NOR$_2$O: a Library for Transforming Non-Ontological Resources to Ontologies

Boris Villazón-Terrazas, Asunción Gómez-Pérez, and Jean Paul Calbimonte

Ontology Engineering Group, Departamento de Inteligencia Artificial, Facultad de Informática, Universidad Politécnica de Madrid, Spain
{bvillazon,asun,jpcalbimonte}@fi.upm.es

Abstract. With the goal of speeding up the ontology development process, ontology engineers are starting to reuse and transform as much as possible available non-ontological resources, such as classification schemes, thesauri, lexicons, etc. Within the NeOn project we propose a method for re-engineering non-ontological resources into ontologies. This method is based on the so-called re-engineering patterns. This paper presents the description of the software library, that implements the transformations suggested by the patterns.

Key words: Non-Ontological Resources, Ontologies, Re-engineering

1 Introduction and Motivation

Non-Ontological Resources (NORs) [?] are knowledge resources whose semantics has not yet been formalized by an ontology. Within the NeOn project\(^1\) [?], we propose a pattern based method for re-engineering NORs into ontologies. The method relies on re-engineering patterns\(^2\), which define a procedure that transforms the NOR components into ontology representational primitives. In this paper, we present the description of the NOR$_2$O, a Java library that implements the transformations proposed by the patterns.

2 NOR$_2$O

The NOR$_2$O library performs an ETL process\(^3\) for transforming the NOR components into ontology elements. Figure 1 depicts the modules of the library.

The NOR Connector loads classification schemes, thesauri, and lexicons modelled with their corresponding data models, and implementations.

The Transformer performs the transformations by implementing the sequence of activities included in the patterns. This module interacts with the Semantic Relation Disambiguator module for obtaining the suggested semantic relations of the NOR elements.

The Semantic Relation Disambiguator is in charge of obtaining the semantic relation between two NOR elements. Basically, the module receives two NOR

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1 http://www.neon-project.org
2 http://ontologydesignpatterns.org/wiki/Submissions:ReengineeringODPs
3 Extract, transform, and load (ETL) of legacy data sources.
elements from the Transformer module and returns the semantic relation between
them. The module connects the external resource through the External Resource
Service module to get the relation.

The External Resource Service is in charge of interacting with external re-
sources for obtaining the semantic relations between two NOR elements. At this
moment the module interacts with WordNet\(^4\). We are implementing the access
to DBpedia\(^5\).

The OR Connector generates the ontology in OWL. To this end, this module
relies on the OWL API\(^6\).

We have performed a set of evaluations\(^7\) of the NOR\(_2\)O, and we have obtained
very good results. Finally, to conclude the description of the software library, it
is worth to mention that the implementation of this library follows a modular
approach, therefore it is possible to extend it to include other types of NORs,
data models, and implementations in a simple way, as well as exploiting other
external resources for relation disambiguation.

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\(^4\) http://wordnet.princeton.edu/
\(^5\) http://dbpedia.org/
\(^6\) http://owlapi.sourceforge.net/
\(^7\) NORs available at http://droz.dia.fi.upm.es/nors and the ontologies generated at http://droz.
dia.fi.upm.es/ontologies