US Office of National Coordinator (ONC)
Standards and Interoperability (S&I) Framework
<u>Cross Initiative – S&I Simplification Work Group</u>

Simplification & UCAT Priorities

In collaboration with NIST and AHRQ

20 February 2014

S&I Simplification - Analysis Status - 17 January 2014 - Core Matrix Version 2.6 (Working Draft)
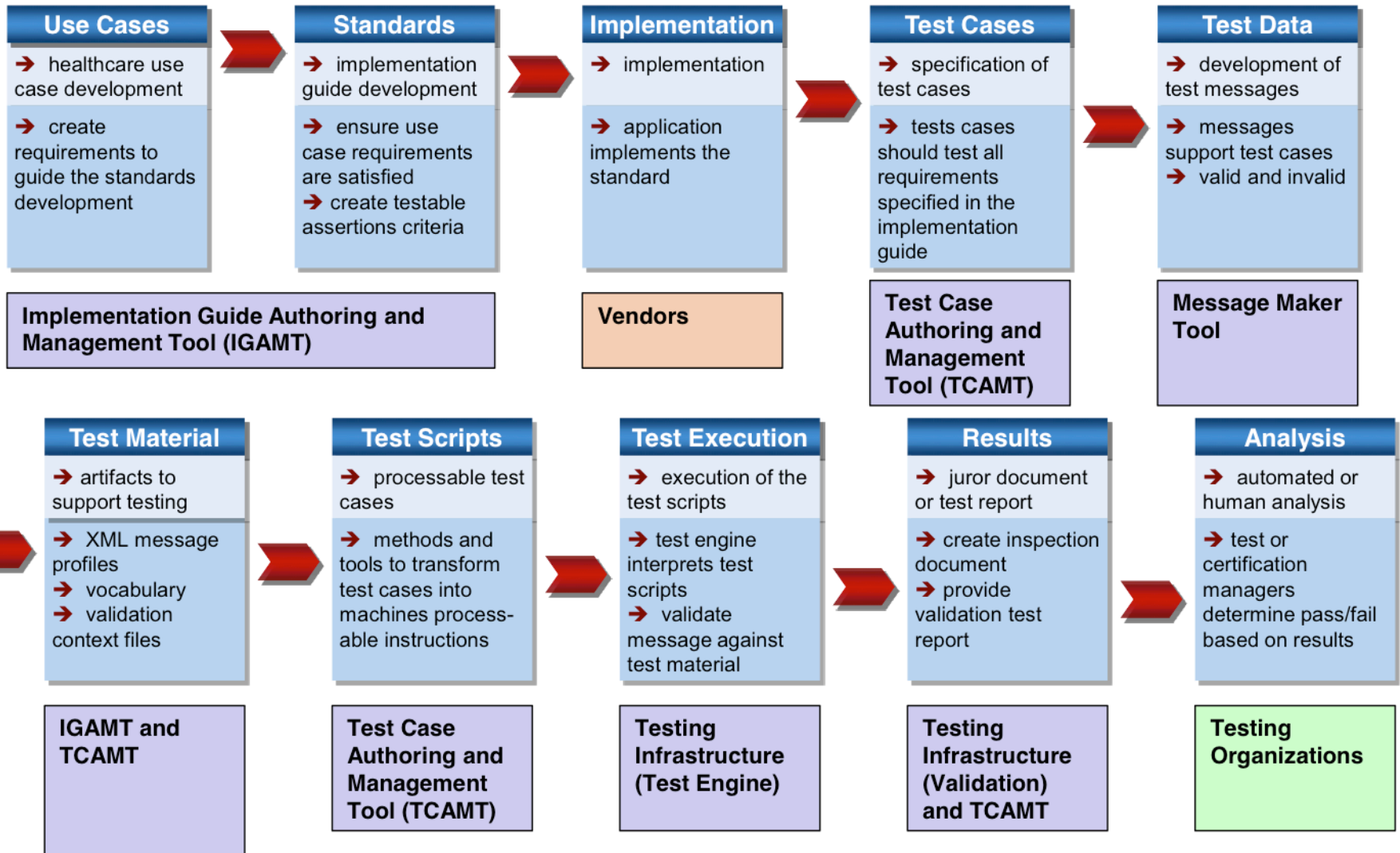**Incorporation of Use Case Initiatives in S&I Simplification Core Matrix**

Initiative	Analysis Type	Common Requirements	Common Actors, Systems, Roles	Scenarios, Event Steps	Common Actions	FHIM — Common Data Objects, Elements	AHRQ — US Health Information Knowledgebase	Consensus Core Matrix
Transitions of Care (TOC)	Retro	COMPLETE	COMPLETE	COMPLETE	COMPLETE	Data Requirements Compiled	REGISTERED	v1
Lab Results Interface (LRI)								v1
Longitudinal Coordination of Care (LCC) 1								v2.1
LCC 2		In Progress						TBD
Lab Orders Interface (LOI)	Retro	COMPLETE	COMPLETE	COMPLETE	COMPLETE	Compiled	REGISTERED	v2.1
Provider Directory (PD) - Digital Certificate								
PD - Electronic Address								
esMD 1 - Electronic Submission of Medical Documentation, Provider Profiles Authentication								
esMD 2 - Structured Content of Electronic Medical Documentation Request (eMDR)								
esMD 3 - Author of Record Level 1	Concurrent						Awaiting Consensus	TBD
esMD 3 - Author of Record Level 2	Retro							
esMD 3 - Author of Record Level 3	TBD	Future						
Query Health (QH)	Retro	COMPLETE	COMPLETE	COMPLETE	COMPLETE	Compiled	REGISTERED	v2.1
Data Segmentation for Privacy (DS4P)								
Public Health Reporting (PHRI)								
HeD 1 - Health eDecisions - Clinical Decision Support (CDS) Artifact Sharing		In Progress	COMPLETE	COMPLETE	COMPLETE		Awaiting Consensus	TBD
HeD 2 - CDS Guidance Service								
Structured Data Capture								
EU/US eHealth Initiative	Concurrent	COMPLETE						
RESTful Health Exchange (RHEx)	TBD	TBD						
Automated Blue Button								
Data Access Framework (DAF)								
Electronic Certificate	Retro	N/A				Compiled	REGISTERED	N/A

S&I Simplification
Priorities

- Analyze Components from Latest UC Requirements
  - Health eDecisions (HeD) 1/2 – w/Paul Dow (ACC)
  - Structured Data Capture (SDC) – w/Mitra Rocca (FDA)

  Mostly Complete – Common Requirements Review to go

- ISO TC215 WG 1 – S&I Use Case Methodology
  - Approved as New Work Item Proposal: Sydney, October 2013
  - Scope: S&I Use Case Simplification <u>Methodology</u>
  - Example: EU/US eHealth Cooperation Initiative
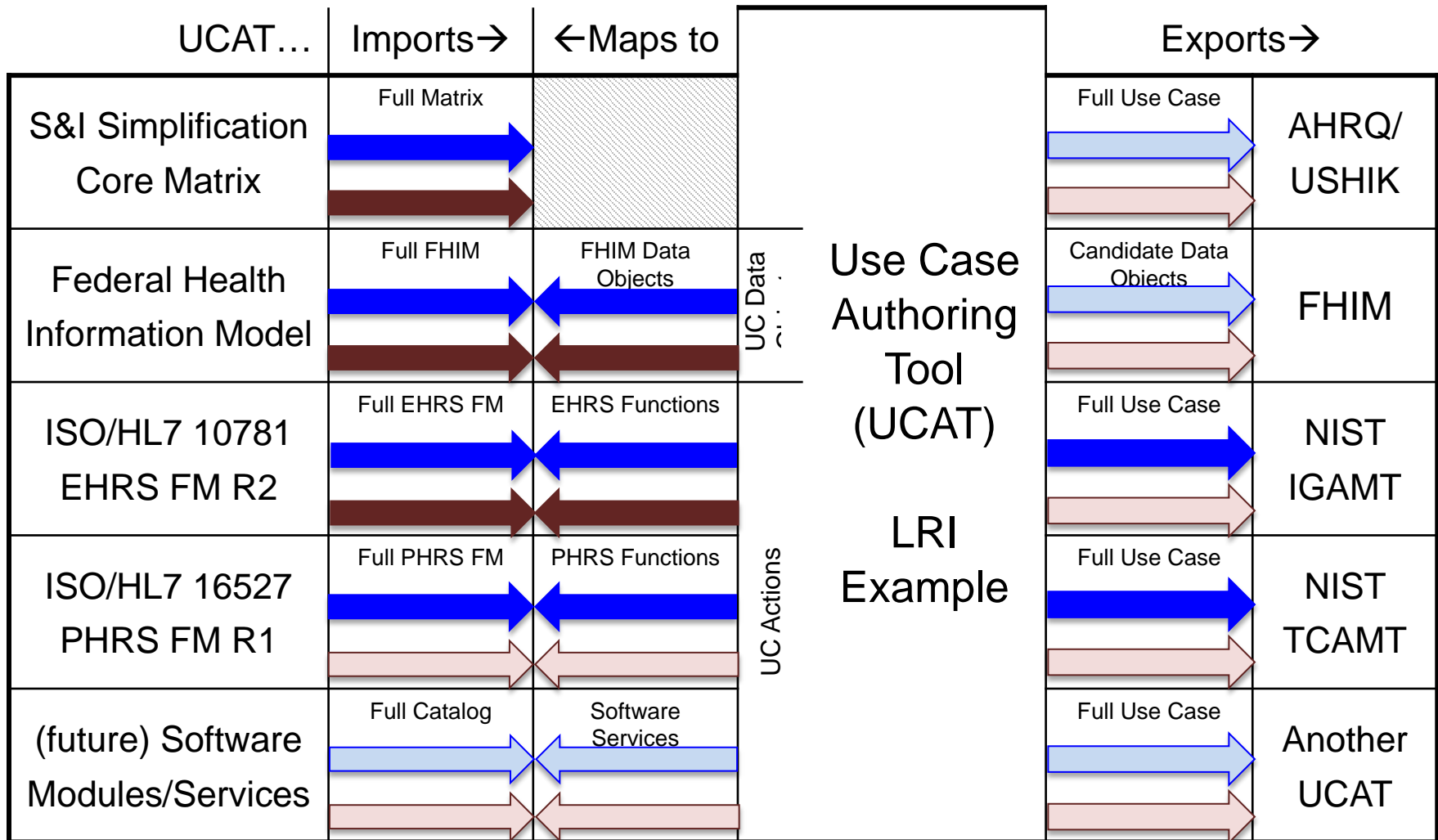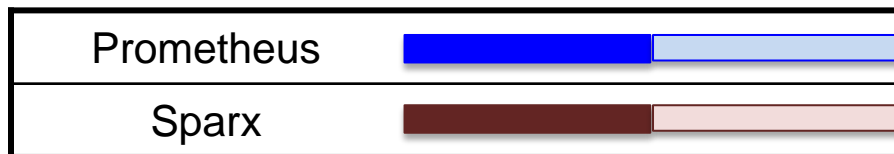
What will the tools address?

Use Cases	Standards	Implementation	Test Cases	Test Data
→ healthcare use case development → create requirements to guide the standards development	→ implementation guide development → ensure use case requirements are satisfied → create testable assertions criteria	→ implementation → application implements the standard	→ specification of test cases → tests cases should test all requirements specified in the implementation guide	→ development of test messages → messages support test cases → valid and invalid
Implementation Guide Authoring and Management Tool (IGAMT)		**Vendors**	**Test Case Authoring and Management Tool (TCAMT)**	**Message Maker Tool**

Test Material	Test Scripts	Test Execution	Results	Analysis
→ artifacts to support testing → XML message profiles → vocabulary → validation context files	→ processable test cases → methods and tools to transform test cases into machines process-able instructions	→ execution of the test scripts → test engine interprets test scripts → validate message against test material	→ juror document or test report → create inspection document → provide validation test report	→ automated or human analysis → test or certification managers determine pass/fail based on results
IGAMT and TCAMT	**Test Case Authoring and Management Tool (TCAMT)**	**Testing Infrastructure (Test Engine)**	**Testing Infrastructure (Validation) and TCAMT**	**Testing Organizations**

S&I Simplification
Progression Steps*

Steps	Tool	Used to…
S&I Use Case Requirements (UCR) Phase		
A-B	Excel	(Current) Analyze UC Components, Update Core Simplification Matrix
C-D	UCAT	Build Use Case, specify Requirements and Details
E		Render completed Use Case per S&I UCR Template (Word .docx)
F		Identify New Core Component Candidates from this Use Case
G		For FHIM update: identify new UC data objects, elements
H		Output to USHIK: full Use Case
I		Output to NIST Tool Suite (IGAMT/TCAMT): full Use Case
S&I Harmonization Phase		
J-K	IGAMT	Develop/manage Implementation Guides for selected standards
NIST-designed Software Testing and Certification		
M-S	IG/TCAMT	Develop/manage software test cases; support testing and validation

* See S&I Simplification – Progression Spreadsheet

UCAT…	Imports→	←Maps to		Exports→	
S&I Simplification Core Matrix	Full Matrix		Use Case Authoring Tool (UCAT) LRI Example	Full Use Case	AHRQ/ USHIK
Federal Health Information Model	Full FHIM	FHIM Data Objects		Candidate Data Objects	FHIM
ISO/HL7 10781 EHRS FM R2	Full EHRS FM	EHRS Functions		Full Use Case	NIST IGAMT
ISO/HL7 16527 PHRS FM R1	Full PHRS FM	PHRS Functions		Full Use Case	NIST TCAMT
(future) Software Modules/Services	Full Catalog	Software Services		Full Use Case	Another UCAT

UC Data Objects

UC Actions

	Complete	Anticipated
Prometheus		
Sparx		

S&I Simplification – Use Case Authoring Tool
UCAT Priorities

Priorities identified in consultation with ONC and S&I leadership.	
Priority	Status
1. Seek Commercially Available UCAT Options • Prometheus Use Case Editor (Art Griesser) • Sparx Enterprise Architect w/extensions (J.D. Baker)	• UCAT Requirements are described in S&I Simplification Progress spreadsheet (rows 14-16) • Each vendor has agreed to self-report tool development progress and status vs. UCAT Requirements • Prometheus report posted • Sparx to post
2. Show UCAT options side-by-side • With fit to S&I and Simplification Methodology	
3. Identify UCAT interest with other FHA agencies	• NIST, AHRQ – engaged • DOD, VA, FDA – in discussion • Presentation to FHA Architecture and Modeling WG – 11 Feb 2014

S&I Simplification – Use Case Authoring Tool (UCAT)
UCAT Priorities

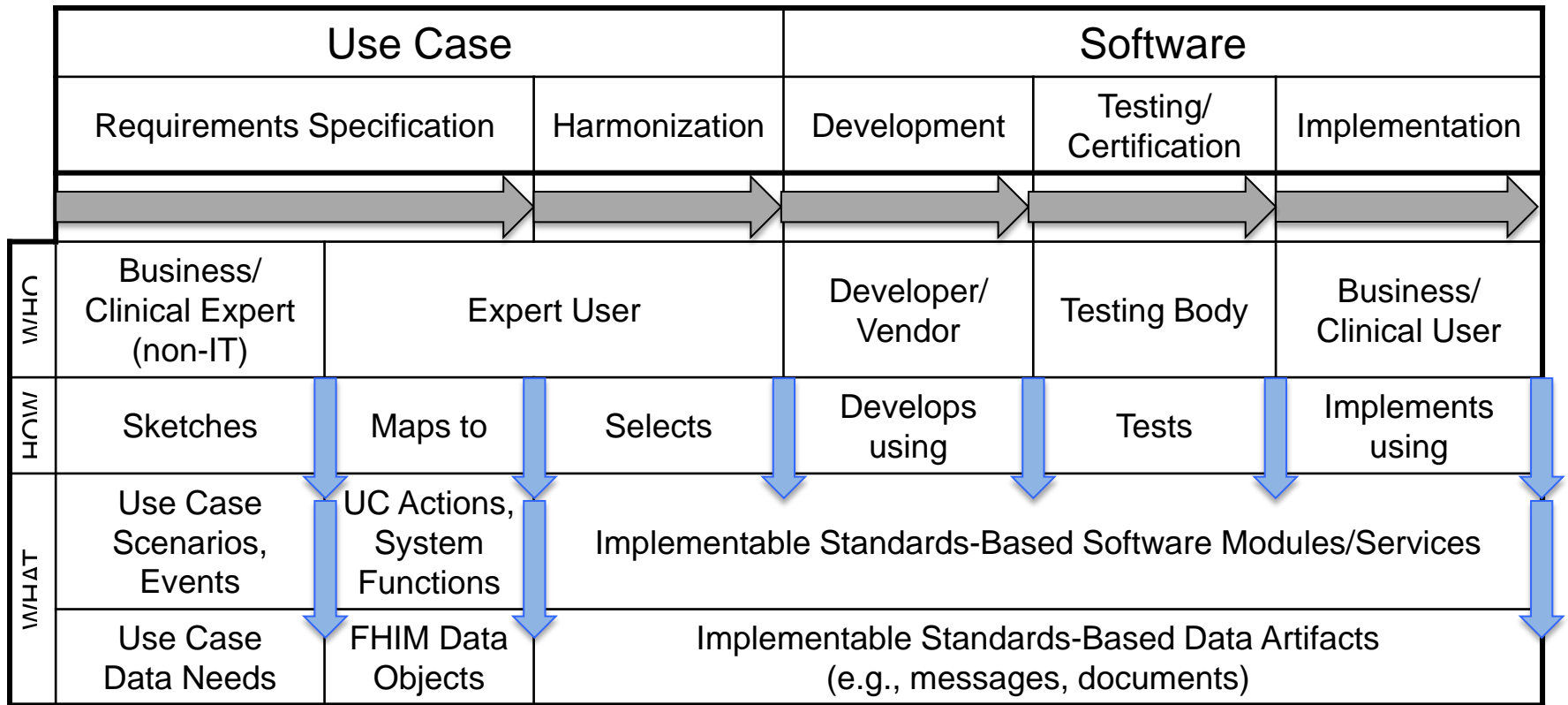| Priority	Status

4. Achieve UCAT/FHIM integration
• FHIM is released in periodic versions
• UCAT captures each new FHIM version (as .xmi)
• UCAT maps UC Data Requirements to FHIM objects
• UCAT captures new UC Data Objects (new FHIM candidates)
	• Prometheus and Sparx:
	  • Have captured latest FHIM .xmi file
	  • Can map UC to FHIM data objects

5. Use UCAT in parallel w/upcoming S&I Use Case(s) • To complete UC Requirements Template	• Prometheus: Currently capturing EU/US eHealth Cooperation Initiative – Interoperability Use Case • Sparx: TBD

S&I Simplification – Use Case Authoring Tool (UCAT)
UCAT Priorities

Priority	Status
6. Validate non-IT Technical User Interface – To Create Initial Use Case Sketch by Clinical/Business SME	• Prometheus (development planned) • Sparx TBD

Anchored by the Use Case Authoring Tool (UCAT)
From Sketch to Implementation

	Use Case		Software		
	Requirements Specification	Harmonization	Development	Testing/ Certification	Implementation
	→	→	→	→	→
WHO	Business/ Clinical Expert (non-IT)	Expert User	Developer/ Vendor	Testing Body	Business/ Clinical User
HOW	Sketches	Maps to	Selects	Develops using	Tests	Implements using
WHAT	Use Case Scenarios, Events	UC Actions, System Functions	Implementable Standards-Based Software Modules/Services		
	Use Case Data Needs	FHIM Data Objects	Implementable Standards-Based Data Artifacts (e.g., messages, documents)		

Requirements   ← Traceability →   Implementation

S&I Simplification – Use Case Authoring Tool (UCAT)
UCAT Priorities

Priority	Status

7. Develop UC Exchange Format
  – Render paginated UC template
    • As .pdf and .html files
  – Render computable UC details
    • As .json file
  – To facilitate output to:
    • NIST IGAMT/TCAMT Tools
    • AHRQ/USHIK
    • Another UCAT
	• NIST has drafted exchange format for UCAT to IGAMT/TCAMT
	  • Prometheus has output LRI files according to NIST specification
	  • Sparx TBD
	• Will convene expert team to draft UC Exchange format
	• Will contact OMG seeking interest

S&I Simplification – Use Case Authoring Tool (UCAT)
UCAT Priorities

Priority	Status

8. Develop End-to-End Demo – Anchored by UCAT
– Candidate(s): Any Use Case expressed (express-able) in S&I Use Case Requirements Template
– First: S&I Lab Results Interface (LRI)
	• Presentation: 22 January 2014 Host: HL7 EHR WG
	• Followup
	  • ONC/NIST
	  • Canada Health Infoway

Links

- US Office of National Coordinator (ONC) Standards and Interoperability (S&I) Framework Wiki
  - http://wiki.siframework.org
- S&I Simplification Wiki
  - http://wiki.siframework.org/Cross+Initiative+-+S%26I+Simplification+WG
  - http://wiki.siframework.org/Use+Case+Simplification+Reference+Materials
- Federal Health Information Model (FHIM)
  - http://www.fhims.org
- AHRQ/USHIK S&I Pilot Site
  - http://ushik-stg.dcgroupinc.com/index_si.jsp?system=si
- HL7 EHR Interoperability Wiki
  - http://wiki.hl7.org/index.php?title=EHR_Interoperability_WG