Ontology Localization

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Motivation

The goal here is to face the demand for ontology-based applications that support **multilinguality** in tasks such as information retrieval, question answering or knowledge management. With this aim, ontology engineers are searching for strategies to build multilingual ontologies. However, this is an expensive and time-consuming undertaking. Therefore, in order to enable the smooth creation of multilingual ontologies, in NeOn we have developed a method for guiding users in the **localization** of available ontologies. Additionally, we provide a supporting tool, the **LabelTranslator** NeOn plug-in, that enables a semi-automatic localization of ontologies,.

What is Ontology Localization?

How is the process?

Ontology Localization

Definition

Ontology localization refers to the adaptation of an ontology to a particular language and culture

Goal

To translate an ontology expressed in a source natural language into a target natural language.

Input

An ontology whose ontology terms are expressed in one or several natural languages, from which one is selected as source natural language.

Output

An ontology whose ontology terms have been translated to a target natural language. The resulting translations are added to the original ontology in one or several languages.
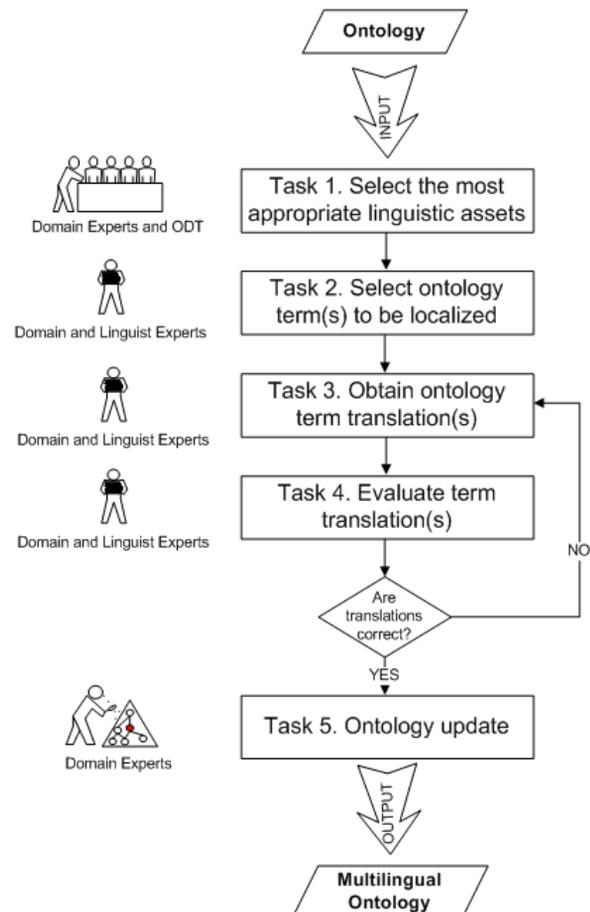
Who

Software developers and ontology practitioners, who form part of the ontology development team, as well as domain and linguistic experts.

When

Once the conceptual model of the ontology is stable, so as to avoid spending time and resources in a model that is not definitive.

Ontology

Domain Experts and ODT

INPUT

Task 1. Select the most appropriate linguistic assets

Domain and Linguist Experts

Task 2. Select ontology term(s) to be localized

Domain and Linguist Experts

Task 3. Obtain ontology term translation(s)

Task 4. Evaluate term translation(s)

Domain and Linguist Experts

Are translations correct?

NO

YES

Domain Experts

Task 5. Ontology update

OUTPUT

Multilingual Ontology

How is each specific task performed?

This activity is exemplified by means of the semi-automatic localization of an FAO ontology (the Food and Agriculture Organization of the United Nations) carried out with the LabelTranslator NeOn plug-in. The FAO is an international organization with six official languages that needs to manage information in several natural languages. Our goal here is to localize the *Pest control* ontology from English into Spanish.

Task 1. Selecting the most appropriate linguistic assets.
The goal of this task is to select the linguistic assets to be used in the translation process. In its current version, LabelTranslator accesses a fixed set of multilingual linguistic resources (EuroWordNet, Wiktionary, IATE) and translation web services (GoogleTranslate, BabelFish).
• Task 2. Selecting ontology term(s) to be localized.
Once the ontology has been imported in the NeOn Toolkit, LabelTranslator allows users to manually sort out the labels that should undergo localization. Per default, all labels are selected. LabelTranslator also retrieves the local context (direct hypernyms, hyponyms, siblings) of each ontology label which is then interpreted by the system using a structure-level approach. In the case of the *Pest control* ontology, all labels were automatically selected.
• Task 3. Obtaining ontology term translation(s).
To obtain the most appropriate translation for each ontology label, LabelTranslator uses the following techniques: Cross-language term extraction, Sense discovery and Word Sense Disambiguation .
• Task 4. Evaluating term translation(s).
The goal of this task is to evaluate the label translations in the target language. In the current version of LabelTranslator, this activity has to be performed manually by the user. Then the user has to check the *Semantic fidelity evaluation* (if labels represent conceptually equivalent terms) and the *Stylistic evaluation* (if syntax and style are equivalent).
• Task 5. Updating the Ontology.
The ontology is updated with the resulting linguistic data, which is stored in the LIR model, a separate module adopted by LabelTranslator to organize and relate linguistic information within and across languages.

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