OMOP CDM compared to ContSys (ISO13940) to make data FAIR
&
Quality registry data represented in the OMOP CDM

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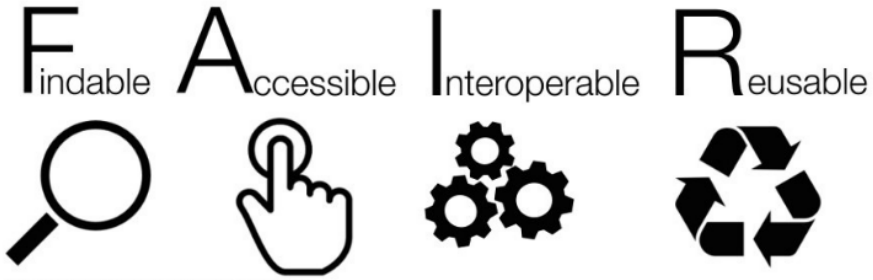
Introduction



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Research questions

- Which data model is most suitable for a quality registry to describe their data in a FAIR way?

  - Which data model is most suitable for ICU's to make their data FAIR?
  - To what extent are the information models OMOP CDM, CDISC SDTM and ContSys compatible?
  - Will transforming information from one model to another lead to information loss?

Background

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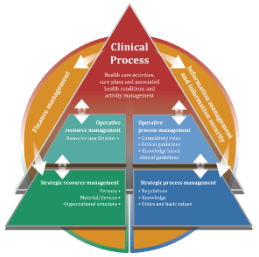
cdisc



OMOP CDM

Classes

Domains

Columns

Data model

Class level

Domain level

Detail level

ContSys

Clauses

Concepts

Data model

Class level

Domain level

Detail level

Evaluation of the models

- Garza et al.
- Kahn et al.
- Moody et al.

Characteristics:

Integrity
Extensibility
Integration
….
+
Type of data
Strengths
Purpose
…

- ✓ OMOP CDM
- ✓ ContSys
- × CDISC SDTM

SARI and MDS

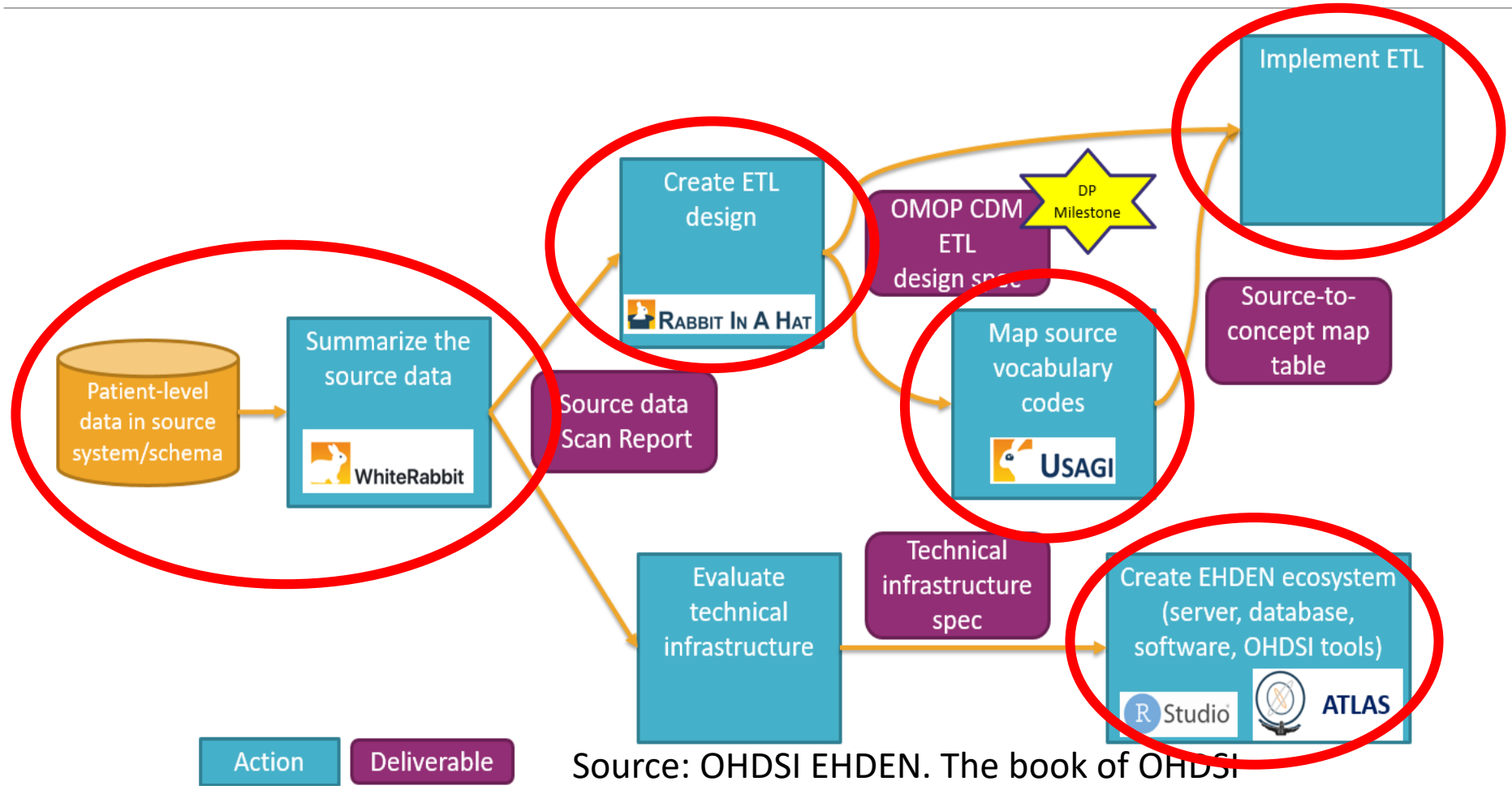
SARI:

- Severe Acute Respiratory Infection
- 20 fields
- No use of a source vocabulary
- Compare OMOP/ContSys

MDS:

- Minimal dataset (core dataset, contains context and aggregated data)
- 200 fields
- No use of a source vocabulary
- OMOP feasible for NICE

SARI/MDS represented in OMOP CDM



Source: OHDSI EHDEN. The book of OHDSI

Results MDS OMOP representation and implementation

WHITE RABBIT

Scan report

RABBIT IN A HAT

Source

mds dataset.csv

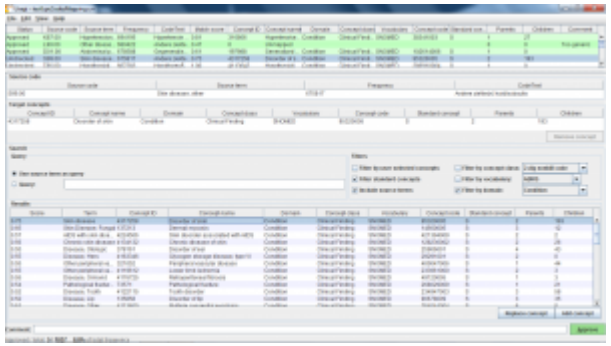
CDMV6.0

person

observation_period

All necessary data items

USAGI



Data values (89%)

PostgreSQL

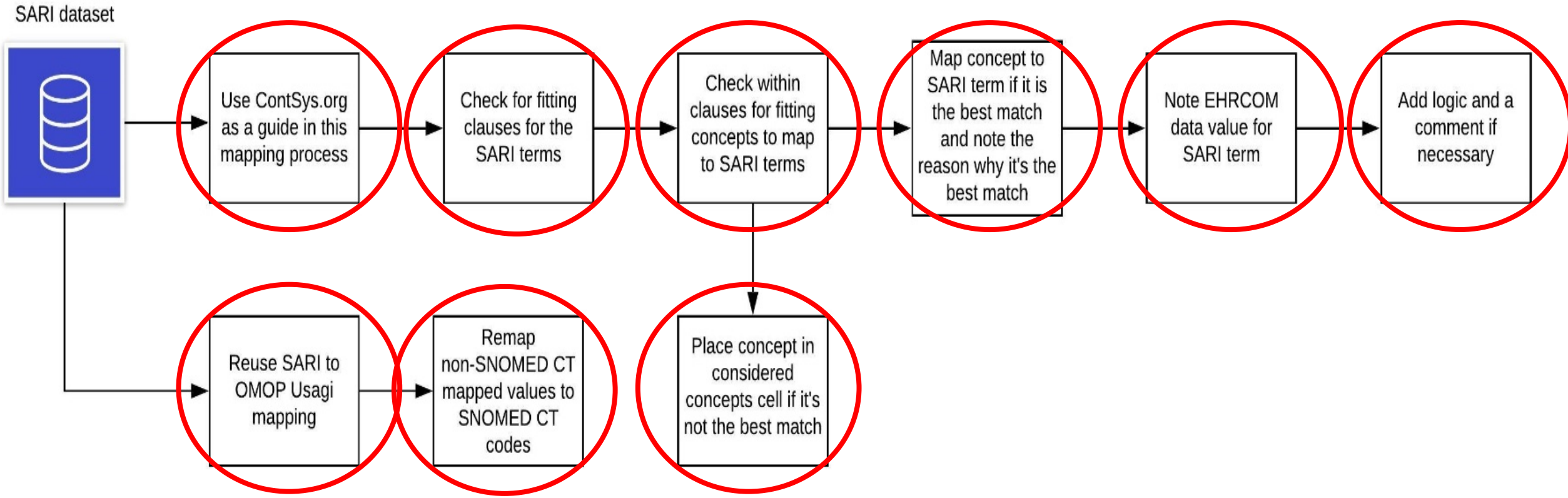
CODES table

OHDSI ACHILLES

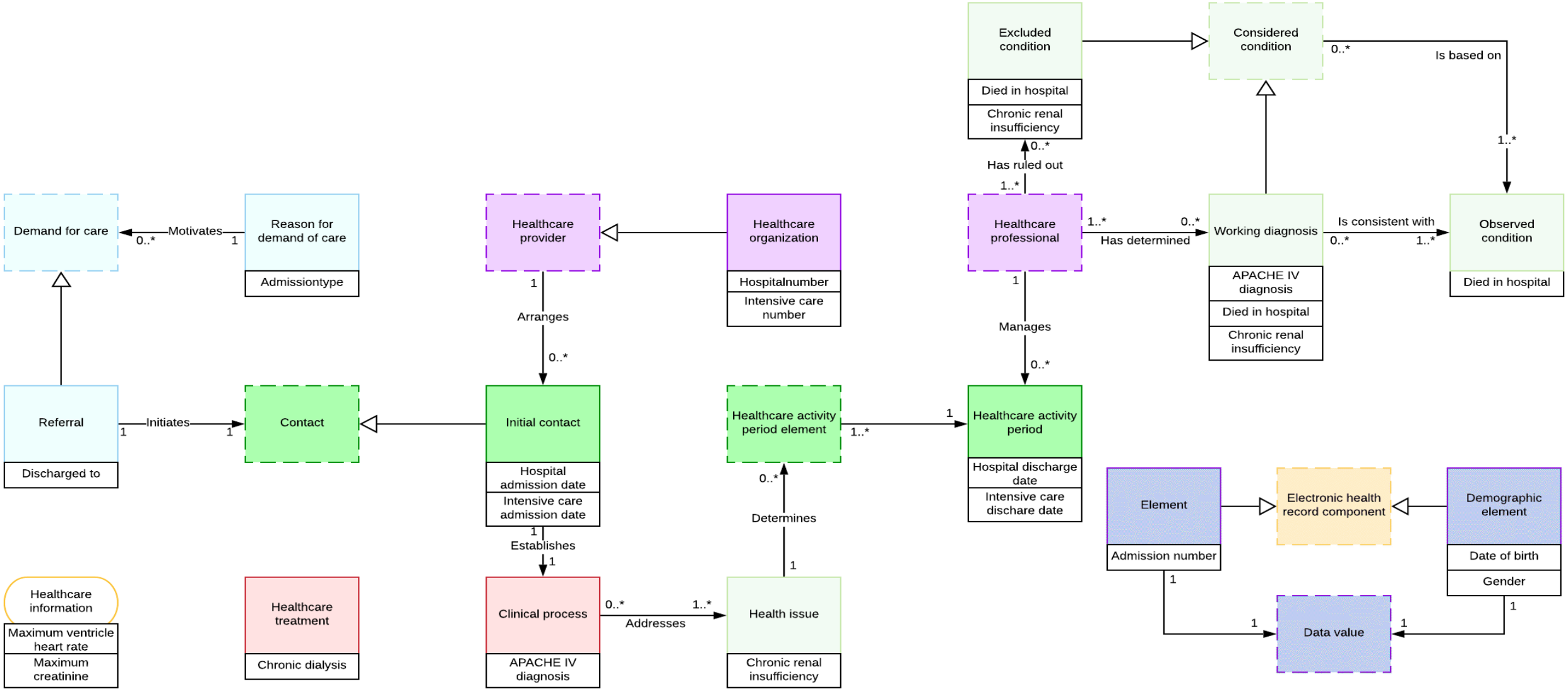
R Studio

ACHILLES:
Characterize data &
Data quality analysis

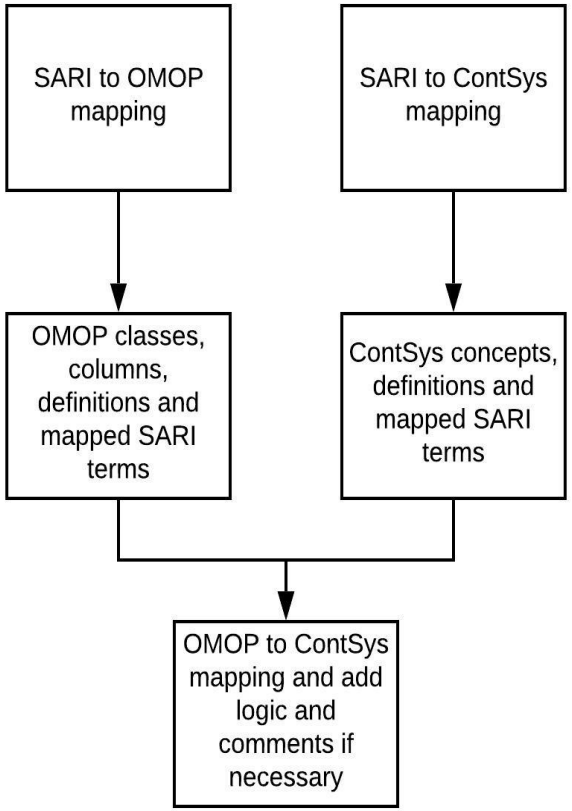
SARI represented in ContSys



Results SARI ContSys representation



OMOP to ContSys



Results OMOP to ContSys

OMOP:

gender_concept_id
OMOP: 8502 (male)

94.6%

SARI term:

gender
M

ContSys:

Demographic element
SNOMED CT: 248153007 (male)

93.5%

Summary of results – Models experience

OMOP CDM:

- ✓ Guide
- ✓ Forum
- ✓ Tools
- ✓ Specific columns
- ✓ No freedom for decisions
- × Negative findings
- ✓ FAIR

ContSys:

- × No guide
- × No forum
- × No tools
- × General concepts
- × Freedom for decisions
- ✓ Negative findings
- × FAIRly poor

Discussion - Interoperability

OMOP:

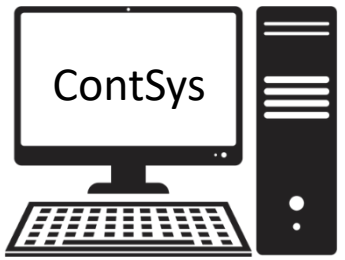
gender_concept_id
OMOP: 8502 (male)

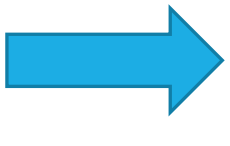
94.6%

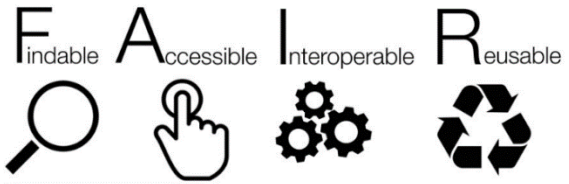
ContSys:

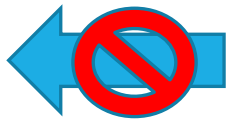
Demographic element
SNOMED CT: 248153007

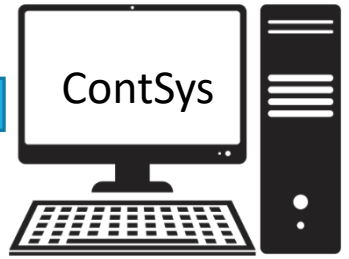
93.5%











Discussion

Strengths

- Two datasets used
- Choices for information models based on an evaluation

Weaknesses

- ContSys representation open for interpretation

Future research

- Properly represent in ContSys
- Optimal representation of aggregated/context data in OMOP CDM

Conclusion


NICE
OHDSI
OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS
OHDSI
OR
Clinical Process
OMOP
ContSys

Thank you for listening

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