Background

- Electronic health records (EHRs) improve efficiency and quality of care[1]. It opens opportunities for data sharing in healthcare and collaborative research.
- System interoperability is the ability of systems to exchange and use the information that has been transmitted[2] and has been identified as a major challenge. Data standardization is considered fundamental to semantic interoperability and is even more difficult in Europe due to its 24 official languages.
- The OMOP vocabulary tables are designed for data standardization allowing mapping terminologies together and share the same standards.

On top of OMOP we have developed a web-based application to help map source terminologies to standard one as defined by OHDSI teams. It is called omop-mapper.fgh.ovh and it is a OMOP-centric, collaborative, international and ergonomic website which combine: a free text research tool and a mapping user-based tool.

1 Objectives

1 Evaluate the omop-mapper web app in the context of a french national datathon.
2 Compare omop-mapper to Usagi (OHDSI tool) and Relma (LOINC tool).

2 Methods

2.1 Development

- Backend : We use python-flask to build our API. The database is built on top of OMOP and PostgreSQL. We use Solr for the full-text search, hit highlighting, faceted search. Apache Spark allows complex and fast data transformations. Apache Livy has been used to synchronize PostgreSQL and Solr.
- Frontend : we use openUI5[3], an opensource framework developed by SAP corporation.

2.2 Terminology sharing

- All the french hospitals were invited to share their own terminology.
- We use a private framagit[4] as it is sensitive data. A template is provided to standardize the import format. The frequencies of local terminologies are used to prioritize the mapping. Their are not mandatory. As it may be sensitive informations, a semi quantitive approach was used and french hospitals didn’t have to give the exact count.
- As standard terminologies we use athena version 5.0

2.3 Comparison

- Usagi[5] is an opensource software used by OHDSI community to help in the process of mapping codes from a source system into terminologies, preferably standard ones, stored in the Observational Medical Outcomes Partnership (OMOP) Vocabulary[6].
- Relma[7] is developed by the Regenstrief Institute and distributed free of charge (in its basic version) through the LOINC website. It help for mapping local terms to LOINC, allowing collaborative works, quality controls prior to csv import, no installation required, and internationalization. omop-mapper.fgh.ovh is an open source web application that allows intra and inter linguual mapping.

Several algorithms can be chosen and help to map items with different approaches.

4 Discussion

The performance evaluation was similar between Usagi and omop-mapper. Relma had weaker performances.

Our tool provides others contributions such as collaborative works, quality controls prior to csv import, no installation required, and internationalization. omop-mapper.fgh.ovh is an open source web application that allows intra and inter linguual mapping.

Several algorithms can be chosen and help to map items with different approaches.

5 Conclusion

We will use the tool for the semantic mapping between French hospitals. This tool will help to organize a french datathon during next MedInfo congress. We hope this tool will help international semantic interoperability.

We want to highlight that all OMOP databases will benefit from the statistics provided by our tool and will facilitate the mapping process.

References


Figure 1: Backend and frontend architecture

Figure 2: Omop-Mapper database showing