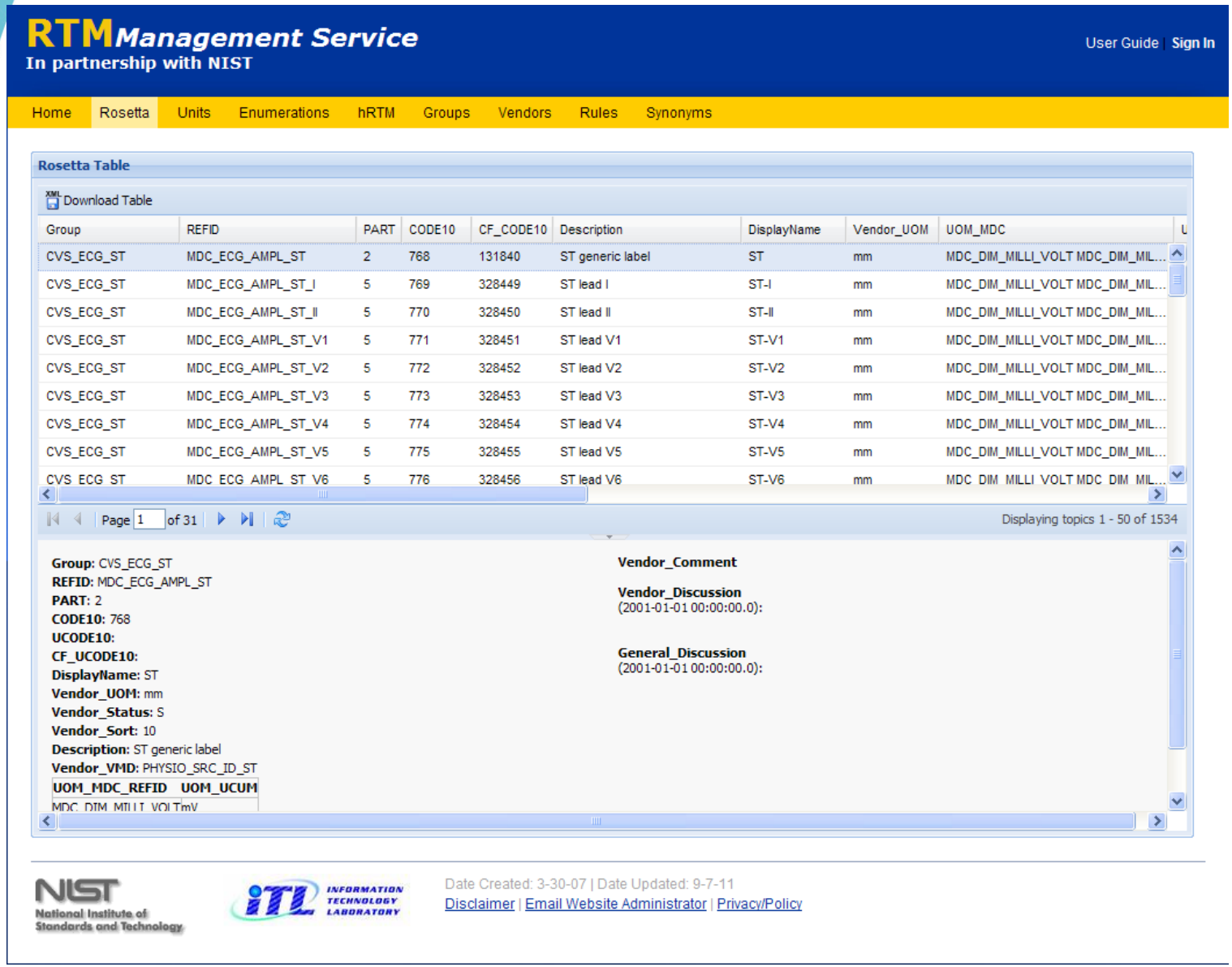
- IEEE copyright issues
  - -Displaying of copyrighted information...
  - -Maintenance issues...
  - -Hosting/Server issues...
  - -Access control issues...
- Integration of LOINC Terms
  - We have no documentation on LOINC.
  - Mapping must be provided.
- Waiting for SNOMED mapped terms.
- Clarification of new/private terms adoption process

RTMMS Scenario and DEMO

All users capabilities:

- View/Download Rosetta Table
- View/Download Units Table
- View/Download Enumerations Table
- View logging history
- Filter Rosetta Table
  - By Vendor ID (Philips)
  - Using Regular Expressions (MDCX_.*)
  - Viewing Discussed Entries

Rosetta Table



RTM Management Service
In partnership with NIST

User Guide | Sign In

Home | Rosetta | Units | Enumerations | hRTM | Groups | Vendors | Rules | Synonyms

Rosetta Table

Download Table

Group	REFID	PART	CODE10	CF_CODE10	Description	DisplayName	Vendor_UOM	UOM_MDC
CVS_ECG_ST	MDC_ECG_AMPL_ST	2	768	131840	ST generic label	ST	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_I	5	769	328449	ST lead I	ST-I	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_II	5	770	328450	ST lead II	ST-II	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V1	5	771	328451	ST lead V1	ST-V1	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V2	5	772	328452	ST lead V2	ST-V2	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V3	5	773	328453	ST lead V3	ST-V3	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V4	5	774	328454	ST lead V4	ST-V4	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V5	5	775	328455	ST lead V5	ST-V5	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V6	5	776	328456	ST lead V6	ST-V6	mm	MDC_DIM_MILLI_VOLT MDC_DIM_MIL...

Page 1 of 31 | Displaying topics 1 - 50 of 1534

Group: CVS_ECG_ST
REFID: MDC_ECG_AMPL_ST
PART: 2
CODE10: 768
UCODE10:
CF_UCODE10:
DisplayName: ST
Vendor_UOM: mm
Vendor_Status: S
Vendor_Sort: 10
Description: ST generic label
Vendor_VMD: PHYSIO_SRC_ID_ST

UOM_MDC_REFID	UOM_UCUM
MDC_DIM_MILLI_VOLT	mV

Vendor_Comment

Vendor_Discussion
(2001-01-01 00:00:00.0):

General_Discussion
(2001-01-01 00:00:00.0):

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Date Created: 3-30-07 | Date Updated: 9-7-11
Disclaimer | Email Website Administrator | Privacy/Policy

Units Table

Units | Unit Groups

Dimension: Select dimension...

Download Table

Dimension	Dim	DimC	Unit_of_Measure	Symbol	UOM_UCUM	UOM_MDC	UCODE10	Discussion
Unspecified			Â?UnspecifiedÂ?	?	{unknown}	MDC_DIM_NOS		(2001-0...
Dimension- less	1	1	Â?dimensionlessÂ?	-	1;{unitless}	MDC_DIM_DIMLESS		(2001-0...
Dimension- less	1	1	Â?booleanÂ?	1/0	{bool};1	MDC_DIM_BOOLEAN		(2001-0...
- decibel (existing 11073 de...	[Bel]	[Bel]	Decibel	DB	dB	MDC_DIM_DECIBEL		(2001-0...
- decibel (proposal "dB1")	[Bel]	[Bel]	decibel volt	dB(V)	dB[V]	MDC_DIM_DECIBEL_X_V		(2001-0...
- decibel (proposal "dB1")	[Bel]	[Bel]	decibel millivolt	dB(mV)	dB[mV]	MDC_DIM_DECIBEL_X_MV		(2001-0...
- decibel (proposal "dB1")	[Bel]	[Bel]	decibel microvolt	dB(uV)	dB[uV]	MDC_DIM_DECIBEL_X_UV		(2001-0...
- decibel (proposal "dB1")	[Bel]	[Bel]	decibel nanovolt	dB(nV)	dB[nV]	MDC_DIM_DECIBEL_X_NV		(2001-0...
- decibel (proposal "dB1")	[Bel]	[Bel]	decibel 10 nanovolt	dB(10nV)	dB[10.nV]	MDC_DIM_DECIBEL_DECA_NV		(2001-0...
- decibel (proposal "dB2")	[Bel]	[Bel]	bel millivolt	B(mV)	B[mV]	MDC_DIM_X_BEL_MV		(2001-0...
- Bel and deciBel (proposal ...	[Bel]	[Bel]	B	B	B	MDC_DIM_X_BEL		(2001-0...
- Bel and deciBel (proposal ...	[Bel]	[Bel]	Decibel	dB	dB	MDC_DIM_DECI_BEL		(2001-0...
- Bel and deciBel (proposal ...	1	1	10-2 (percent)	%	%	MDC_DIM_PERCENT		(2001-0...
- Bel and deciBel (proposal ...	1	1	10-3 (part(s) per thou...	Ppht	[ppth]	MDC_DIM_PARTS_PER_10_TO_...		(2001-0...
- Bel and deciBel (proposal ...	1	1	10-6 (part(s) per million)	Ppm	[ppm]	MDC_DIM_PARTS_PER_10_TO_...		(2001-0...
- Bel and deciBel (proposal ...	1	1	10-9 (part(s) per milliard)		10*-9;10^-9	MDC_DIM_PARTS_PER_10_TO_...		(2001-0...
- Bel and deciBel (proposal ...	1	1	10-12 (part(s) per billio...	Ppb	10^-12;10*-12	MDC_DIM_PARTS_PER_10_TO_...		(2001-0...
- Bel and deciBel (proposal ...	1	1	10-18 (part(s) per trilli...	Ppt	10^-15;10*-15	MDC_DIM_PARTS_PER_10_TO_...		(2001-0...
- angles	[rad]	[rad]	angle degree	Degree	deg	MDC_DIM_ANG_DEG		(2001-0...
- angles	[rad]	[rad]	angle radian	Rad	rad	MDC_DIM_ANG_RAD		(2001-0...
- mass fraction	MM-1	1	Â?magnitudeÂ? gram(...	g g-1	g/g	MDC_DIM_X_G_PER_G		(2001-0...

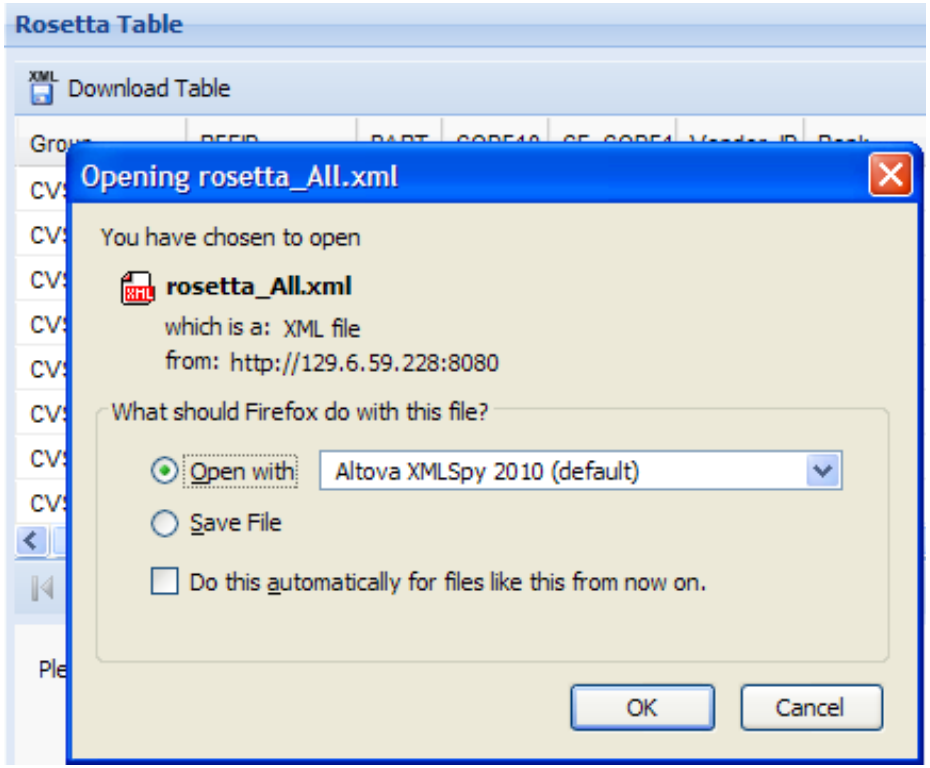
Enumeration Table

Enumerations | Enumeration Groups

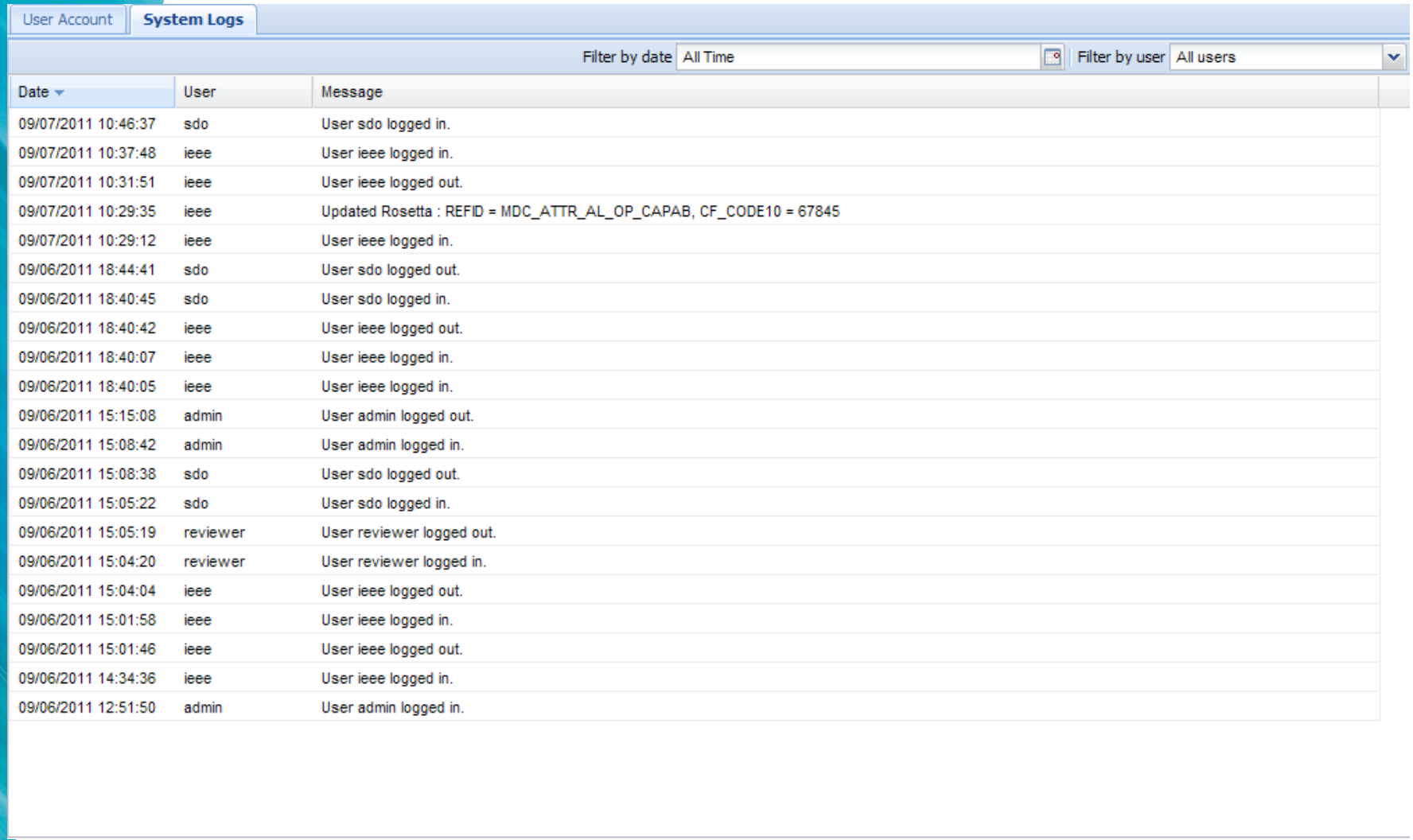
Download Table

GroupDescription	TOKEN	REFID	EPART	ECODE10	CF_ECODE10	ApplicationDescription	Discussion
Boolean	TRUE						(2001-01-01...
Boolean	FALSE						(2001-01-01...
Alarm Condition		MDC_EVT_STANDBY_WARN	129	61440		Pump on Hold	(2001-01-01...
Alarm Condition		MDC_EVT_EMPTY	3	26		Bag Empty	(2001-01-01...
Alarm Condition		MDC_EVT_FLUID_LINE_OCCL	3	332		Occlusion	(2001-01-01...
Alarm Condition		MDC_EVT_FLUID_LINE_AIR	3	592		Air in Line	(2001-01-01...
Alarm Condition		MDC_EVT_DOOR_POSN_ERR	3	476		Door Open	(2001-01-01...
Alarm Condition		MDC_EVT_ADVIS_SETTINGS_CHK	3	6668		Programming Error	(2001-01-01...
Alarm Condition		MDC_EVT_MALF	3	70		Device Malfunction	(2001-01-01...
Alarm Condition		MDC_EVT_POSN_PROB	3	160		Set Loading Error	(2001-01-01...
Alarm Condition		MDC_EVT_BATT_LO	3	194		Low Battery	(2001-01-01...
Alarm Condition		MDC_EVT_FLOW_LO	3	342		Low Flow	(2001-01-01...
Alarm Condition		MDC_EVT_IDLE	129	0		Pump Idle	(2001-01-01...
Alarm Condition		MDC_EVT_CALLBACK	129	0		Callback	(2001-01-01...
Alarm Condition		MDC_EVT_VOL_INFUS_COMP	129	0		VTBI Complete	(2001-01-01...
Alarm Condition		MDC_EVT_VOL_INFUS_NEAR_COMP	129	0		VTBI Near Completion	(2001-01-01...
Alarm Condition		MDC_EVT_BATT_DEPL	129	0		Depleted Battery	(2001-01-01...
Alarm Condition		MDC_EVT_BATT_SERV	129	0		Service Battery	(2001-01-01...
Alarm Condition		MDC_EVT_EMER_STOP	129	0		Emergency Stop	(2001-01-01...
Alarm Condition		MDC_EVT_PWR_LOSS	129	0		Power Loss	(2001-01-01...
Alarm Condition		MDC_EVT_FLOW_STOP_OPEN	129	0			(2001-01-01...
Alarm Condition		MDC_EVT_CHECK_IV_SET	129	0			(2001-01-01...

Download Table in XML



Logging history



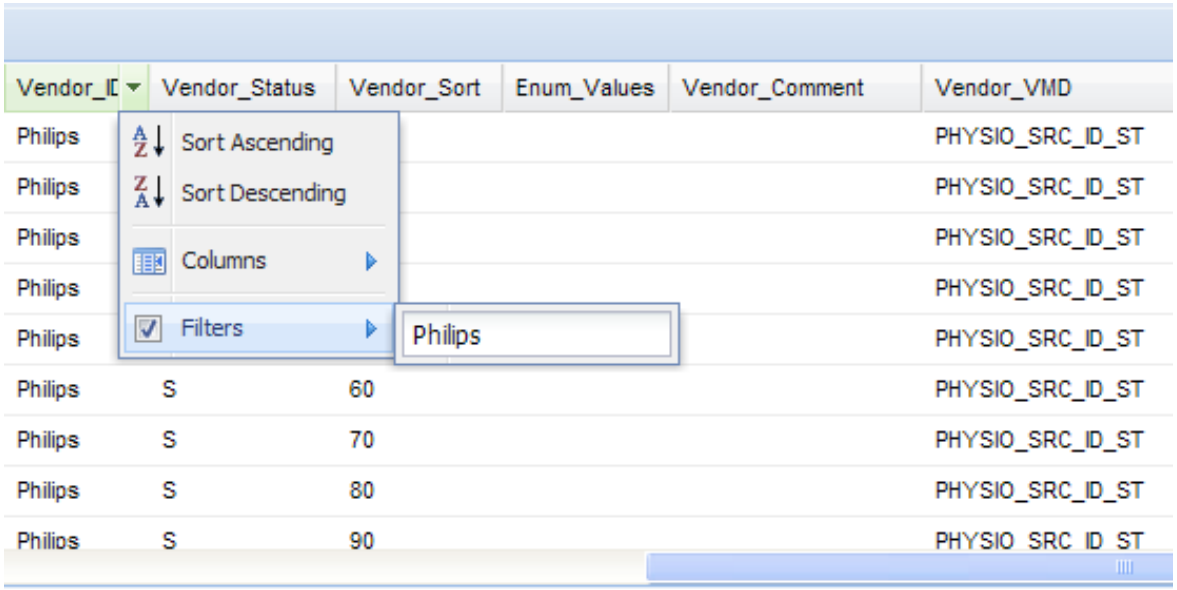
User Account | System Logs

Filter by date: All Time | Filter by user: All users

Date	User	Message
09/07/2011 10:46:37	sdo	User sdo logged in.
09/07/2011 10:37:48	ieee	User ieee logged in.
09/07/2011 10:31:51	ieee	User ieee logged out.
09/07/2011 10:29:35	ieee	Updated Rosetta : REFID = MDC_ATTR_AL_OP_CAPAB, CF_CODE10 = 67845
09/07/2011 10:29:12	ieee	User ieee logged in.
09/06/2011 18:44:41	sdo	User sdo logged out.
09/06/2011 18:40:45	sdo	User sdo logged in.
09/06/2011 18:40:42	ieee	User ieee logged out.
09/06/2011 18:40:07	ieee	User ieee logged in.
09/06/2011 18:40:05	ieee	User ieee logged in.
09/06/2011 15:15:08	admin	User admin logged out.
09/06/2011 15:08:42	admin	User admin logged in.
09/06/2011 15:08:38	sdo	User sdo logged out.
09/06/2011 15:05:22	sdo	User sdo logged in.
09/06/2011 15:05:19	reviewer	User reviewer logged out.
09/06/2011 15:04:20	reviewer	User reviewer logged in.
09/06/2011 15:04:04	ieee	User ieee logged out.
09/06/2011 15:01:58	ieee	User ieee logged in.
09/06/2011 15:01:46	ieee	User ieee logged out.
09/06/2011 14:34:36	ieee	User ieee logged in.
09/06/2011 12:51:50	admin	User admin logged in.

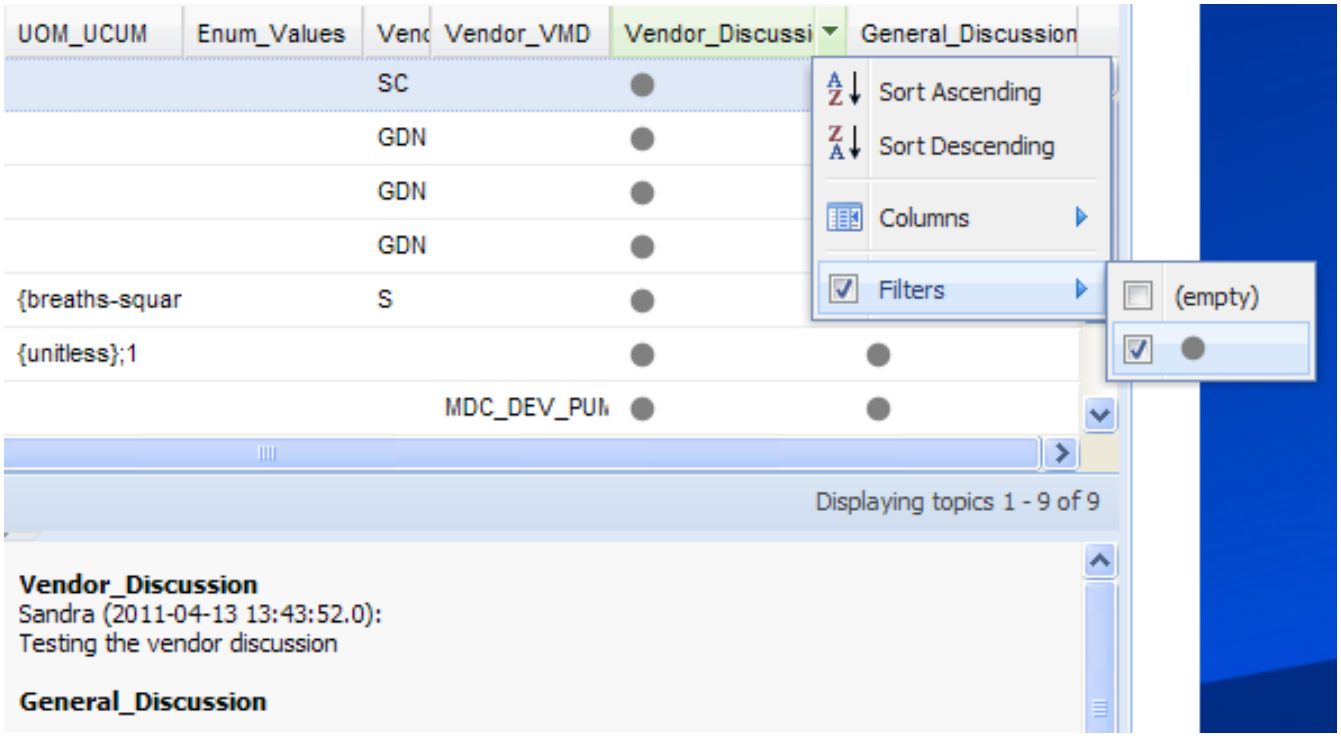
Filter Rosetta table

Filter Vendor_ID



Filter Rosetta table

Filter Vendor_Discussion



RTMMS Scenario and DEMO

All users capabilities:

- Account management
- User Guide

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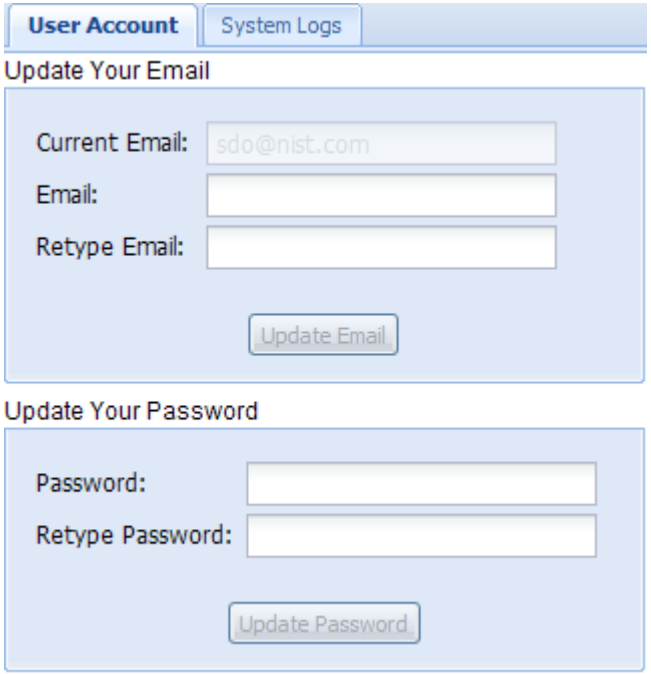
Account Management



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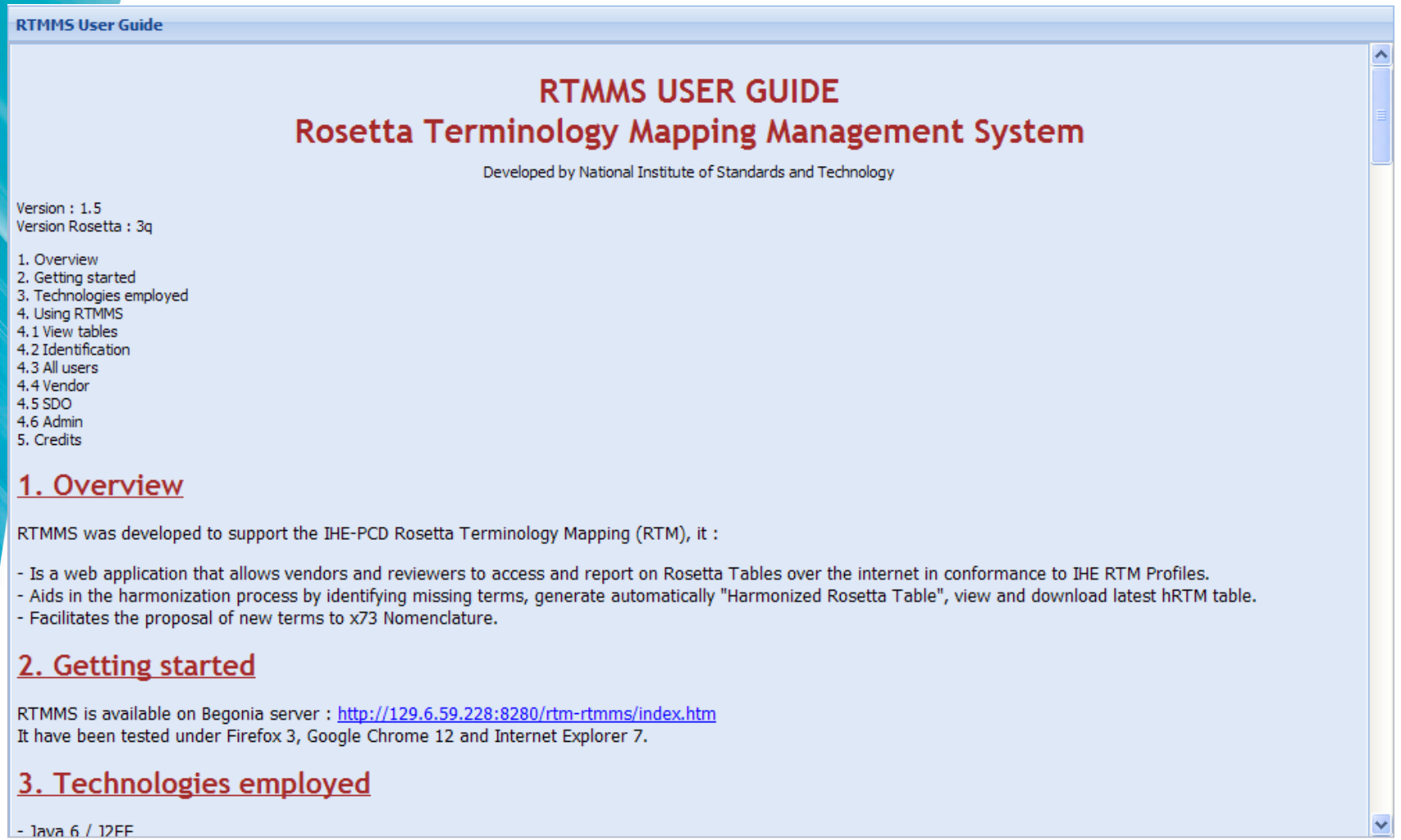
User Guide



RTMMS User Guide

RTMMS USER GUIDE
Rosetta Terminology Mapping Management System

Developed by National Institute of Standards and Technology

Version : 1.5
Version Rosetta : 3q

1. Overview
2. Getting started
3. Technologies employed
4. Using RTMMS
4.1 View tables
4.2 Identification
4.3 All users
4.4 Vendor
4.5 SDO
4.6 Admin
5. Credits

1. Overview

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

- Is a web application that allows vendors and reviewers to access and report on Rosetta Tables over the internet in conformance to IHE RTM Profiles.
- Aids in the harmonization process by identifying missing terms, generate automatically "Harmonized Rosetta Table", view and download latest hRTM table.
- Facilitates the proposal of new terms to x73 Nomenclature.

2. Getting started

RTMMS is available on Begonia server : http://129.6.59.228:8280/rtm-rtmms/index.htm
It have been tested under Firefox 3, Google Chrome 12 and Internet Explorer 7.

3. Technologies employed

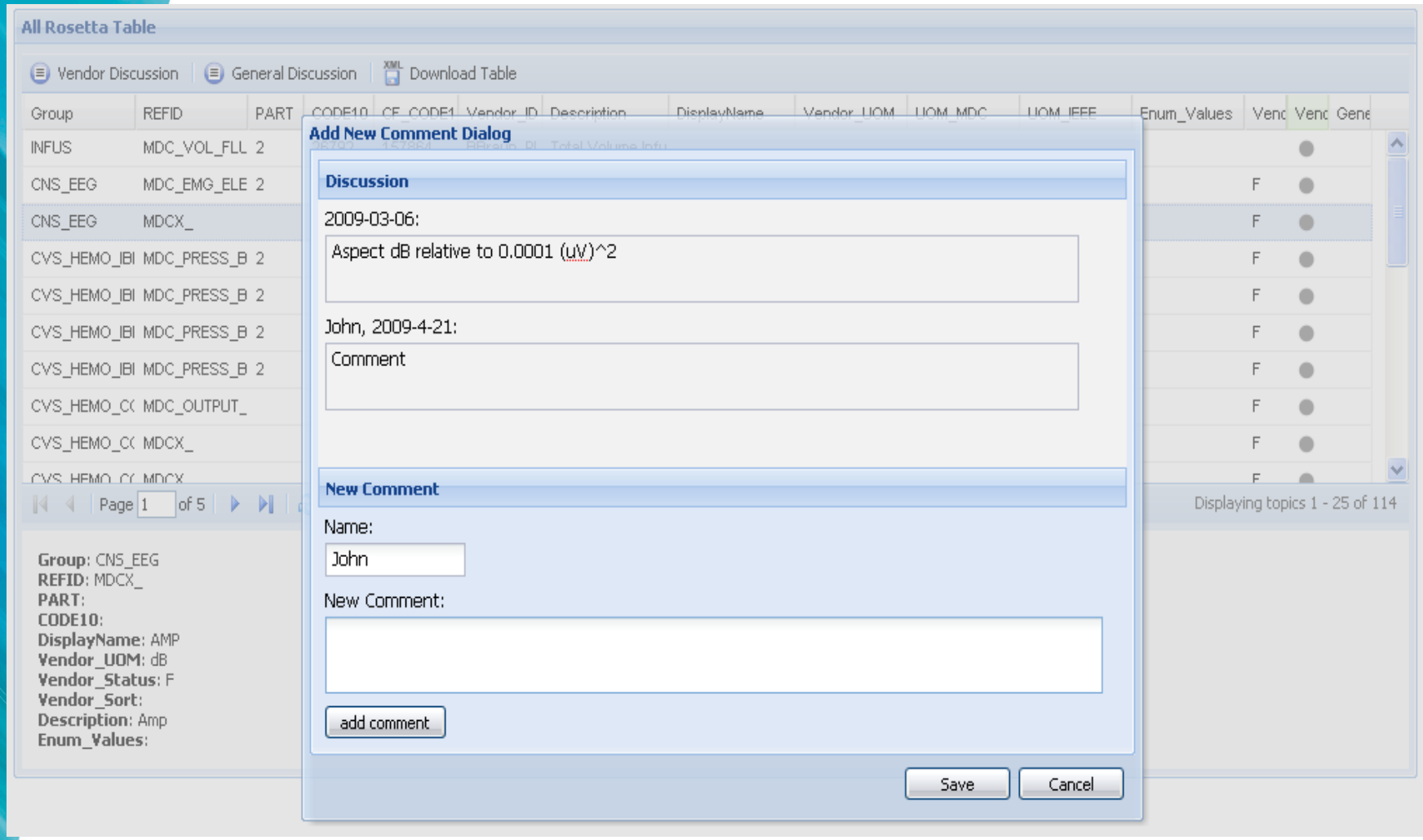
- Java 6 / J2EE

RTMMS Scenario

‘Reviewer’ Type User Capabilities

- Contribute to Discussions
  - Adding Comments

Comment Dialog



RTMMS Scenario

‘Vendor’ Type User Capabilities

- Add a new Rosetta entry
  - REFIDs lookup from x73 Nomenclature
  - Group lookup from RTM tables
  - Units/Unit Groups and Enumerations/Enumeration Groups lookup from RTM tables
  - Term codes completion from x73 Nomenclature
  - Suggesting new terms to the standard
  - Validating Required fields
- Edit a Rosetta entry
- Deprecate a Rosetta entry

Rosetta : Philips vendor

Philips Rosetta Table

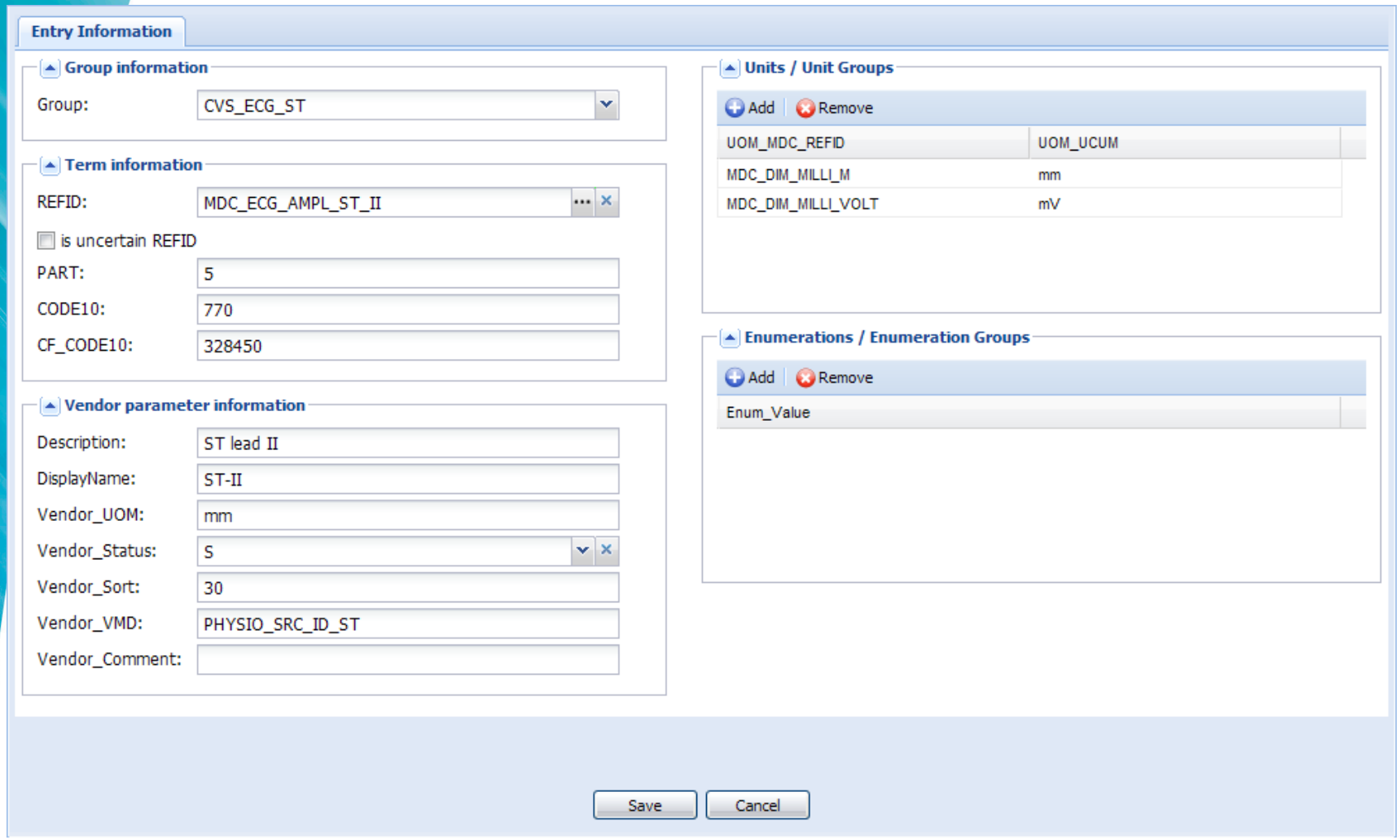
Edit | Deprecate | General Discussion | Download Table

Group	REFID	PART	CODE10	CF_CODE10	Description	DisplayName	Vendor_UOM	UOM_MDC
CVS_ECG_ST	MDC_ECG_AMPL_ST	2	768	131840	ST generic label	ST	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_I	5	769	328449	ST lead I	ST-I	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_II	5	770	328450	ST lead II	ST-II	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V1	5	771	328451	ST lead V1	ST-V1	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V2	5	772	328452	ST lead V2	ST-V2	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V3	5	773	328453	ST lead V3	ST-V3	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V4	5	774	328454	ST lead V4	ST-V4	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V5	5	775	328455	ST lead V5	ST-V5	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...
CVS_ECG_ST	MDC_ECG_AMPL_ST_V6	5	776	328456	ST lead V6	ST-V6	mm	MDC_DIM_MILLI_M MDC_DIM_MILLI_...

Page 1 of 5 | Displaying topics 1 - 25 of 239

Please select a row to see additional details

Edit Entry

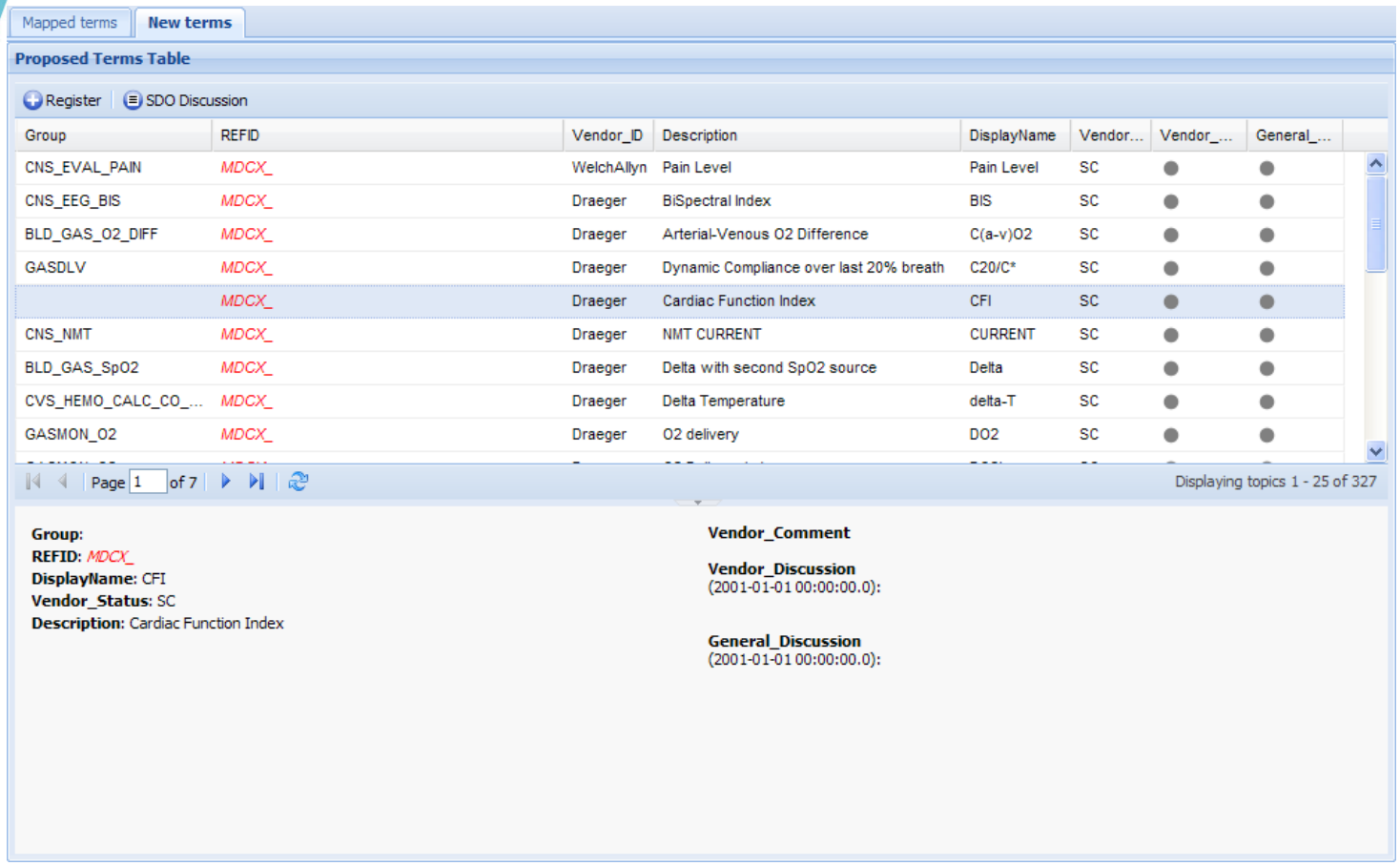

Entry Information
Group information
Group:
CVS_ECG_ST
Term information
REFID:
MDC_ECG_AMPL_ST_II
is uncertain REFID
PART:
5
CODE10:
770
CF_CODE10:
328450
Vendor parameter information
Description:
ST lead II
DisplayName:
ST-II
Vendor_UOM:
mm
Vendor_Status:
S
Vendor_Sort:
30
Vendor_VMD:
PHYSIO_SRC_ID_ST
Vendor_Comment:
Units / Unit Groups
Add
Remove
UOM_MDC_REFID
UOM_UCUM
MDC_DIM_MILLI_M
mm
MDC_DIM_MILLI_VOLT
mV
Enumerations / Enumeration Groups
Add
Remove
Enum_Value
Save
Cancel

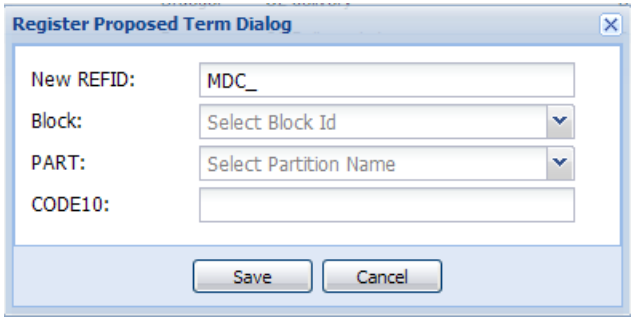
RTMMS Scenario

‘SDO’ Type User Capabilities

- Register a Proposed Term
  - Assigning term code
  - Automatically updating Vendor tables

Register new terms





RTMMS Scenario

‘Admin’ Type User Capabilities

- Save/Load/Delete selected database
- User management
- Import XML files provided by Paul Schluter

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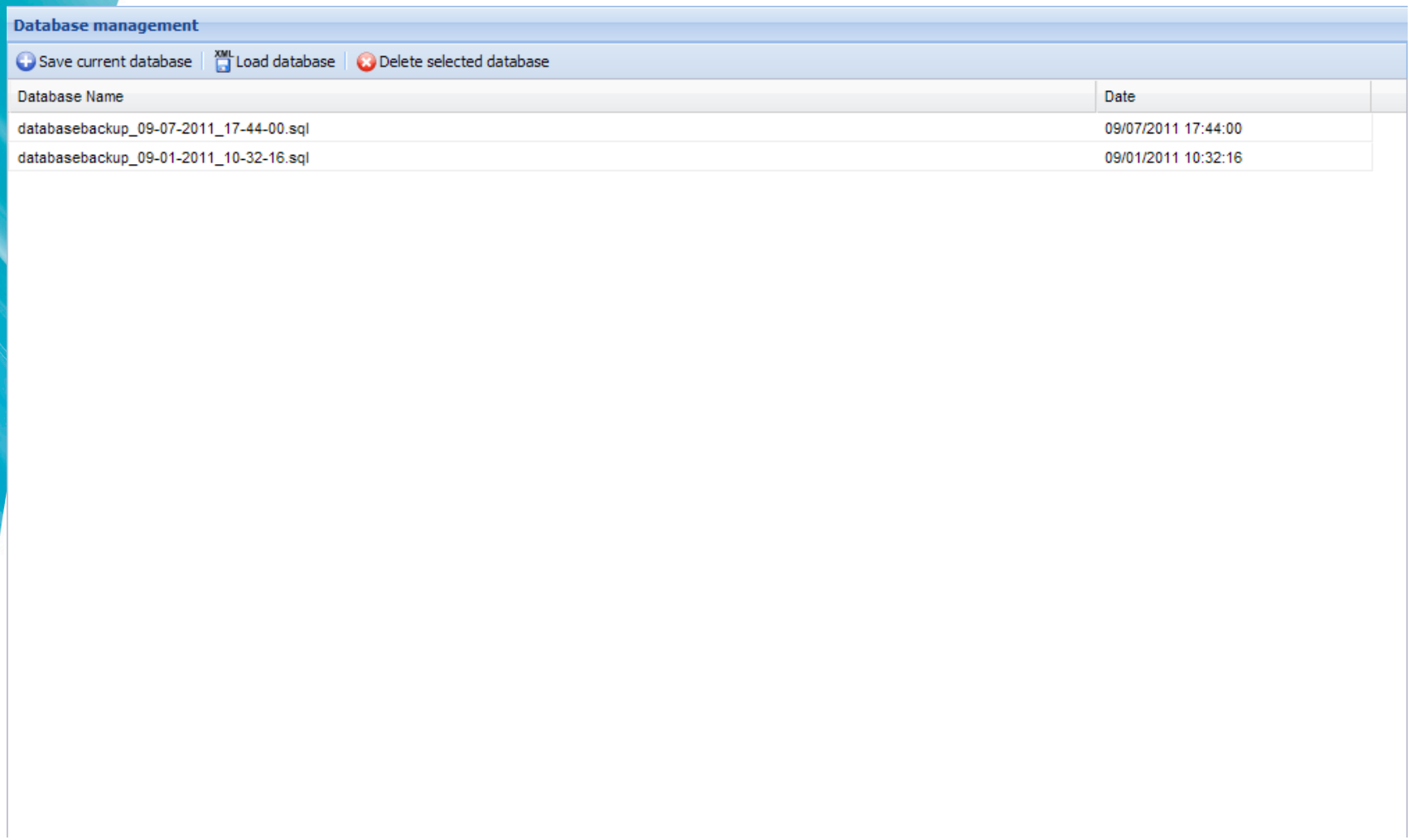
Database Management



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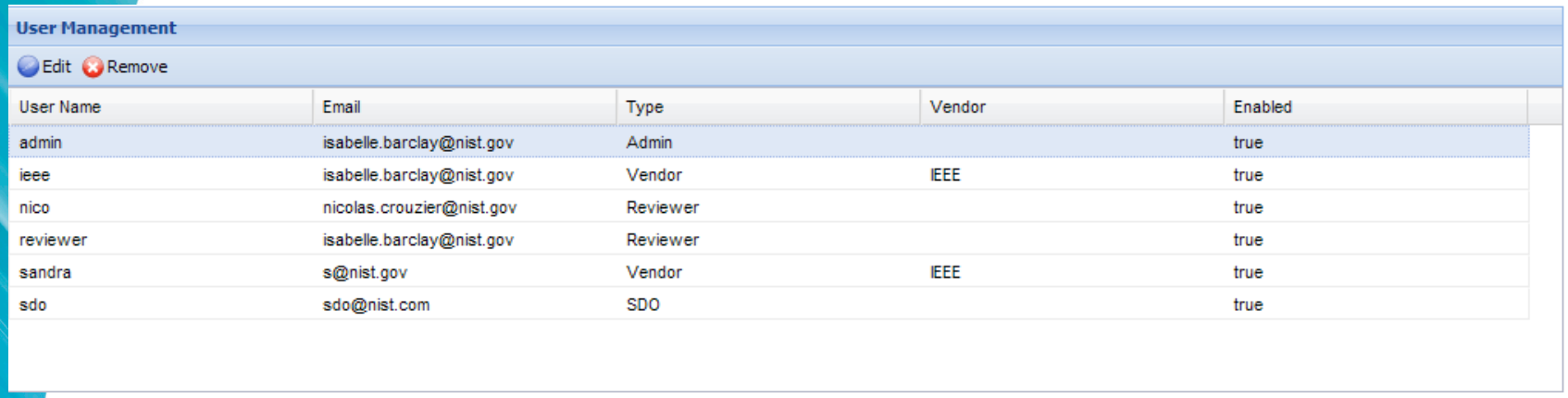
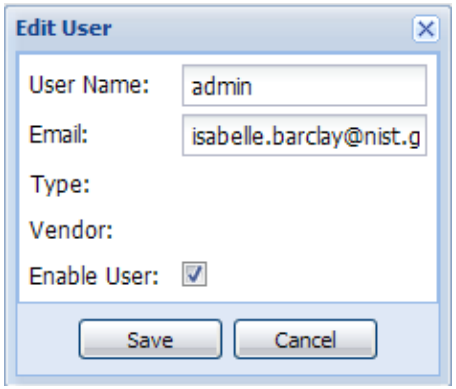
User Management





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Import Rosetta XML files

Import data from Paul xml file. This operation will delete all current Rosetta terms/Units/Enumerations terms and fill the database from the selected XML file.
Make sure to make a backup before using this feature: Create backup

Rosetta XML file: Choose File RosettaTable.3q.2011-05-07T10.xml

Import Steps	Status
Upload file	
Check XML format	
Delete current database	
Parse ucum units	
Parse vendors	
Parse groups	
Parse enumerations	
Parse units	
Parse rosetta	

Import data from XML file

Software and Systems Division

INFORMATION TECHNOLOGY LABORATORY

NIST
National Institute of Standards and Technology

Software and Systems Division

HL7 / Healthcare Devices WG
(San Diego, California)

"ICSGenerator"
Tool Activities

John Garguilo and Sandra Martinez

11-16 September, 2011

iTL INFORMATION TECHNOLOGY LABORATORY

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  john.garguilo@nist.gov
- Sandra Martinez
  301-975-3579
  sandra.martinez@nist.gov
- Jing Gao (Guess Researcher)

Project Web site:
www.nist.gov/medicaldevices

ICSGenerator Overview

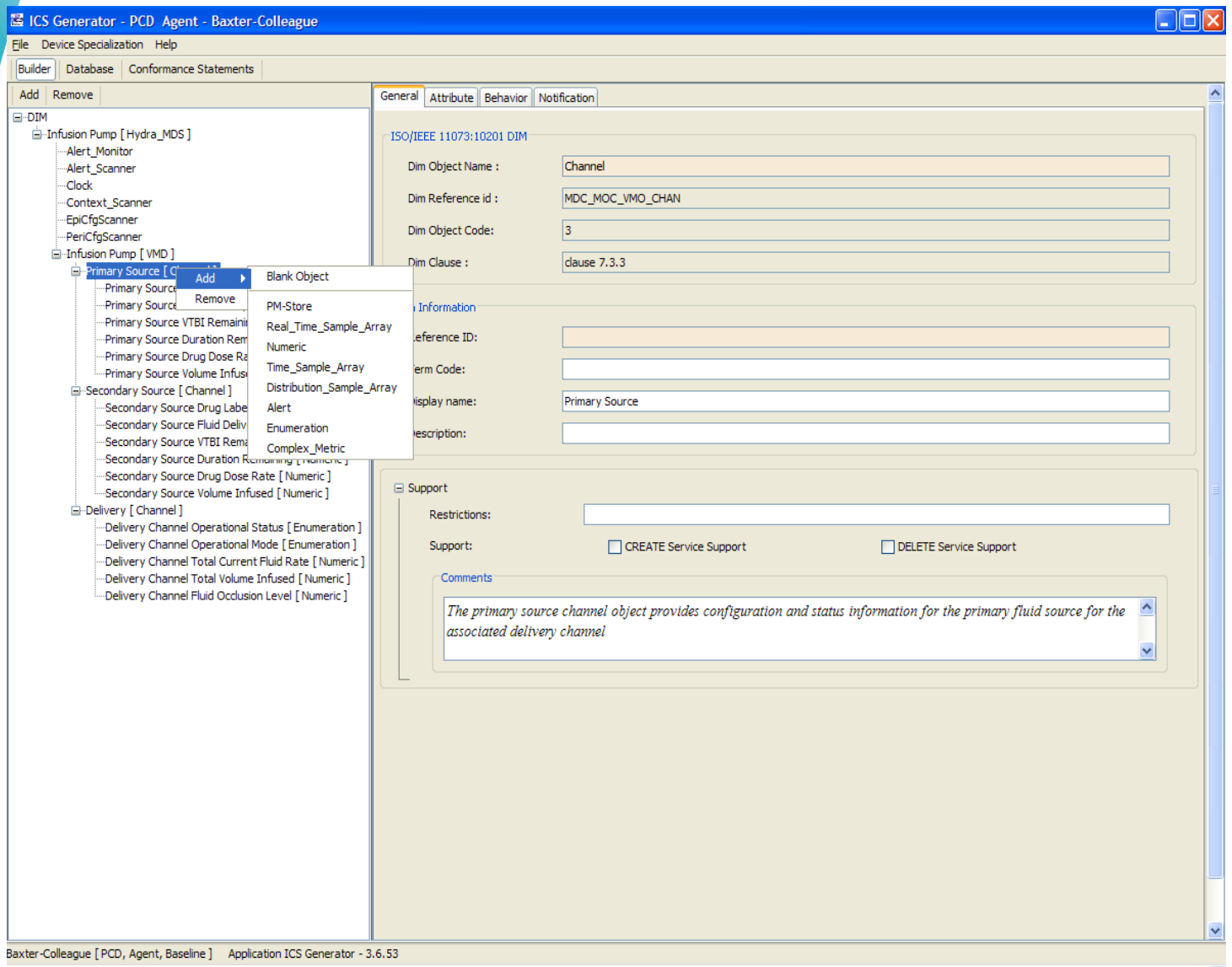
ICSGenerator was developed to:

- 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

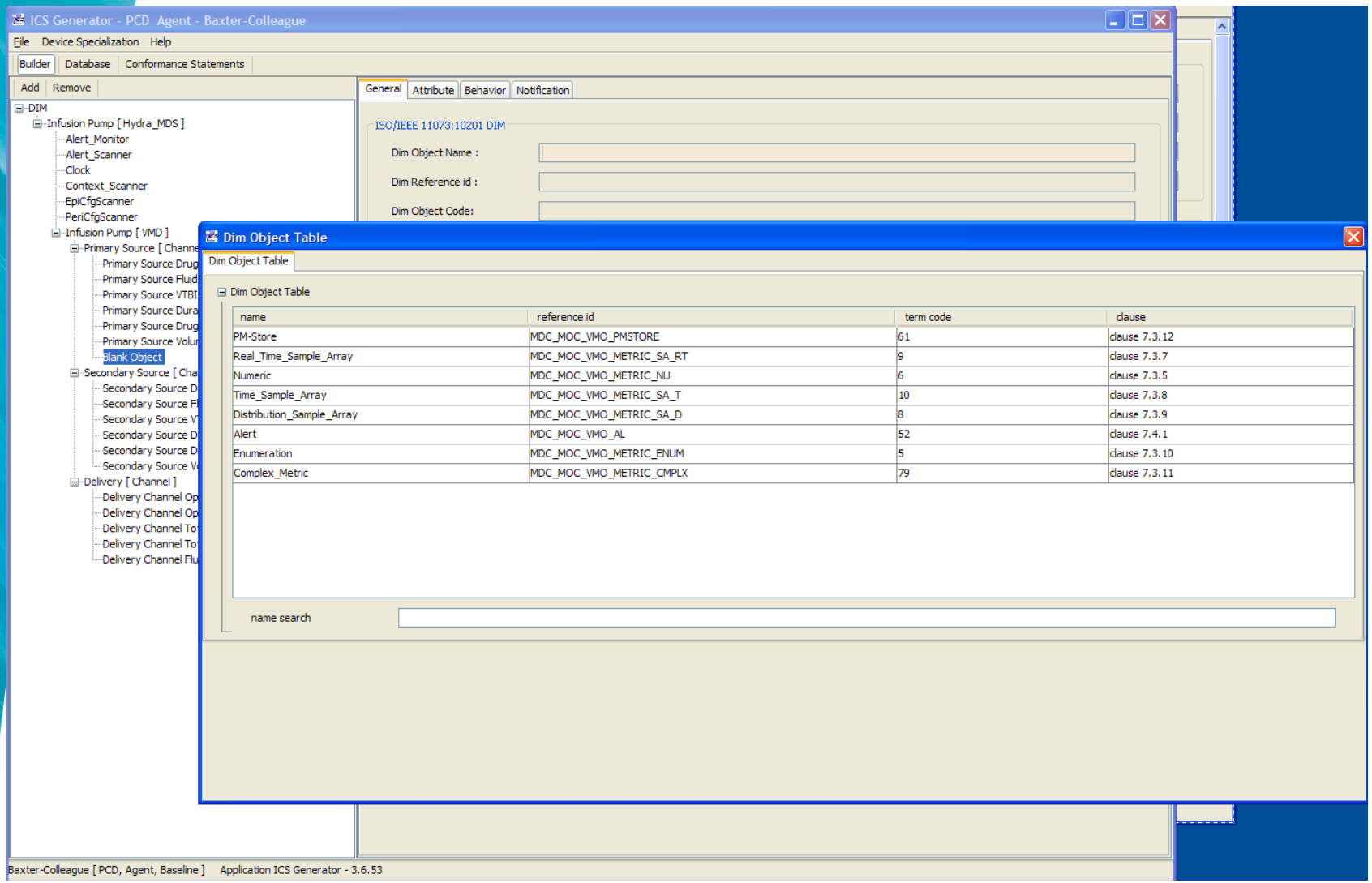
ICSGenerator Enhancements

- Access to latest hRTM version (3q 2011-05-07T10)
- Access to the latest X73 Nomenclature dbase version (containing IDC, PHD and Appendix B.)
- Private Terms support
  - Capability to enter private objects using a “blank” object template.
  - Capability to import private terms using a Rosetta-based xml file.
    - "File" menu ➔ “import private terms”
  - Capability to access MDC-<vid> private terms from hRTM, if available.
  - Capability to enter private attributes to a private object or to already defined objects.
    (This is based on the x73 DIM allowance of extension (section 6.1.4) to the model that states: “In other cases, it may be necessary to define completely new objects **or to add new attributes, new methods, or new events to already defined objects**. These extensions are considered private or manufacturer-specific extensions”.)

Capability to enter private objects using a “blank” object template



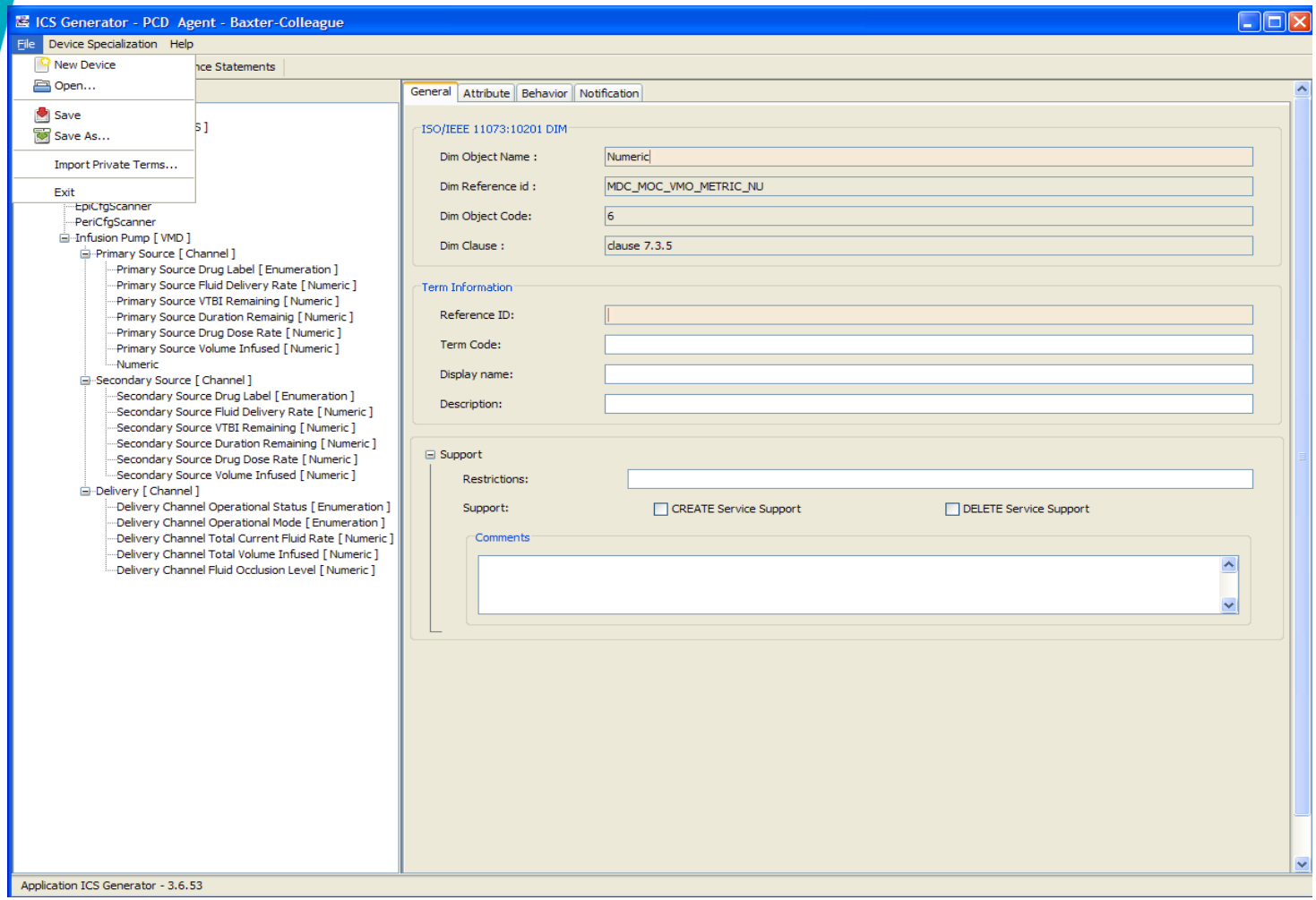
Capability to enter private objects using a “blank” object template



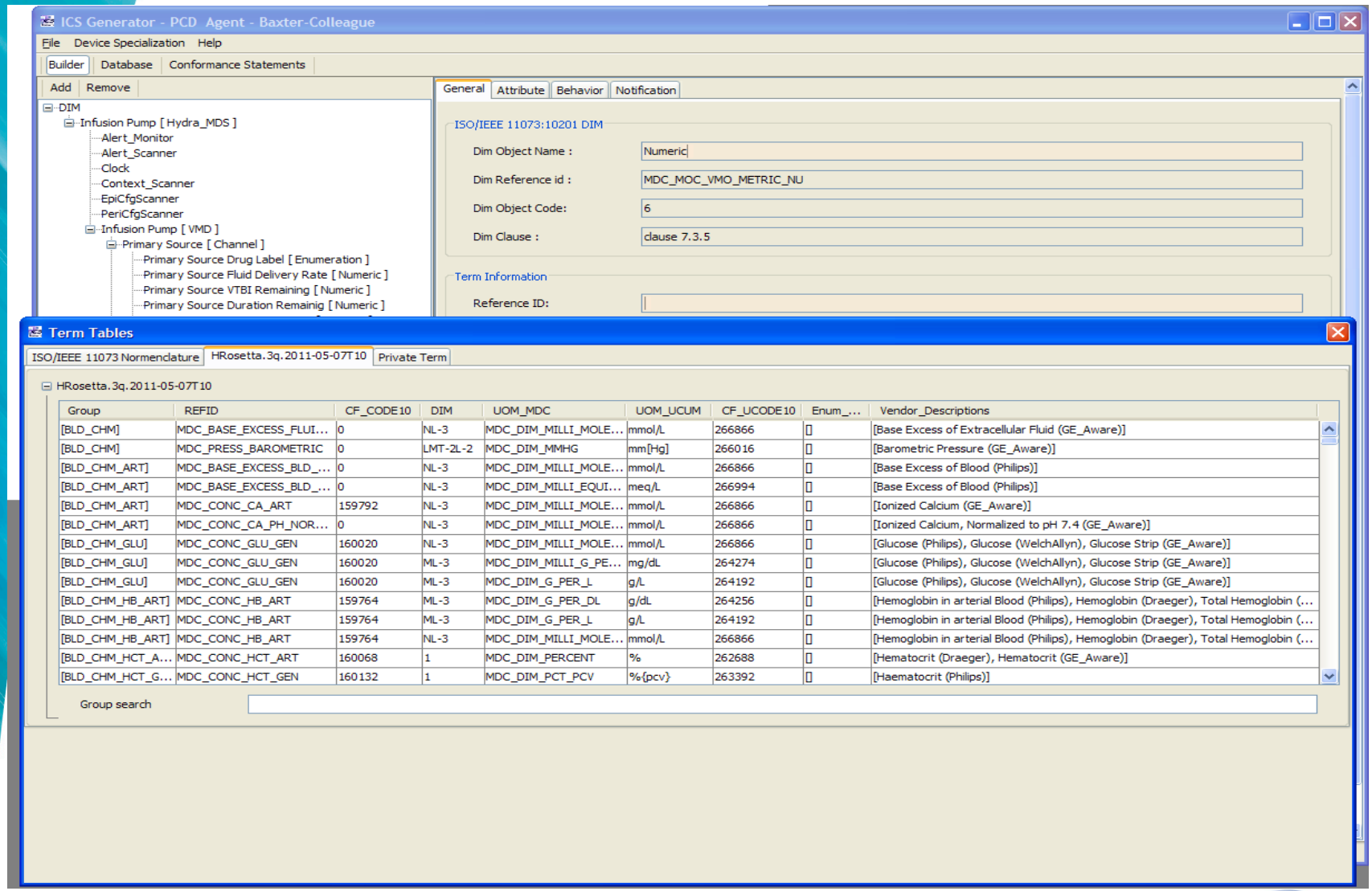
name	reference id	term code	clause
PM-Store	MDC_MOC_VMO_PMSTORE	61	clause 7.3.12
Real_Time_Sample_Array	MDC_MOC_VMO_METRIC_SA_RT	9	clause 7.3.7
Numeric	MDC_MOC_VMO_METRIC_NU	6	clause 7.3.5
Time_Sample_Array	MDC_MOC_VMO_METRIC_SA_T	10	clause 7.3.8
Distribution_Sample_Array	MDC_MOC_VMO_METRIC_SA_D	8	clause 7.3.9
Alert	MDC_MOC_VMO_AL	52	clause 7.4.1
Enumeration	MDC_MOC_VMO_METRIC_ENUM	5	clause 7.3.10
Complex_Metric	MDC_MOC_VMO_METRIC_CMPLX	79	clause 7.3.11

ICSGenerator Updates

Capability to import private terms using a Rosetta-based xml file

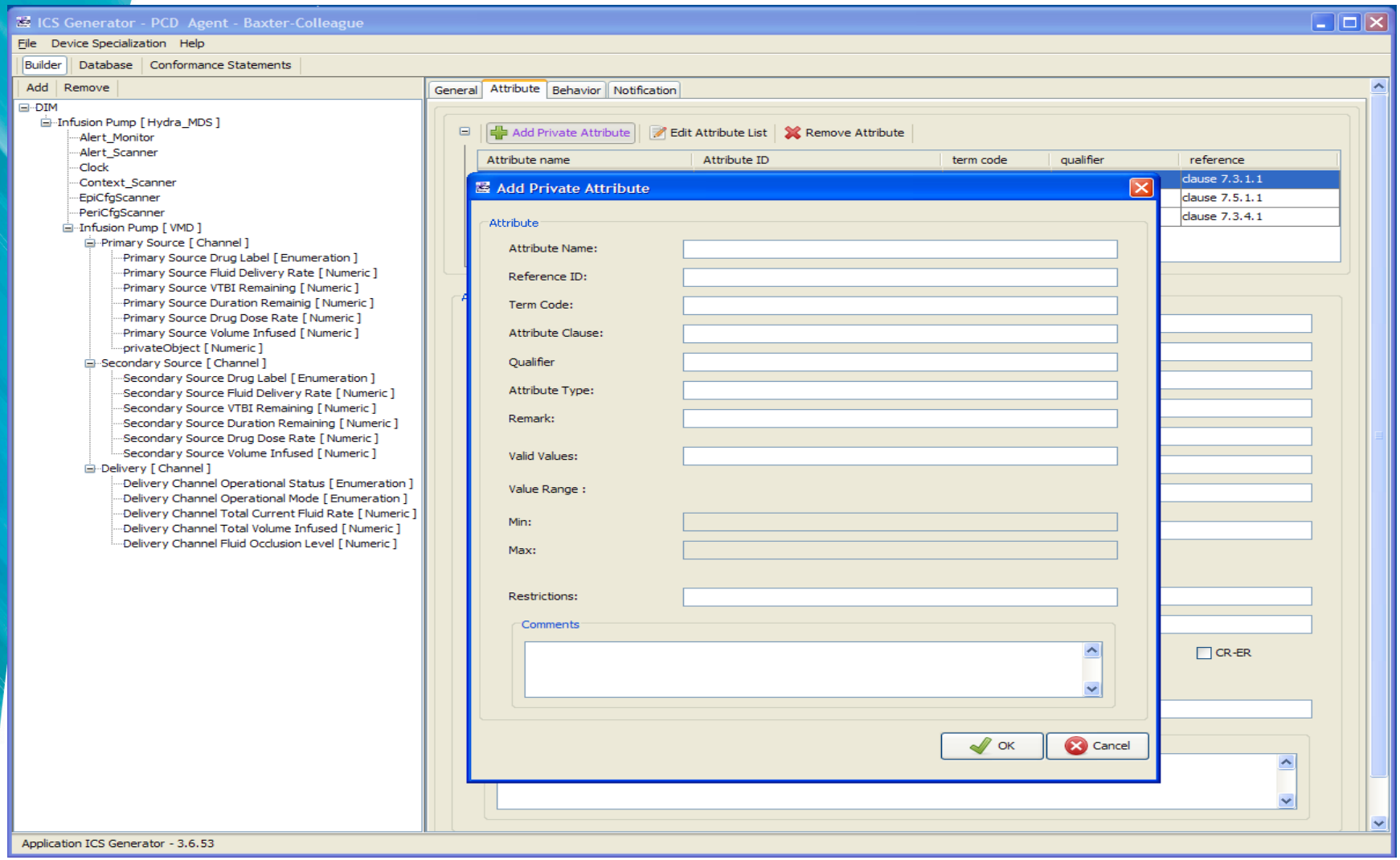


Capability to access private terms from hRTM.



Group	REFID	CF_CODE10	DIM	UOM_MDC	UOM_UCUM	CF_UCODE10	Enum_...	Vendor_Descriptions
[BLD_CHM]	MDC_BASE_EXCESS_FLUI...	0	NL-3	MDC_DIM_MILLI_MOLE...	mmol/L	266866	[]	[Base Excess of Extracellular Fluid (GE_Aware)]
[BLD_CHM]	MDC_PRESS_BAROMETRIC	0	LMT-2L-2	MDC_DIM_MMHG	mm[Hg]	266016	[]	[Barometric Pressure (GE_Aware)]
[BLD_CHM_ART]	MDC_BASE_EXCESS_BLD_...	0	NL-3	MDC_DIM_MILLI_MOLE...	mmol/L	266866	[]	[Base Excess of Blood (Philips)]
[BLD_CHM_ART]	MDC_BASE_EXCESS_BLD_...	0	NL-3	MDC_DIM_MILLI_EQUI...	meq/L	266994	[]	[Base Excess of Blood (Philips)]
[BLD_CHM_ART]	MDC_CONC_CA_ART	159792	NL-3	MDC_DIM_MILLI_MOLE...	mmol/L	266866	[]	[Ionized Calcium (GE_Aware)]
[BLD_CHM_ART]	MDC_CONC_CA_PH_NOR...	0	NL-3	MDC_DIM_MILLI_MOLE...	mmol/L	266866	[]	[Ionized Calcium, Normalized to pH 7.4 (GE_Aware)]
[BLD_CHM_GLU]	MDC_CONC_GLU_GEN	160020	NL-3	MDC_DIM_MILLI_MOLE...	mmol/L	266866	[]	[Glucose (Philips), Glucose (WelchAllyn), Glucose Strip (GE_Aware)]
[BLD_CHM_GLU]	MDC_CONC_GLU_GEN	160020	ML-3	MDC_DIM_MILLI_G_PE...	mg/dL	264274	[]	[Glucose (Philips), Glucose (WelchAllyn), Glucose Strip (GE_Aware)]
[BLD_CHM_GLU]	MDC_CONC_GLU_GEN	160020	ML-3	MDC_DIM_G_PER_L	g/L	264192	[]	[Glucose (Philips), Glucose (WelchAllyn), Glucose Strip (GE_Aware)]
[BLD_CHM_HB_ART]	MDC_CONC_HB_ART	159764	ML-3	MDC_DIM_G_PER_DL	g/dL	264256	[]	[Hemoglobin in arterial Blood (Philips), Hemoglobin (Draeger), Total Hemoglobin (...
[BLD_CHM_HB_ART]	MDC_CONC_HB_ART	159764	ML-3	MDC_DIM_G_PER_L	g/L	264192	[]	[Hemoglobin in arterial Blood (Philips), Hemoglobin (Draeger), Total Hemoglobin (...
[BLD_CHM_HB_ART]	MDC_CONC_HB_ART	159764	NL-3	MDC_DIM_MILLI_MOLE...	mmol/L	266866	[]	[Hemoglobin in arterial Blood (Philips), Hemoglobin (Draeger), Total Hemoglobin (...
[BLD_CHM_HCT_A...	MDC_CONC_HCT_ART	160068	1	MDC_DIM_PERCENT	%	262688	[]	[Hematocrit (Draeger), Hematocrit (GE_Aware)]
[BLD_CHM_HCT_G...	MDC_CONC_HCT_GEN	160132	1	MDC_DIM_PCT_PCV	%{pcv}	263392	[]	[Haematocrit (Philips)]

Capability to enter private attributes to a private object or to already defined objects.



ICSGenerator Enhancements (Cont.)

User Interface improvements:

- "Profile Overview" display
  - By clicking “DIM” on tree root, profile information is displayed on the right side panel.
- Dim Object changeable
  - By clicking on the DIM Object Name an object can be changed to a different object.

ICSGenerator Future Enhancements

- Support PHD standards
  - Update specializations with published versions

- Access to MCD-<vid> private terms via hRTM, when available.

NIST
National Institute of Standards and Technology

Thank You!

- Questions
- Discussion

Software and Systems Division

ITL INFORMATION TECHNOLOGY LABORATORY