ISO TC215 – ISO 19669
Re-Usable Component Strategy for Use Case Development

Report to ISO TC215 WG1/WG2

15 November 2016

Lillehammer, Norway

ISO 19669

Fundamentals

- Based on US Standards and Interoperability (S&I) Framework Use Case Development Approach
  - Sponsored by the US Office of National Coordinator for Health Information Technology (ONC)
  - Based on S&I Simplification Work Group analysis (2011 on)
- In Close Collaboration with
  - US National Institute for Standards and Technology (NIST)
  - US Agency for Health Quality and Research (AHRQ)

In General
Use Cases

- A Use Case has
  - One or more Scenario(s) with
  - One or more Event(s) with
  - One or more Action(s).

- Use Case Scenarios describe (resolve to):
  - A set and sequence of Actors taking Actions;
  - A progression of steps.

- Actors may be
  - Individuals, organizations or systems.

In General

Use Cases

- ## Convey Patterns of:
    - Patient Flow – with Patient as Actor
    - Provider (Work/Process) Flow – with Provider as Actor
    - Information Flow – including System as an Actor

- ## And Show:
    - Event Steps with Actions taken – by Actors in Roles – to support individual health and provide healthcare
    - Often including health record entries resulting from Actions taken

US Standards and Interoperability (S&I) Framework

S&I Simplification WG

- Reviewed S&I Initiative Use Cases
- Identified Commonalties, Patterns of Repetition/Re-Use
  - Both Current and Potential
- Compiled and Distilled Components from S&I Initiatives
- Specified Actions (examples) for each Scenario and Event Step

Analysis: 21 Use Cases with 47 Multi-Step Scenarios

S&I Simplification - Analysis Status - 28 December 2015 - Core Matrix Version 3.4 DRAFT
Incorporation of Use Case Initiatives in S&I Simplification Core Matrix

Initiative	Initial Analysis Phase - Core Matrix					FHIM	AHRQ	Consensus Core Matrix
	Analysis Type	Common Requirements	Common Actors, Systems, Roles	Scenarios, Event Steps	Common Actions	Common Data Objects, Elements	US Health Information Knowledgebase	
Transitions of Care (TOC)	Retro	COMPLETE	COMPLETE	COMPLETE	COMPLETE	FHIM Mapping in Progress	REGISTERED	v1
Lab Results Interface (LRI)								
Longitudinal Coordination of Care (LCC) 1								v2.1
Care Plan Interoperability (LCC 2)							Awaiting Tooling	v4
Lab Orders Interface (LOI)							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 Tooling	v3
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	FHIM Mapping in Progress	REGISTERED	v2.1
Data Segmentation for Privacy (DS4P)								
Public Health Reporting (PHRI)								
HeD 1 - Health eDecisions - Clinical Decision Support (CDS) Artifact Sharing							Awaiting Tooling	v3
HeD 2 - CDS Guidance Service								
Structured Data Capture								
EU/US eHealth Initiative	Concurrent							
DAF 1 - Data Access Framework - Local Access	Retro							
DAF 2 - Targeted Access								
Data Provenance	Concurrent							v4
RESTful Health Exchange (RHEx)	TBD	TBD						TBD
Automated Blue Button								
Electronic Certificate		N/A				In Progress	REGISTERED	N/A

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Key Objectives

- To identify Core Components broadly applicable to, and *re-usable* in subsequent specification of, Use Cases
  - Core Components are Requirements, Events, Actions, Actors, Roles and Data Objects and Elements, that we:
    - Find in common across Use Cases, Scenarios and Events;
    - Might re-use in a new Use Case Scenario.
- To establish/maintain a Core Component Registry
- To allow each Use Case Initiative to
  - Select (re-use) Core Components applicable to their needs
  - Create anew: identify new Core Component candidates
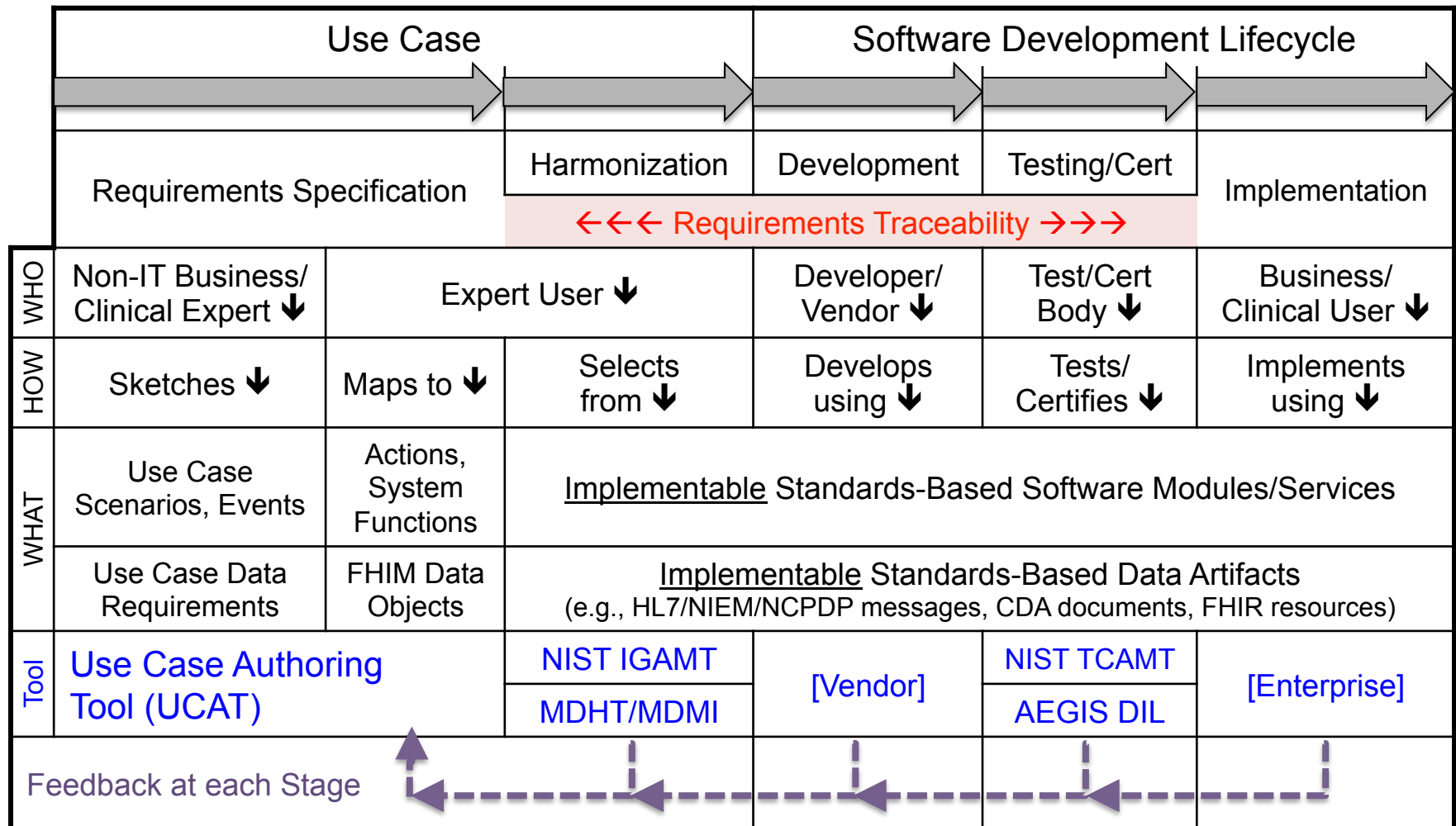- To identify Implementable Data and Software Constructs fulfilling Core Component requirements

Key Objectives, con't

- To lay the foundation for a consistent infrastructure and build-out

- To lead to uniformity in requirement specification, standards and implementation guidance, software development, testing and certification, implementation

- To ensure requirements traceability, at each progression step, and end-to-end (use case to implementation)

- [NIST] To apply cross-industry: beyond S&I Framework, beyond the domain of health and healthcare
  - A generic approach

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Considering…

- ## Which Components of a Use Case are:
  - ### Potentially computable?
    - #### As implementable software and/or data objects?
  - ### Uniquely identifiable? Catalogue-able?
    - #### In an established repository?
  - ### Candidates for re-use?
    - #### In another Use Case scenario?

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From Sketch to Implementation

	Use Case			Software Development Lifecycle		
	Requirements Specification		Harmonization	Development	Testing/Cert	Implementation
			←←← Requirements Traceability →→→			
WHO	Non-IT Business/ Clinical Expert ↓	Expert User ↓		Developer/ Vendor ↓	Test/Cert Body ↓	Business/ Clinical User ↓
HOW	Sketches ↓	Maps to ↓	Selects from ↓	Develops using ↓	Tests/ Certifies ↓	Implements using ↓
WHAT	Use Case Scenarios, Events	Actions, System Functions	Implementable Standards-Based Software Modules/Services			
WHAT	Use Case Data Requirements	FHIM Data Objects	Implementable Standards-Based Data Artifacts (e.g., HL7/NIEM/NCPDP messages, CDA documents, FHIR resources)			
Tool	Use Case Authoring Tool (UCAT)		NIST IGAMT	[Vendor]	NIST TCAMT	[Enterprise]
Tool	Use Case Authoring Tool (UCAT)		MDHT/MDMI	[Vendor]	AEGIS DIL	[Enterprise]
Feedback at each Stage						

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Technical Report Outline

1) Scope
2) Normative References
3) Terms and definitions
4) Symbols (and abbreviated terms)
5) Objective for the re-usable components
6) Use case basics
7) Use case component candidates
8) Use case components
9) Use case scenarios
10) Use case requirements template
11) Methodology for component capture
12) Progression – use case development to implementation

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Status and Next Steps

- Draft Technical Report (DTR) Ballot
  - Closed 15 September
  - Passed – all affirmative
  - Comments dispositioned

- Next
  - Approve for publication
  - Update final draft

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UCAT Tool Developers

- ## Prometheus Beacon Use Case Editor
  - – Art Griesser, Lead

  - – a.griesser@prometheuscomputing.com

  - – https://prometheuscomputing.com/beacon

- ## Sparx Enterprise Architect Extensions
  - – J.D. Baker, Lead

  - – jbaker@sparxsystems.com

  - – http://www.sparxsystems.com

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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

- HL7 EHR Interoperability Wiki
  - http://wiki.hl7.org/index.php?title=EHR_Interoperability_WG

Contact

- ## Gary L. Dickinson
    - Director, Healthcare Standards, CentriHealth
    - Lead, S&I Framework, S&I Simplification Work Group
    - Co-Chair, HL7 EHR Work Group
    - +1-951-536-7010
    - gary.dickinson@ehr-standards.com