Reusing Non-Ontological Resources

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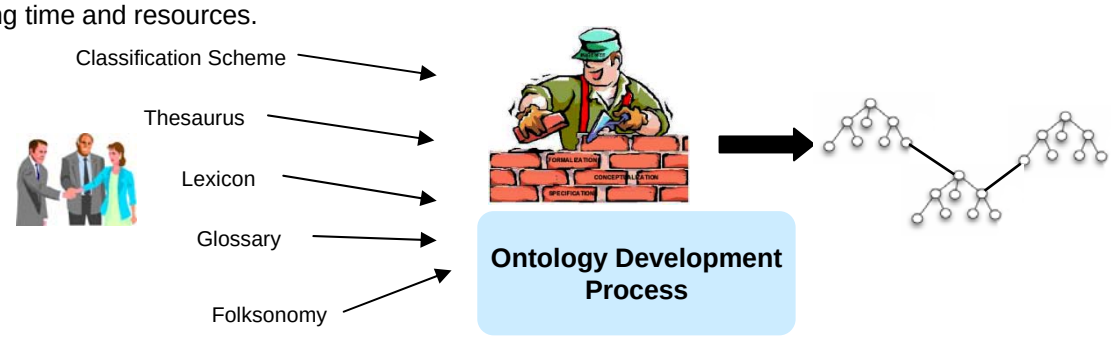
Motivation

With the goal of speeding up the ontology development process, ontology engineers are starting to reuse as much as possible available ontologies and non-ontological resources (classification schemes, thesauri, lexica, glossaries and folksonomies) that have already reached some degree of consensus. Non-ontological resources are highly heterogeneous in their data model and contents: they encode different types of knowledge and can be modeled and implemented in different ways. Within NeOn we present a method for reusing non-ontological resources and developing ontologies rapidly. This method allows building ontologies by reusing resources already agreed on, thus saving time and resources.



What is Non-Ontological Resource Reuse?

Non-Ontological Resource Reuse

Definition

Non-Ontological Resource Reuse refers to the process of choosing the most suitable non-ontological resources for the development of ontologies.

Goal

To choose the most suitable non-ontological resources for building ontologies.

Input

The ontology requirements specification document (ORSD).

Output

A set of non-ontological resources that to some extend covers the expected domain.

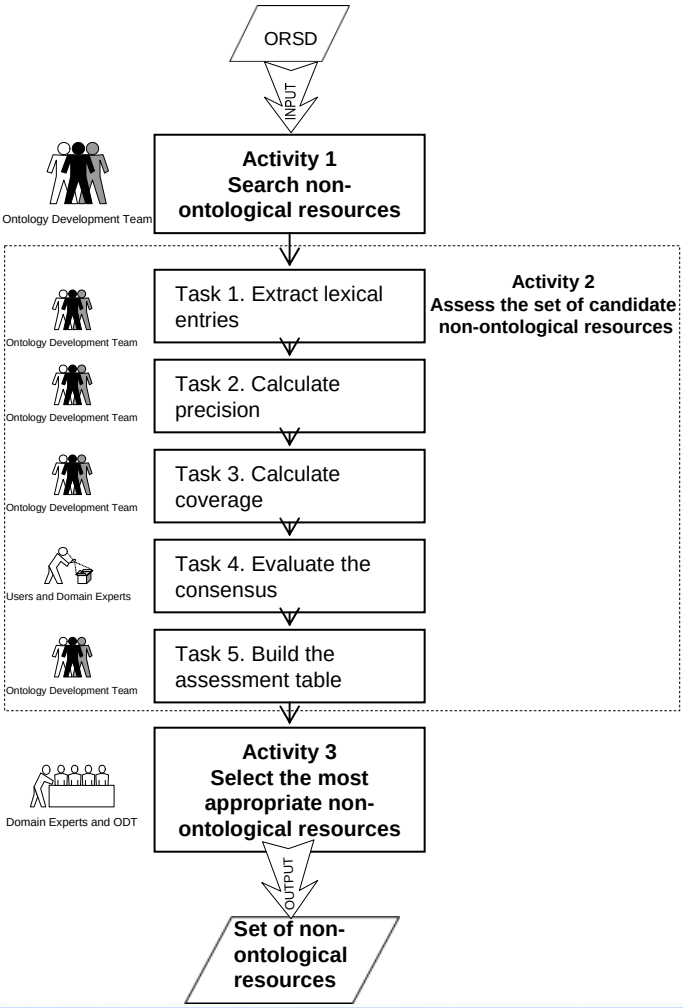
Who

Domain experts, software developers and ontology practitioners.

When

After the ontology specification activity and before the non-ontological resource re-engineering process.

What is the process?



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Reusing Non-Ontological Resources

This process includes the following activities.

Activity 1. Searching non-ontological resources. The goal of the activity is to search non-ontological resources from highly reliable Web sites, domain-related sites, and resources within organizations. Domain experts, software developers and ontology practitioners carry out this activity taking as input the ontology requirements specification document (ORSD).

Activity 2. Assessing the set of non-ontological resource candidates. The goal of the activity is to assess the set of non-ontological resource candidates. Domain experts, software developers and ontology practitioners carry out this activity taking as input the set of candidate non-ontological resources.

Task 1. Extracting lexical entries. The goal of this task is to extract the lexical entries of the non-ontological resources. To perform this task, it is necessary to take as input the non-ontological resources and extract their lexical entries using terminology extraction tools.

Task 2. Calculating precision. The goal of this task is to calculate the precision of the non-ontological resources. To carry out this task, it is necessary to take as input the lexical entries extracted in task 1 and the terminology from the Ontology Requirements Specification Document (ORSD). Then, the precision of the non-ontological resources should be computed.

$$Precision = \frac{\{NORLexicalEntries\} \cap \{ORSDTerminology\}}{\{NORLexicalEntries\}}$$

Task 3. Calculating coverage. The goal of this task is to calculate the coverage of the non-ontological resources. To carry out this task, it is necessary to take as input the lexical entries extracted in task 1 and the terminology from the ORSD for computing the coverage of the non-ontological resources.

$$Coverage = \frac{\{NORLexicalEntries\} \cap \{ORSDTerminology\}}{\{ORSDTerminology\}}$$

Task 4. Evaluating the consensus. The goal of this task is to evaluate the consensus of the non-ontological resources. Since consensus is a subjective and not quantifiable criterion, domain experts perform this task taking as input the non-ontological resources for stating whether the non-ontological resources contain terminology agreed on by the community or not.

Task 5. Building the assessment table. The goal of this task is to create an assessment table of the non-ontological resources. Software developers and ontology practitioners carry out this task, taking as input the non-ontological resources with their respective values for precision, coverage and consensus criteria, for the construction of the assessment table.

Activity 3. Selecting the most appropriate non-ontological resources. The goal of this activity is to select the most appropriate non-ontological resources taking as input the non-ontological resource assessment table.

Example : Semantic Nomenclature Case Study

All the information of the pharmaceutical products are modeled and stored in different legacy systems and databases. The goal here is to build an ontology network about pharmaceutical products using some of the legacy systems.

Activity 1. Searching non-ontological resources. Following some of the suggestions made by domain experts, we searched resources in highly reliable pharmaceutical web sites where we found the following: (1) DIGITALIS, (2) INTEGRA, (3)BOTPlus, and (4) CEDIMCAT.

Activity 2. Assessing the set of non-ontological resources candidates. We followed the five tasks of this activity. For the construction of the assessment table, we collected all the information of every non-ontological resource.

Resource	Precision	Coverage	Consensus
DIGITALIS	X	X	Yes
INTEGRA	X	X	Yes
BOTPlus	X	X	Yes
CEDIMCAT	X		No

Activity 3. Selecting the most appropriate non-ontological resources. Domain experts selected the following non-ontological resources: DIGITALIS, INTEGRA and BOTPlus.

Additional Information

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❑ *D5.4.1 NeOn Methodology for Building Contextualized Ontology Networks (http://www.neon-project.org/web-content/images/Publications/neon_2008_d5.4.1.pdf)*

❑ *D5.4.2. Revision and Extension of the NeOn Methodology for Building Contextualized Ontology Networks (http://www.neon-project.org/web-content/images/Publications/neon_2009_d5.4.2.pdf)*