



RedCAP & FHIR

FHIR into and out of RedCAP

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AUSTRALIAN E-HEALTH RESEARCH CENTRE
www.csiro.au



FHIR at CSIRO

- Commonwealth Scientific & Industrial Research Organisation
 - Australian E-Health Research Centre
- FHIR Terminology
 - Ontoserver, Shrimp, Snapper
 - National Clinical Terminology Service
- Analytics with FHIR and Terminologies
- SMART-on-FHIR
 - Genomics test ordering
 - Medical Image Analysis
 - Case-Based Learning for Medical Students
- FHIR Profiles for Primary Care (HL7 AU)

REDCap

- Experimental/Research Data Capture
- Online designer for forms, text and structured data
- Manage research data
- Existing support for structured data capture: BioPortal
 - Whole ontology, no support for ValueSets
 - Little control over content
 - Only international edition of SNOMED CT, no refsets
 - Can't mix code systems*

REDCap & FHIR Terminology

- External module, approved for public module registry*
- Configure REDCap to point to a FHIR Terminology server
- Link form element to
 - FHIR ValueSet
 - FHIR CodeSystem
 - SNOMED CT refset (implicit ValueSet)
 - SNOMED CT hierarchy (implicit isa ValueSet)
 - LOINC answer list
- When using the form, select a code using typeahead
- Currently in use in 5 studies, 4 active
 - Mostly using medications at the moment
 - More trials coming, including for genomics using HPO/SNOMED

REDCap & FHIR Terminology

Field Type: Text Box (Short Text, Number, Date/Time, ...) ▾

Field Label

Variable Name (utilized in logic, calcs, and exports)

ONLY letters, numbers, and underscores

Enable auto naming of variable based upon its Field Label?

How to use [\[+\] Smart Variables](#) [Piping](#)

Validation? (optional) ---- None ---- ▾

– or –

FHIR Ontologies ▾

Search For valuset using:

✓ -- choose search criteria --

- ValueSet Name
- By CodeSystem
- SnomedCT Refset
- SnomedCT isa implicit valueset
- LOINC implicit answer set

* Prompt if field is blank

Identifier? No Yes

Does the field contain identifying information (e.g., name, SSN, address)?

Custom Alignment Right / Vertical (RV) ▾

Align the position of the field on the page

Field Note (optional)

Small reminder text displayed underneath field

FHIRCap

- Map data from REDCap data store to FHIR resources
- Trying to coerce/encourage downstream tools to use FHIR
 - More ready to connect to clinical systems
 - Helps us build out representations of phenotypes in FHIR
- Specific declarative mapping language for transformations
 - Grammar generated from FHIR spec (easy to migrate to R4)
- Propagate changes after modifications of REDCap data, metadata, rules, mappings

FHIRCap

- Use in genomics
 - Australian Genomics Health Alliance
 - 8 projects (in the same REDCap project)*
 - Necessitated an extra operator to discriminate!
 - VariantAtlas the only downstream consumer of FHIR
- Paper accepted to AMIA 2019 Informatics Summit

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Thank you

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