The Health Terminology/Ontology Portal (HeTOP)  
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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.

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.

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.heтоп.eu/

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 plateform and is currently used for various projects: automatic annotation of medical documents, semantic support for a health data warehouse, etc.

References