Chapter 2
OntoClippy: A User-Friendly Ontology Design and Creation Methodology

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ABSTRACT

In this article, the author describes OntoClippy, a tool-supported methodology for the user-friendly design and creation of ontologies. Existing ontology design methodologies and tools are targeted at experts and not suitable for users without a background in formal logic. Therefore, this research develops a methodology and a supporting tool to facilitate the acceptance of ontologies by a wider audience. In this article, the author positions the approach with respect to the current state of the art, formulates the basic principles of the methodology, presents its formal grounding, and describes its phases in detail. To demonstrate the viability of our approach, the author performs a comparative evaluation. The experiment is described, as well as real-world applications of the approach.

INTRODUCTION

The acceptance and use of ontologies is hindered by the fact that they are very complex and can only be created by trained ontology engineers. Our goal is making ontologies accessible by designing a methodology and, equally important, a supporting tool, which enable domain-experts and users without a background in logic to design ontologies. We don’t want to replace ontology engineers in the ontology building process, but we want to make their work easier by enabling users to build skeleton ontologies, which can be further refined by them.

We envision three use-cases for our approach:

- Average users without a background in computer science, who want to contribute knowledge on their subjects of interest to the semantic web (Berners-Lee, Hendler & Lassila, 2001).
- Domain-experts who create formalized knowledge that is to be used in a software system. Traditionally such ontologies would be created by ontology engineers interviewing domain experts in an iterative process. Enabling domain experts to create initial versions of those ontologies them-
selves potentially leads to cost and time
benefits when compared to the traditional
way.
• Ontology engineers using the methodol-
gy for rapid prototyping of ontologies.

We want to reach our goal of increasing the
acceptance of ontologies by hiding, as much
as possible, the formalism required to build
them. Therefore we developed OntoClippy, a
user-friendly, tool-supported ontology design and
creation methodology with the aim to make ontolo-
gies usable by non experts. We want to convey to
everybody interested in building ontologies, that
ontology design doesn’t need to be complex and
that by using our tool-supported methodology
user will be more productive than with existing
methodologies and tools. Eventually we want
to test this with an empirical evaluation through
experiments and supported by questionnaires.

STATE OF THE ART

In our earlier work we formulated criteria for user-
friendly ontology design and creation methodolo-
gies and conducted a survey comparing existing
methodologies. In the following section we give
a short overview over our work and position our
work with respect to other approaches for making
ontology design and creation more user-friendly.

Criteria for User-Friendly Ontology
Design and Creation Methodologies

An ontology creation methodology for domain
experts should be efficient to use and easy to
teach. The following section gives requirements
for such a methodology in the form of criteria the
methodology has to meet. These criteria are based
on experiences made in the course of the STASIS
project (http://www.stasis-project.net). During the
project they were discussed and evaluated with
users from both academia and industry. Subse-
quently they have been presented and discussed
at the I-ESA conference (Dahlem, Guo, Hahn &
Reinelt, 2009).

Besides the methodologies themselves the
presented criteria also cover aspects of ontology
construction tools and the underlying ontology
languages. A methodology should use adequate
terminology. It should be well structured, self
descriptive, transparent and supported by a tool.
The methodology, as well as the supporting tool
should help users to avoid errors, they should
be robust and consistent and finally they should
support conceptualization flexibility (cf. the basic
principles of our methodology).

The supporting tools should offer lookahead
features, it should hide formality as much as pos-
sible and it should present ontology assumptions
in a comprehensible manner.

Finally expressiveness is an inherent property
of the underlying ontology language, but is also
reflected in the methodology itself, as it might
restrict the expressiveness to a subset of the un-
derlying language.

Existing Methodologies and Tools

In our earlier work (Dahlem & Hahn, 2009) we
conducted a survey comparing ontology creation
methodologies found in literature. These methodo-
logies were developed in various communities
and with various foci: CommonKADS (Wielinga,
Schreiber & Beuker, 1992), Cyc (Lenat, 1995) and
KBSI IDEF5 (Benjamin, Menzel, Mayer, Fillion,
Futrell, DeWitte & Lingineni, 1994) are geared
towards Knowledge Based Systems. The methodo-
logies of Grüninger and Fox (1995) and Uschold
and King (1995), as well as METHONTOL
ogy (Fernández, Gómez-Pérez & Juristo, 1997), On-
tology Development 101 (Noy & McGuinness,
2001) and UPON (De Nicola, Missikoff & Navigli,
1995) are designed for building ontologies from
scratch. DILIGENT (Vrandecic, Pinto, Sure &
Tempich, 2005) and HCOME (Kotis, Vouros &
Alonso, 2005) put the focus on the evolution and
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