



THE HEALTHCARE INNOVATION ECOSYSTEM

## **HSPC Terminology and Information Model Initiatives**

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Keith Campbell, MD, FACMI (Initiative Co-lead)

5/23/2017

# Agenda

- HSPC Overview
- HSPC Initiatives
- Terminology and Tooling Initiative
- Terminology and Tooling Deliverables

# HSPC History

- Incorporated as a not-for-profit corporation on August 22, 2014
  - Intermountain Healthcare
  - Louisiana State University
  - Veteran's Administration
- Support from providers, government, standards orgs, professional societies, EMR vendors, 3<sup>rd</sup> party developers
- F2F meetings 3-6 times per year, ongoing discussion between

# Healthcare Services Platform Consortium

## Mission

*Improve health by creating a vibrant, open ecosystem of interoperable applications, content, and services*

## Vision

*Be a provider-led organization accelerating the delivery of a platform that supports innovative healthcare applications for the improvement of health and healthcare.*

# Team Members



Stan Huff, MD,  
President



Oscar Diaz, CEO



Craig Parker, MD  
Board Secretary



Laura Heermann  
Langford, PhD, RN  
COO



Susan Matney, PhD,  
RN Terminologist



Scott Narus, PhD  
Intermountain Informaticist

- Wayne Wilbright – Board Member
- Jonathan Nebeker – Board Member
- Davide Soterra, PhD - CTO
- Emory Fry – CMIO
- Viet Nguyen - CMO
- Keith Toussaint – Business Development
- Blackford Middleton – Advisor
- Virginia Rhiel – Std Integration
- Ken Rubin – SOA Architecture
- Peter Haug – Knowledge Sharing
- Rick Freeman – FHIR Sandbox
- Sue Jimenez – Finance, Office support

# HSPC – Why?

- **Need for intra- and inter-organizational interoperability**
  - Data (true syntactic & semantic interoperability)
  - Application
  - Decision Support rules
  - Knowledge
- **Provide (vendor-neutral) services not available in marketplace**
  - Collaboration space
  - Standards setting
  - Conformance testing
  - App marketplace
  - Reference implementation(s)
  - Developer tools, tutorials, libraries and SDKs

# HSPC Initiatives

- Be a provider led collaboration agent
- Create a reference implementation of common SOA
- Develop terminology and information models for true semantic interoperability
- Support authoring and sharing of knowledge content
- Obtain implementation and adoption of approved standards
- Create a shared technical environment to enable simple and efficient development and discovery
- Support conformance and certification testing
- Support a vendor and provider neutral marketplace

# Terminology and Modeling Initiative:

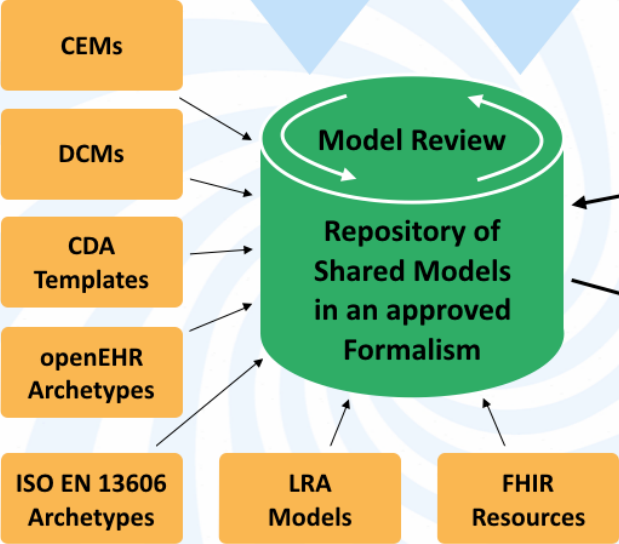
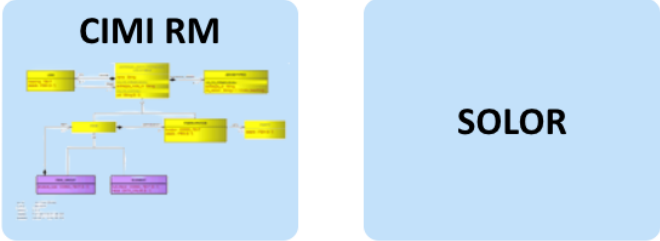
**Develop terminology and information models as a foundation for true semantic interoperability**

- Based on real world, technical, high priority use cases brought to us by the member community.

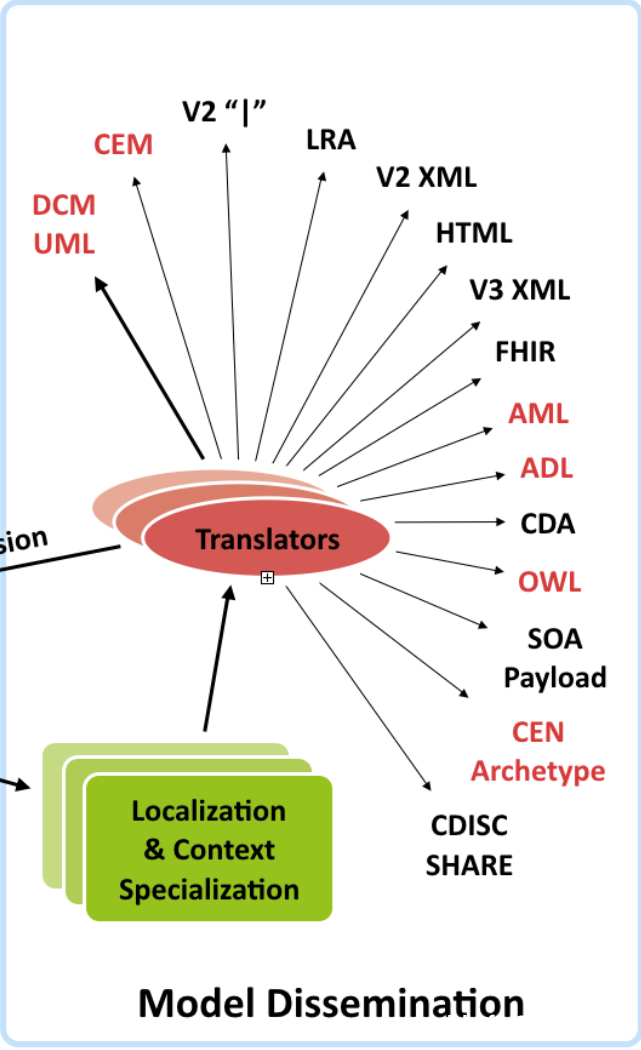


# CIMI Model Development Lifecycle

## Standards Infusion



## Initial Loading of Repository



## Model Dissemination

# Deliverable 1: Develop the CIMI Content Architecture

(overseen by HL7 CIMI WG)

Goal 1: Develop the high level reference archetypes (patterns) and ballot

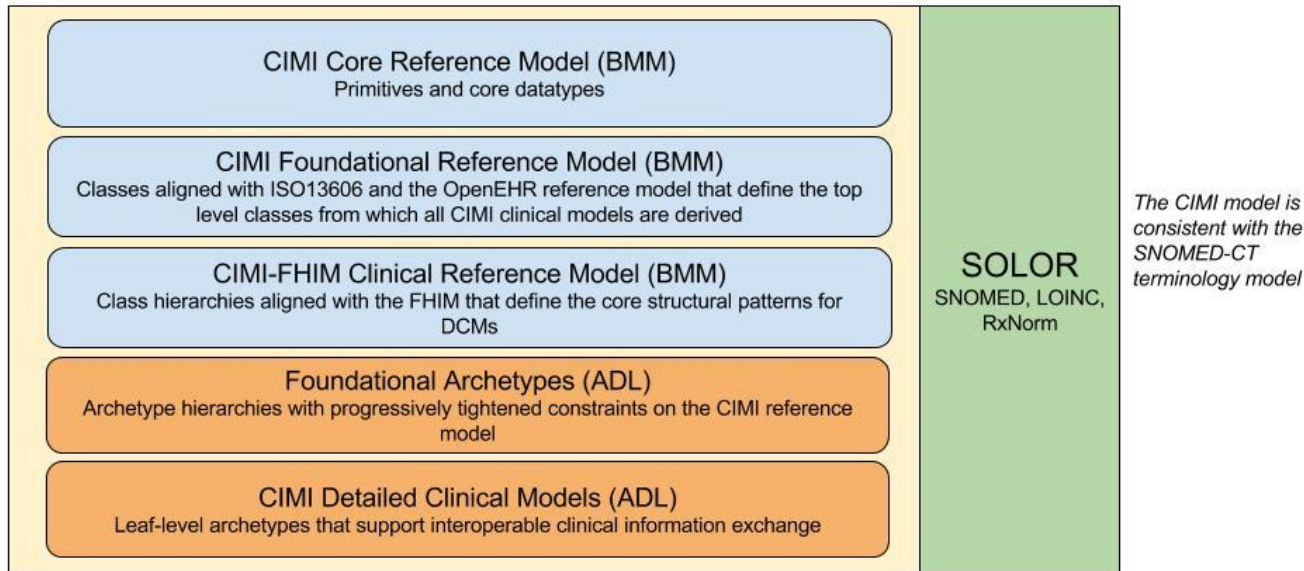
- Assigned to : Susan/Claude
- CIMI Model Style Guide v2 in May HL7 ballot
- Archetypes included: Actor, Organization, Encounter, Evaluation Result, Procedure, Assertion, Medication
- Create detailed clinical models (DCMs) based on the patterns using use cases

Goal 2: Create and ballot the CIMI Reference and Foundational Archetypes

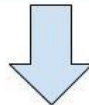
- Assigned to : Claude Nanjo/Joey Coyle
- Patterns above developed and in ballot
- Future patterns (Device, Eval Result subtypes)

# Model Driven Architecture Vision to seamlessly support developers and implementers

Requirements based on vMR, QDM, DAF, FHIR, CDA, Health eDecisions, CQF, OpenEHR, ISO13606, CEMs, ...



Logical-to-FHIR  
Transformation



SIGG (MDHT, MDMI)

FHIR profiles and extensions including profiles for DCMs, DAF, QICore. Other physical serializations possible (e.g., CDA)

*Note that the Basic Meta Model (BMM) is used to define the classes and properties that make up the CIMI model. The Archetype Definition Language (ADL) is used to define the constraints applied on defined classes in the model such as terminology, cardinality, and property slicing constraints.*

# Goal 2: Conformance Testing of BMM Patterns using DCMs

- Understand the relationships between model formalisms (CEML vs. ADL)
- Identify the differences in the patterns
- Can the needed DCM be created using the pattern?

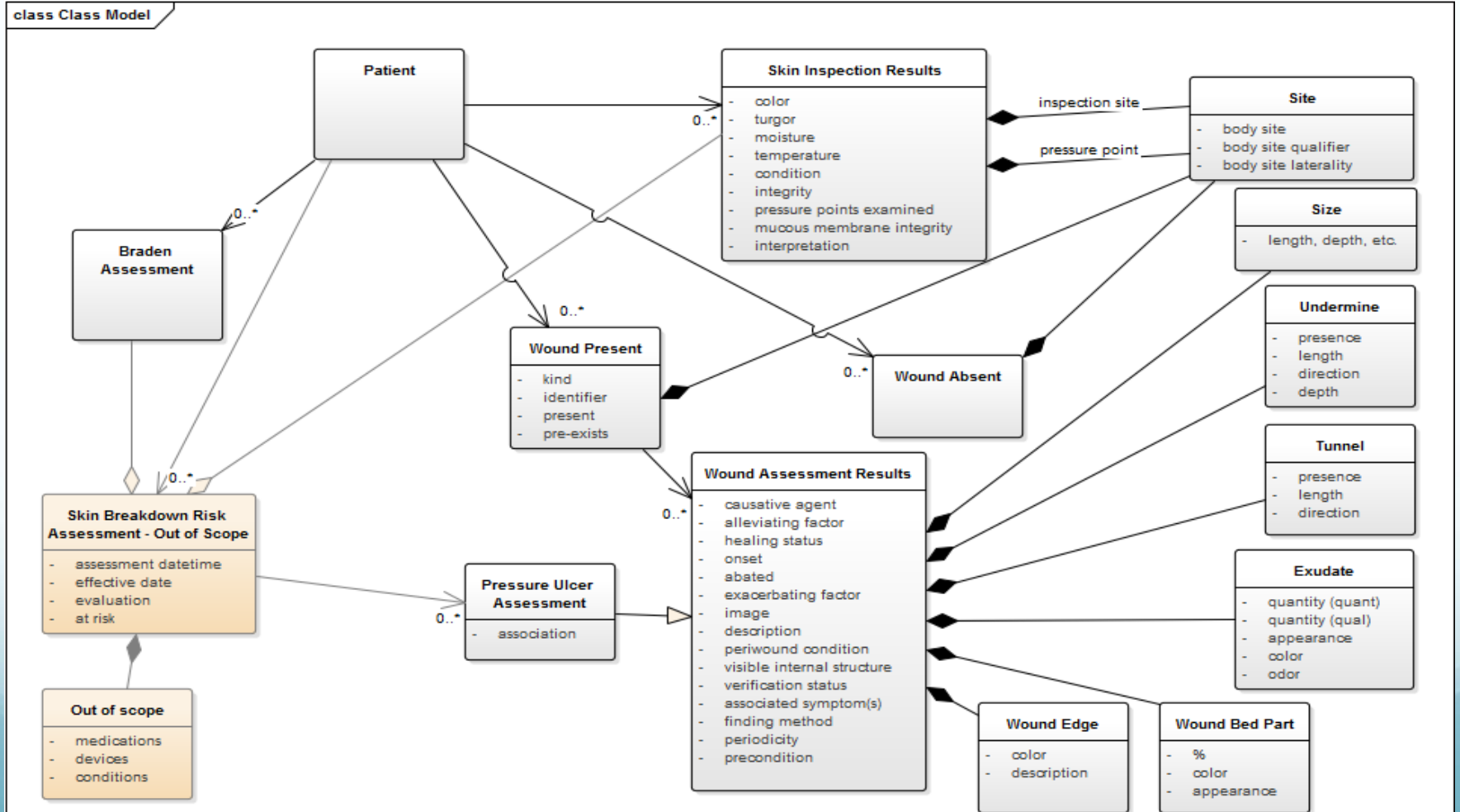
## Deliverable 2 Pilot Projects

- OPA/ACOG Family Practice Annual Report (FPAR)
  - CEM to FHIR
- Skin/Wound Assessment
  - Project with the VA and HL7, using FHIM wound assessment models (also aligning with Tissue Analytics)
  - Using this project to develop SOLOR content and processes
- Future Projects
  - Vital Signs
  - Common labs

# Pressure Injury Modeling Background

- KP-VA Collaborative in 2010 defined an information model driven by nursing practice to enable:
  - Data capture
  - Data re-use
  - Data sharing within and outside organizations.
  - Measurement and extraction of data for meaningful EHR use to support quality, safety, efficiency and decision support.
- 2013 ONC mandated the model and terminology for a Mobilizing Data for Pressure Ulcer Challenge Grant
- 2016 pressure injury criteria updated by NPUAP

# Skin Assessment Model



# Deliverable 3: Define Model Development Pipeline

## Goal 1: Model Request Process Model Development

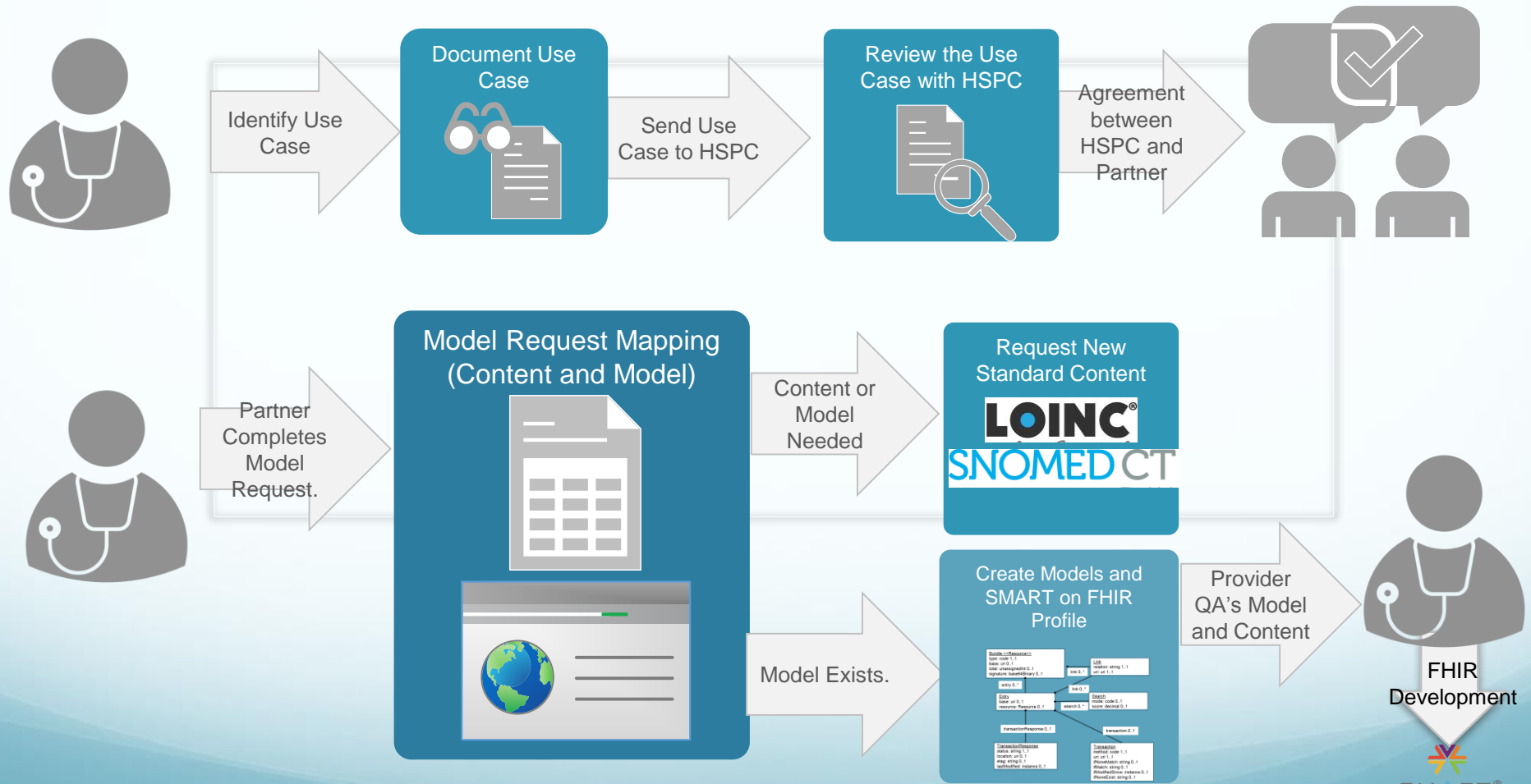
- Assigned to : Susan/Keith
- Identify common principles and processes
- Define Scope Templates (Using SBAR)
- Use Case Template Development
- Define Analysis Process
- Identify content curation process (Working with HDD Team/SOLOR)
- Define and Document Model Development Process

## Goal 2: Model Development Process

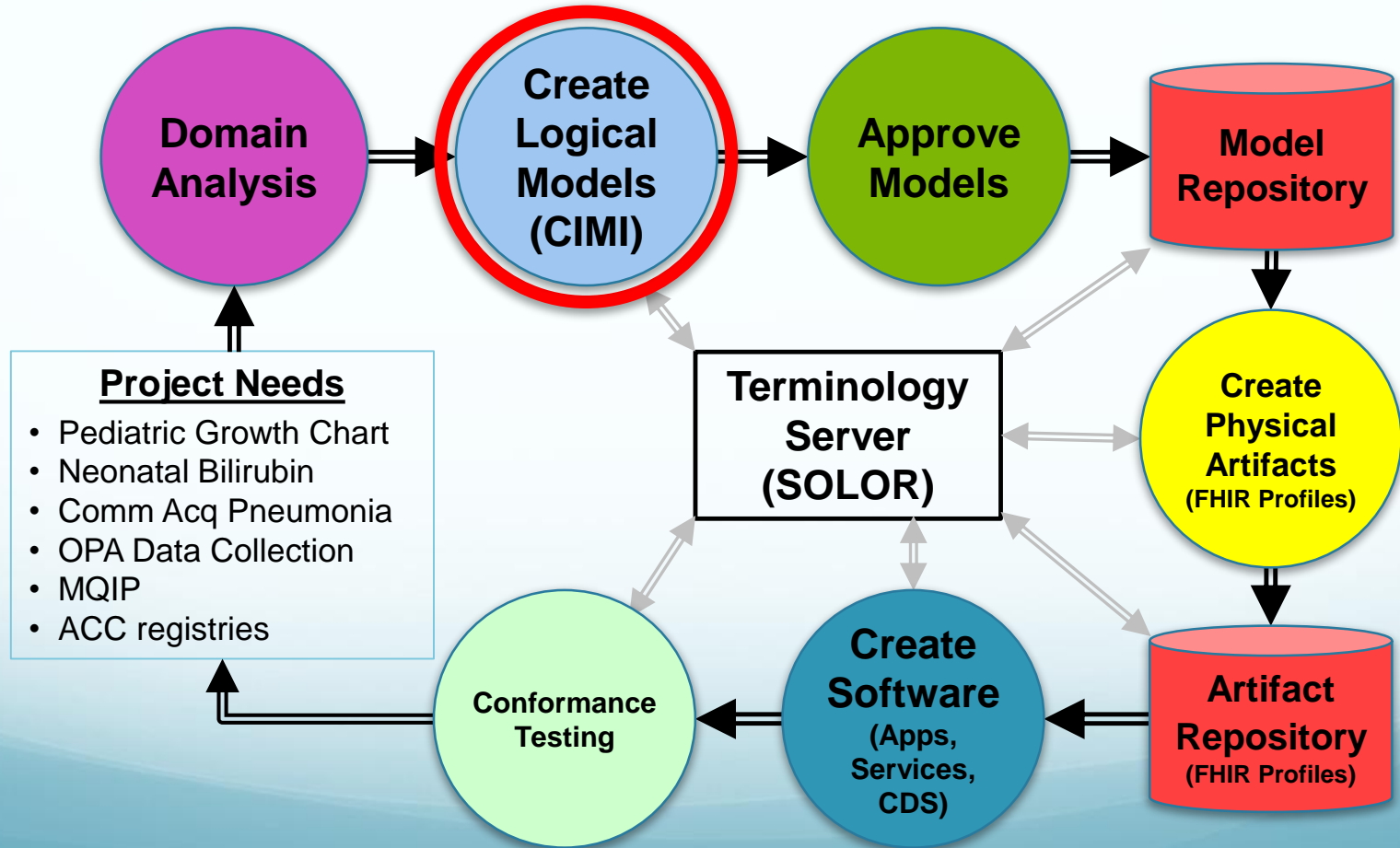
- Assigned to : Susan/Claude/Jay



# Model Request Workflow



# The Interoperable App Development Process



# Deliverable 4: Provide SOLOR terminology support (overseen by Keith Campbell)

## Goal 1: Determine Terminology Editing Environment

- Assigned to : Keith Campbell
- Identify provider and location – Using termSpace
- Determine content – based on projects
- Develop long term maintenance process (future)

## Goal 2: Define process for SOLOR terminology development

- Assigned to : Monique van Berkum, John Kilbourn

## Goal 3: Determine Terminology Services required for model binding

- Assigned to : CIMI Pattern Development Subgroup (Susan will lead)

## Goal 4: Identify and implement terminology server

- Assigned to : Keith
- Contract signed for Ontoserver


## Goal 5: Implement Terminology Services for model binding

- Assigned to : Keith

# Deliverable 5: Define versioning and governance processes for terminology and models

- Goal 1: Terminology Versioning and Governance Processes
  - Assigned to: Keith Campbell
  - STAMP
- Goal 2: Model Versioning and Governance Processes
  - Assigned to: Susan/Claude/Jay

☰ **HSPC** Spaces ▾

 Modeling and Terminology Committee

**PAGE TREE**

- › HSPC FHIR Profiles
- › HSPC Profiles Development Process
- › Current Efforts
  - Meeting notes
  - CIMI
  - Terminology Server

Pages

## Modeling and Terminology Committee

Created by Craig Parker, last modified yesterday at 4:43 PM

### Getting started

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**Browse Profiles:** [HSPC FHIR Profiles](#)

**Get Help:** See our roadmap or request new profiles, enhancements, or issues in our [JIRA project](#).

**Engage:** Join our discussion list here: [HSPC Modeling and Terminology Forum](#).

**The Modeling Process:** [HSPC Profiles Development Process](#).

[CIMI](#)

[Terminology Server](#)

# Confluence Page Overview

# Questions



## **Tooling Deliverable xxx: Define terminology and modeling tooling roadmap** (Overseen by Keith and Craig)

### Terminology Tools (assigned to: Keith Campbell)

- Goal 1: Determine tooling required for terminology development and maintenance
- Goal 2: Develop and implement terminology tools

### Modeling Tools (assigned to: Craig Parker)

- Goal 3: Determine tooling required for model development and maintenance
- Goal 4: Develop and implement modeling tools

### Model Transform Tools (assigned to: XXX)

- Goal 5: Develop implement and transform tooling

# Tooling Deliverable XXX: Develop Model Transform Methodologies

- Goal 1: Develop Transforms to CIMI
  - CEM to CIMI transform (Assigned to: Joey Coyle)
  - FHIM UML to CIMI transform (Assigned to: JP Systems/Claude Nanjo)
- Goal 2: Transforms out of CIMI
  - CIMI to FHIR Profiles (Assigned to: Dave Carlson, Claude Nanjo)
  - CIMI to FHIM UML (Assigned to: JP Systems/Richard Esmond)
- Goal 3: CEM Transforms to FHIR
  - CEM to FHIR Profiles (Assigned to: Joey Coyle)



# CEM to CIMI Transform

OpenCEM Browser

October 20, 2016 Release



skin

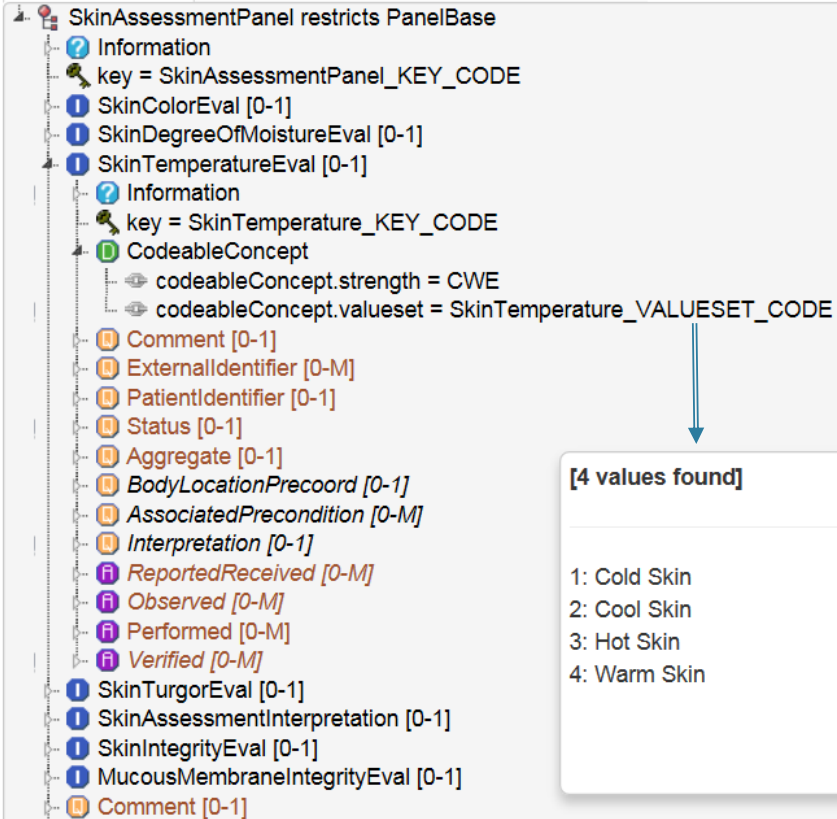
- BreastSkinLesionAssert
- BreastSkinRetractionAssert
- BreastSkinThickeningAssert
- CandidaAlbicansReactionWheal2DPostDoseCandidaAlbican
- CandidaAlbicansReactionWhealDiamPtSkinOrdLabObs
- CoccidioidesReactionWheal2DPost01MLCoccidioidinIDDiam
- EpithelialSkinAntibodiesLabObs
- HistoplasmaCapsulatumFarcimosumReactionWheal2DPos
- HistoplasminReactionWhealDiamPtSkinOrdLabObs
- ICentraSkinColorEval
- InsertionSiteSkinCondition
- KaryotypeFindPtSkinDocLabObs
- KaryotypeFindPtSkinNarLabObs
- MumpsReactionWheal2DPost01MLMumpsIDDiamPtSkinQn
- MumpsVirusReactionWhealDiamPtSkinOrdLabObs
- SkinAbrasionAssert
- SkinAssessmentInterpretation
- SkinAssessmentPanel**
- SkinBreakdownAssert

Compiled Tree

CEML Source

Definition

XCEML



[4 values found]

- 1: Cold Skin
- 2: Cool Skin
- 3: Hot Skin
- 4: Warm Skin