



HL7 FHIR DevDays 2017



Structured Data Capture

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Who am I?

- Name: Lloyd McKenzie
- Company: Gevity
- Background:
 - One of FHIR's 3 initial editors
 - Co-chair MnM, FMG & FHIR Infrastructure
 - Technical lead for ONC's FHIR SDC project
 - will be assuming the same role for the follow-on international project
 - Heavily involved in HL7 and healthcare exchange for last 17 years (v2, v3, CDA, etc.)
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Pre-requisites

- Structured Data Capture is based on several FHIR resources that have been discussed earlier at DevDays
 - Questionnaire & QuestionnaireResponse
 - Review Brian Postlethwaite's slides from this morning if you missed his presentation
 - DataElement (now StructureDefinition logical models)
 - Look at some of the profiling presentations
 - ValueSet
 - Look at some of the terminology services presentations

Objectives

- What was the Structured Data Capture project?
- What does the SDC implementation guide support?
- Potential use-cases for Structured Data Capture?
- Mapping strategies
- Where is SDC going next?

Structured Data Capture (SDC)

- U.S. Office of the National Coordinator for Healthcare (ONC) initiated project
- Parallel efforts in IHE (custom schema) and FHIR
- FHIR effort had 2 focuses
 - Standardizing the sharing of data elements (IS 11179-aligned)
 - Supporting standardization of Questionnaire usage and enabling pre-population and auto-population
- Separate FHIR IGs created for each

How to find FHIR SDC?

- [http://hl7](http://hl7.org)

Level 5 Providing the ability to



Clinical Reasoning

External Links:

Implementation Guides

Specifications based on the FHIR

- [Published by HL7, Affiliates & Foundation](#)
- [Other IGs \(FHIR Wiki\)](#)

Argonaut Provider Directory: The Argonaut project Provider Directory outlines the key data elements for any provider directory and basic query guidance. The components developed in this guide are intended to provide a foundation for a central or distributed Provider or Healthcare Directory.

USA

Final Release
v1.0.

Base National Specifications

US-Core: Base US national implementation guide

USA

STU v3.0

CI v3.0

AU Base: Base Australian national implementation guide

AU

CI v3.0

Clinical Documentation

C-CDA on FHIR: US Realm Implementation Guide (IG) addressing the key aspects of Consolidated CDA (C-CDA) required for Meaningful Use (MU). This IG focuses on the clinical document header and narrative constraints necessary for human readability, and references the Data Access Framework (DAF) implementation guide for coded data representation

USA

Ballot v1.8

Data Collection

SDC: Defines expectations for sharing of Questionnaires and answers, including mechanisms for automatically populating portions of a questionnaire based on embedded mappings to underlying data elements

USA

STU v3.0

CI v3.0

SDC-DE: defines expectations for sharing of data elements between registries

USA

STU v3.0

CI v3.0

Diagnostics

USLab: US Realm Laboratory ordering and reporting between ambulatory care setting and the laboratory and laboratory reporting to public health jurisdictions

USA

Trial Use v1.0

RCPA: Structure Cancer Reporting Protocols (FHIR adaptation of joint CAP/RCPA protocols)

AU

CI v1.9

SDC Use-cases – Data Elements

- Data Elements are a common notion, particularly in the research community
 - Defines the meaning of a discrete piece of data, the type and potentially the allowed values
 - Encourages consistency of data capture – particularly within questionnaires (e.g. CRFs – Case Report Forms)
- Need
 - Standard way to share data elements between data element repositories
 - National Library of Medicine, Federal Drug Administration, National Cancer Institute
 - Want to be aligned with ISO 11179

SDC Use-cases Questionnaire

- Questionnaire, like other resources, is “simple” and highly flexible
 - To support research, cancer reporting, etc. need more sophistication
 - Tight control over appearance/rendering
 - Flow control over what questions appear when
 - Need to set minimum expectations for systems
 - What elements must be present?
 - What elements (and extensions) must be supported?
 - Ensure a minimum baseline of capability to allow support for forms o ‘reasonable’ capability

Use Cases - QuestionnaireResponse

- Filling out questionnaires is:
 - Time consuming (repeatedly answering the same questions when data is already 'known' by the system)
 - Error-prone (transcription errors, missed data)
- It would be nice if a questionnaire could automatically be filled in with data already known
 - User fills in whatever is not automatically filled in
 - User can still review/correct/suppress pre-filled data

Use Cases - QuestionnaireResponse

- Not all systems will support rendering “complex” questionnaires
- Need a way to allow an EHR to support users still filling out those Questionnaires
 - Provide the HTML to render in an internal browser
 - Provide a link to a website where the user can fill in their answers
- In both cases, still want to support populating the response with existing known data

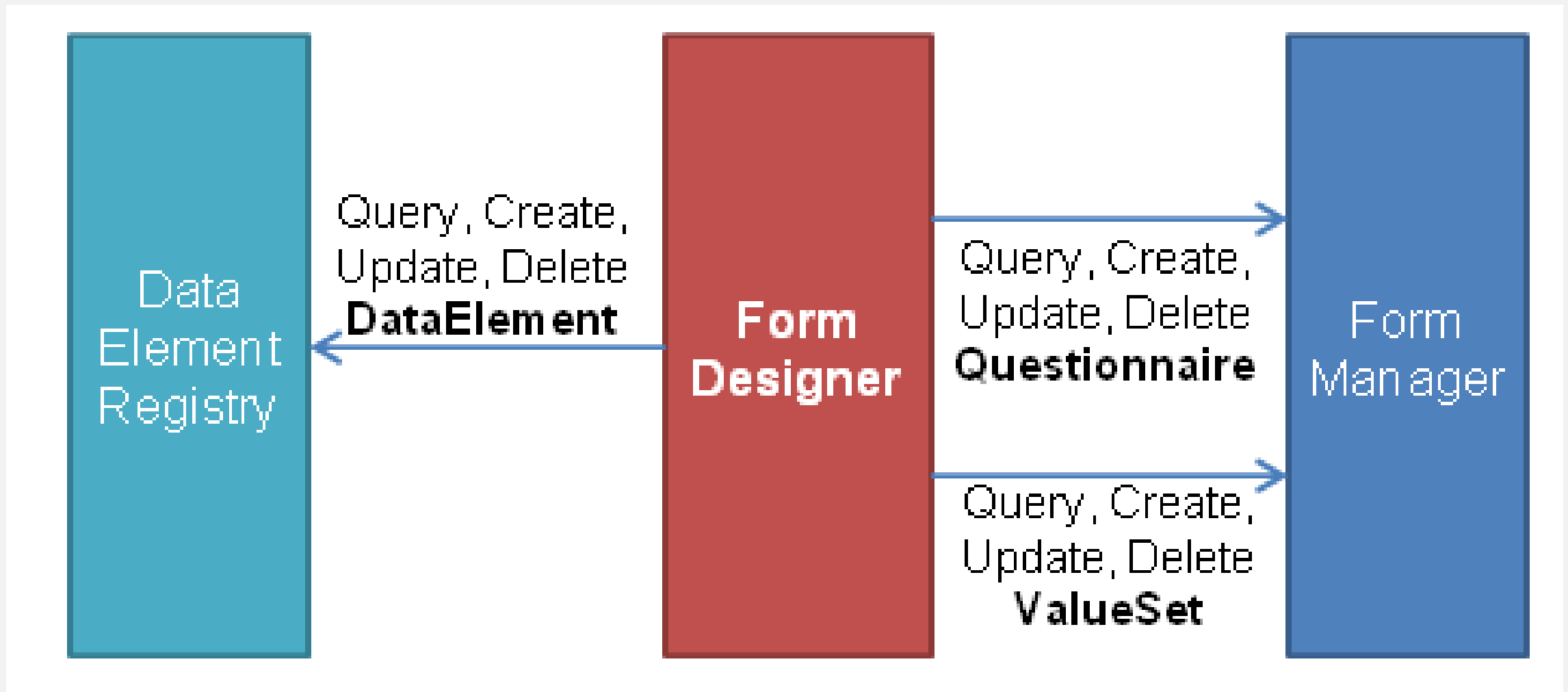
Pre-pop and Auto-pop

- Pre-population
 - An EHR or other data entry system solicits a 3rd party to fill in questionnaire with information submitted to that third party and/or information the third party already holds
- Auto-population
 - An EHR or other data entry system fills in questionnaire with information it holds itself

Pre-population operations

- \$populate
 - Get back a QuestionnaireResponse
- \$populatehtml
 - Get back HTML with active submit button
- \$populatelink
 - Get back URL to site displaying interactive (and partially populated) form

SDC overview



Where can SDC be useful?

- Submitting forms for clinical research
- Submitting public health forms
- Submitting and processing electronic insurance claims (pre-authorizations, special authorizations, etc.)
- Any area where questionnaires/forms are a standard mechanism for data collection

Enabling Questionnaire population

- Extension linking to data element with mapping
- ConceptMap linking Questionnaire questions to data elements with mappings
- Concept map linking Questionnaire questions to source data

What makes SDC U.S.-specific?

- The SDC-DE (Data Element Maintenance) IG includes U.S.-specific vocabulary bindings
- The main SDC IG is generic however
 - Fully appropriate to use outside the U.S.

FHIR SDC vs. IHE SDC

- SDC work had already started in IHE prior to ONC funding the FHIR effort
- IHE SDC
 - Focuses only on Questionnaire, not DataElement
 - Leverages the IHE RFD (Request Forms for Data Capture) spec
 - Defines a custom XML syntax that combines form definition and results capture
 - FHIR used to do this, but changed based on implementer feedback
 - Has evolved largely independently of the FHIR spec

Future plans for SDC

- NLM has provided funding to update the FHIR SDC project
 - Will focus on Questionnaire/QuestionnaireResponse
 - DataElement maintenance IG may still get updated, but not as part of this project
 - Will update IG to align with R4
 - Will look at some additional Questionnaire extensions/capabilities
 - Will revisit whether data elements are useful for mapping and explore other mapping approaches
 - e.g. FHIR mapping language/StructureMap
 - Will likely drop US-specific constraints (which were only in data element) and make the spec fully international

Questions / Discussion?

- <http://hl7.org/fhir>
- <http://hl7.org/fhir/us/sdc>
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