Development of an ETL Process for Bulk and Incremental Load of German Patient Data into OMOP CDM Using FHIR

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Background

Motivation:
- The Use Case 'Alerting in Care – IT Support for Patient Recruitment' [1] in MIRACUM (Medical Informatics in Research and Care in University Medicine) aims to develop a Clinical Trials Recruitment Support System (CTRSS).
- This system suggests patients for clinical trials based on data in the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM).

Objective:
- To provide data for the CTRSS we need to design and develop an ETL (Extract-Transform-Load) process for filling OMOP CDM using Fast Healthcare Interoperability Resources (FHIR) profiles from MI-I and MIRACUM as data source.
- The ETL process has to support an initial (bulk) load as well as near real-time or at least once a day updates (incremental load) of the data in OMOP CDM, to enable quick recruitment.

Methods

Semantic Mapping

FHIR Profiles
- Patient
- Encounter
- Condition
- Medication
- MedicationAdministration
- Observation
- Procedure

OMOP CDM tables [4]
- PERSON
- LOCATION
- DEATH
- VISIT_OCCURRENCE
- VISIT_DETAIL
- OBSERVATION_PERIOD
- CONDITION_OCCURRENCE
- FACT_RELATIONSHIP
- PROCEDURE_OCCURRENCE
- OBSERVATION
- MEASUREMENT
- DRUG_EXPOSURE

SpringBatch Framework [5]

References:

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