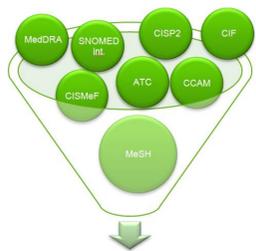


Introduction

Controlled vocabularies are used for a wide range of applications, especially in Health.

The Health Terminology/Ontology Portal (HeTOP) is continuously developed with various methods and technologies. It consists in a multi-terminology multi-domain and cross-lingual portal which could be a useful tool for a wide range of applications and users all over the world. This tool is funded by the European Union and the Région Normandie within the **PlaIR 2.018 project**.



Terminologies/ontologies
integration into a unique model



- Indexing/coding
- Teaching
- Auditing

Results

A total of 85 terminologies are included into HeTOP, it represents 3,360,000 concepts, 5,410,000 synonyms, 534,000 definitions and 13,300,000 relations, whose 1,800,000 mappings: 1,700,000 automatic mappings (currently, 683,000 are validated as exact-match) and 105,000 manual mappings.

It is used daily by 1,500 unique machines. More than 4,800 people are registered, mainly physicians, health students, librarians and translators. Visit HeTOP at: <https://www.hetop.eu/>

Methods

A multi-terminological model has been developed [1]. It supports broad semantic interoperability between terminologies that fulfill it. This meta-model is basically multi-lingual because preferred terms, synonyms and other textual attributes can be defined by a language code ("en" for English, "fr" for French, etc.).

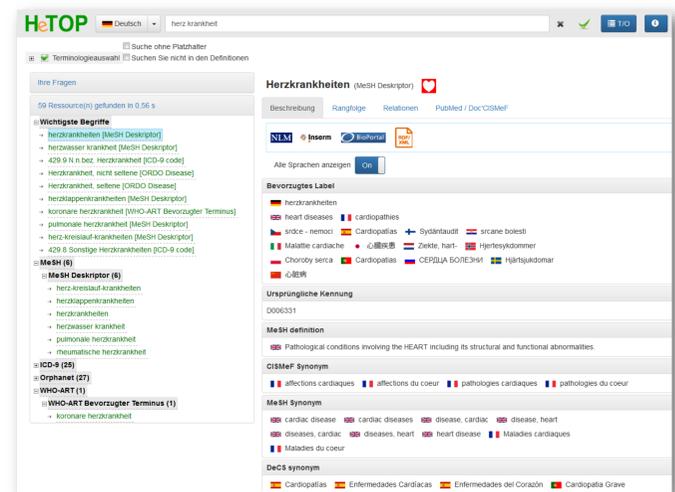
HeTOP interface is available in 6 languages (French, English, Italian, German, Portuguese, Turkish).

We have combined different sources of data for each available terminology language (UMLS[2], official national sources of ICD-10, etc.).

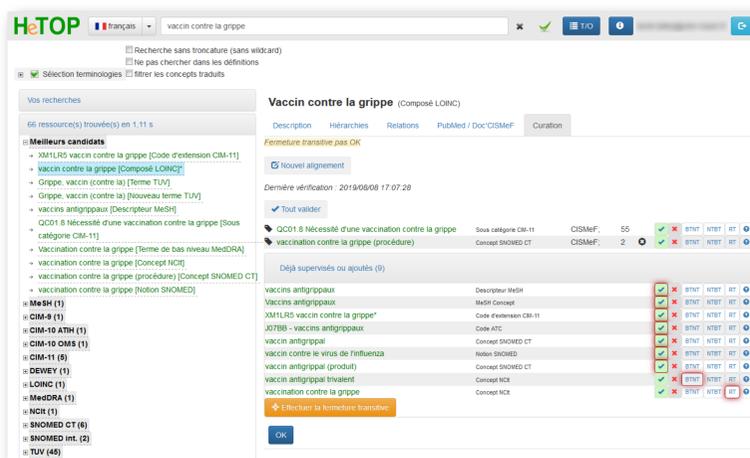
We developed an automatic mapping tool using natural language processes, mapping algorithms and transitive closure. Experts can validate (as exact-match, BTNT/NTBT, related, false or unknown) each automatic mappings found with a dedicated interface (curation).

HeTOP allows the customization of edition rights, mainly used for translators who can edit terms directly on the HeTOP interface.

Data is regularly updated when new versions of terminologies are published.



Screenshot of HeTOP:
Description interface in German for
MeSH « Heart diseases »



Screenshot of HeTOP:
Mappings curation interface for
LOINC « Influenza vaccine »

Discussion & Conclusion

Currently, HeTOP is a valuable tool to search and browse terminologies and ontologies in a multi-terminology and multilingual mode. Other portals propose similar functionalities such as NCBO Bioportal [3] and the EBI Ontology Lookup Service [4]. Those tools are also very friendly but do not allow users to navigate through terms or search among synonyms in different languages. They are also not adapted to a daily use to index.

As far as we know, this kind of multi-terminology and cross-lingual portal is the first in Health. Moreover, a hard work has been done to perform interoperability between terminologies and for their enrichment (addition of synonyms, translations and mappings).

All mappings included into HeTOP represent a large semantic network. It can be exploited for semantic interoperability.

HeTOP is also used to create original content, such as the EFMI thesaurus or Q-codes nomenclature [5].

This tool acts as a platform and is currently used for various projects: automatic annotation of medical documents, semantic support for a health data warehouse, etc.

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