

Background

- **Initial situation:**
 - Design and implementation of an reference ETL job within MIRACUM (Medical Informatics in Research and Care in University Medicine) [1] using Pentaho Data Integration [2]
 - Including static definition of mapping of German patient data, esp. of four basic modules of the Core Data Set of the Medical Informatics Initiative Germany (MI-I): Person, Visit, Diagnosis, Procedure [3]
- **Problems of static definition of mapping:**
 - Lack of transparency
 - Difficult to maintain
 - High level of manual effort
 - Lack of consistency

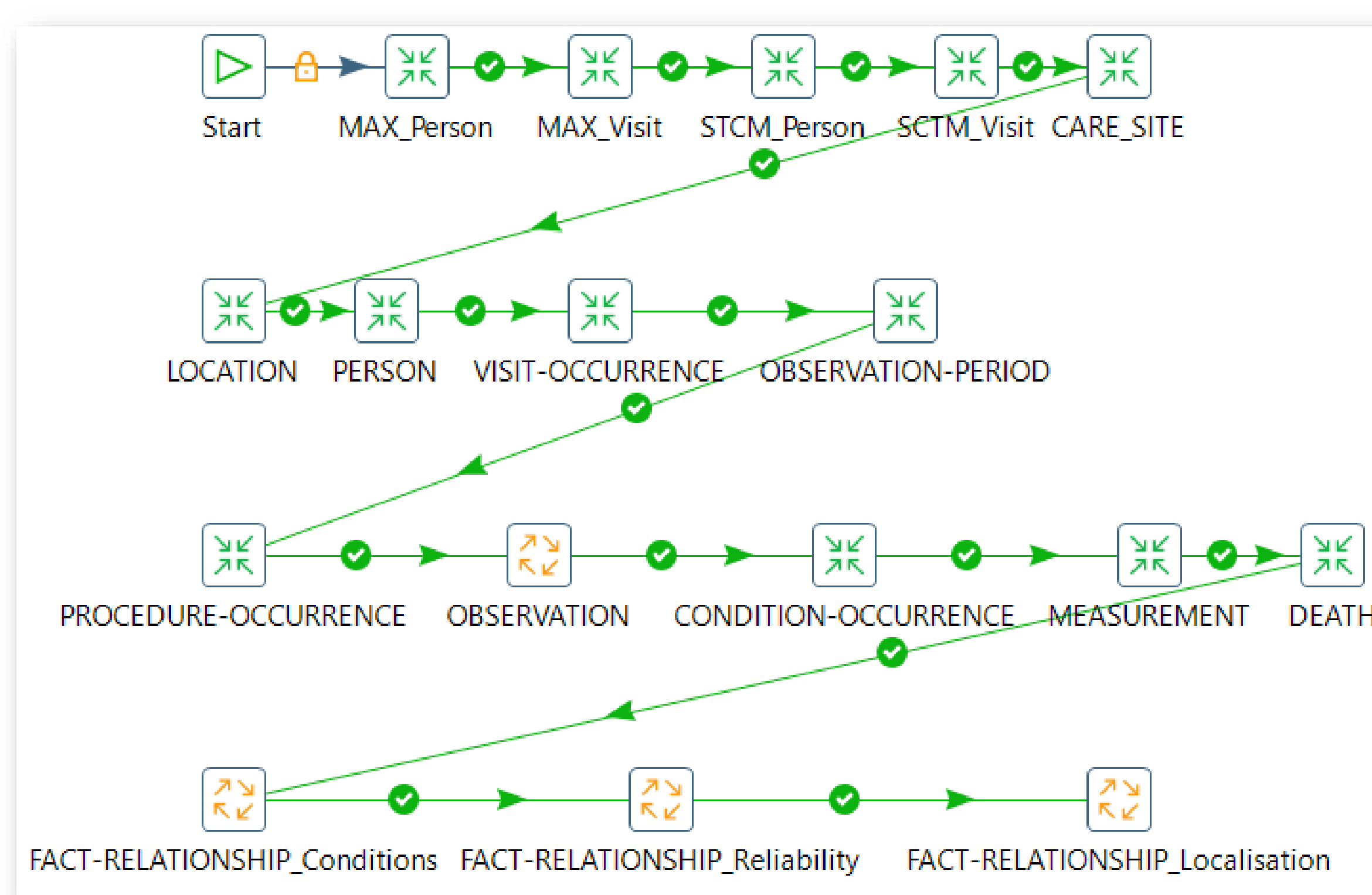


Figure 1: Screenshot of the Reference ETL Process

Field values:

#	Source value	Target value
1	01	4214577
2	02	4010105
3	03	4123929
4	04	4083346
5	05	4214577
6	06	4014291
7	07	4213258
8	08	4180080

Figure 2: Example of static mapping (“reason of admission”) within the reference ETL process

Results

- **Solution:** Design and implementation of the **Transition Database of German Vocabularies (German TDB)** as an extension tool of the reference ETL job
- **Advantages:**
 - Increased transparency and interoperability
 - Nationwide consistency and comparability of mapping
 - Easy maintaining and versioning of mapping
 - Simple and fast installation without additional software

	source_value character varying (20)	omop_target_domain_id character varying (20)	omop_target_concept_id character varying (20)	relationship_id integer	valid_start_date date	valid_end_date date
1	01xx	Observation	4214577	45754864	2019-02-04	2099-12-31
2	02xx	Observation	4010105	45754864	2019-02-04	2099-12-31
3	03xx	Observation	4123929	45754864	2019-02-04	2099-12-31
4	04xx	Observation	4083346	45754864	2019-02-04	2099-12-31
5	05xx	Observation	4214577	45754864	2019-02-04	2099-12-31
6	06xx	Observation	3022007	45754864	2019-02-04	2099-12-31
7	07xx	Observation	4213258	45754864	2019-02-04	2099-12-31
8	08xx	Observation	4180080	45754864	2019-02-04	2099-12-31

Figure 3: Example of mapping (“reason of admission”) with the help of the German TDB

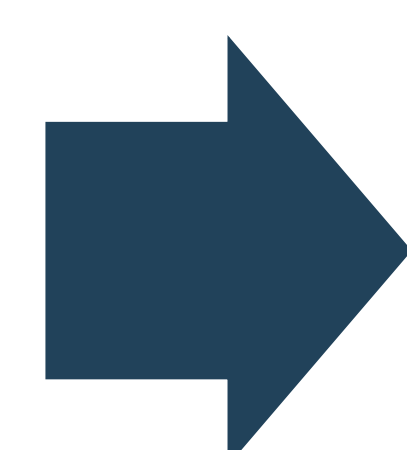
- Available on **GitHub** for use and extension:



Methods

Semantic Mapping

- Semantic mapping of German patient data to OMOP Standard Concepts
- Consensus and documentation of individual mappings by an interdisciplinary team of medical doctors, IT specialists and data scientists



Design and implementation of the German TDB

- Creation of several tables within one database (PostgreSQL) for every kind of source information using the naming convention of OHDSI
- Fill database with SQL statements

Conclusions

- Optimized utilization of the OMOP CDM in Germany by using the German TDB as an extension tool of the reference ETL job
 - Already successful implementation and use in the data integration center of the University Hospital Carl Gustav Carus in Dresden
 - Provision for further MIRACUM partner sites within another release of the reference ETL job
- Possible adoption of the approach regarding other national specifics or different terminologies (esp. Orpha Codes in the context of rare diseases [4] and LOINC) because of high flexibility and fast deployment
 - Extension within the OHDSI Community with further locally specific mappings is conceivable

