



D16.0v0.2 Languages for WSMO

WSMO Working Draft 26 July 2004

This version

<http://www.wsmo.org/2004/d16/d16.0/v0.2/20040726>

Latest version

<http://www.wsmo.org/2004/d16/d16.0/v0.2/>

Previous version

<http://www.wsmo.org/2004/d16/d16.0/v0.2/20040719>

Editor:

Eyal Oren

Authors:

Eyal Oren

Holger Lausen

For printing and off-line reading, this document is also available in non-normative [PDF](#) version.

Copyright © 2004 [DERI](#)®, All Rights Reserved. [DERI](#) liability, trademark, document use, and software licensing rules apply.

Table of Contents

- [1. Introduction](#)
 - [2. Semantical layering in WSML](#)
 - [3. Syntaxes](#)
 - [References](#)
 - [Acknowledgements](#)
-

1. Introduction

The conceptual model for WSMO is described in ([Roman et al. 2004](#)). In order to express the described concepts, a concrete syntax is required. This concrete language must be able to model all concepts (and their attributes) as described in WSMO. A human-readable syntax for WSMO (called WSML) is given in ([Roman et al., 2004](#)).

However, different applications need different logical expressivity. Therefore the WSML working group will provide three variants of WSML with different logical expressivity. In this document we introduce these different variants and indicate in which deliverables they will be defined.

Secondly, different applications need different syntaxes. Therefore the WSML working group will also provide three syntactical variants of WSML, which can be used to express any of the (above mentioned) semantical variants. In this document we will also shortly introduce these different syntaxes and indicate in which deliverables they will be defined.

2. Semantical layering in WSML

In figure 1 the three semantical variants of WSML are shown. These three variants differ in the logical expressivity they offer, and thus in the computational complexity they imply. By offering these three variants, we allow users to make the trade-off between the provided expressivity and the implied complexity on a per-application basis.

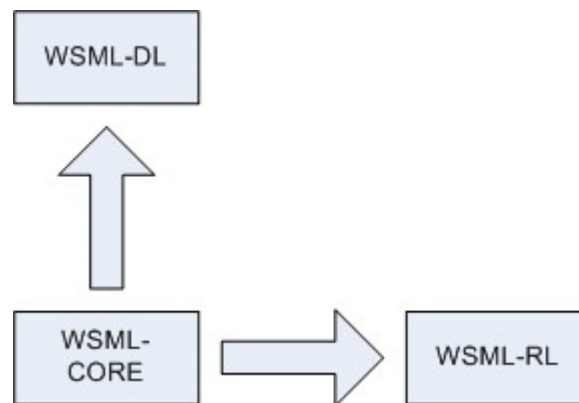


Figure 1. Languages in WSML

WSML-Core

This language is defined by the intersection of Description Logic and Horn Logic. It has the least expressive power of all the languages of the WSML family and therefore the most preferable computational characteristics. WSML-Core is defined in [\[de Bruijn and Foxvog, 2004\]](#).

WSML-DL

This language is an extension of WSML-Core that supports Description Logic. It is defined by OWL-Lite [\[Dean and Schreiber, 2004\]](#) which is a recommendation of the W3C and has reasonable computational characteristics. OWL-DL adds nominals to OWL-Lite that are not very useful in our context and do not justify the added computational complexity. WSML-DL will be defined in a future deliverable.

WSML-RL

This language is an extension of WSML-Core that supports Horn Logic. WSML-RL will be defined in a future deliverable.

3. Syntaxes

The three semantical variants of WSML all share the modelling elements from WSMO. They differ only in the kind of logical expressions one is allowed to use. Therefore the syntaxes for these variants will only differ regarding the allowed logical expressions; for usability reasons, a semantical variant may also include language constructs for certain often-used logical expressions.

The three syntaxes for WSML are:

Abstract syntax:

A human readable syntax for WSML. This syntax is defined in [\[Roman et al., 2004; appendix B\]](#). An example can be seen in [\[Stollberg et al., 2004\]](#). This abstract syntax is machine-readable but requires a specialised parser.

XML syntax:

A syntax specifically tailored for machine processability, instead of human-readability; it is easily parsable by standard XML parsers, but is quite unreadable for humans. This syntax is defined in [\[de Bruijn and Kifer, 2004\]](#)

OWL/RDF syntax

An OWL syntax for WSMO will be provided in a future deliverable to enable interoperability with current web ontologies (for which OWL is the current standard).

References

[de Bruijn and Foxvog, 2004] J. de Bruijn and D. Foxvog: *WSMO-Core*. WSMO Working Draft v0.1.

<http://www.wsmo.org/2004/d16/d16.7/>

[de Bruijn, and Kifer, 2004] J. de Bruijn and M. Kifer (eds): *WSML/XML - An XML Syntax for WSML*. WSMO Working Draft v0.1.

<http://www.wsmo.org/2004/d16/d16.3/v0.1/20040322/>

[Dean and Schreiber, 2004] M. Dean and G. Schreiber (eds): *OWL Web Ontology Language Reference*. W3C Recommendation 10 February 2004.

[Kifer et al., 1995] M. Kifer, G. Lausen, and J. Wu: Logical foundations of object oriented and frame-based languages. *Journal of the ACM*, 42(4):741-843, 1995.

[Roman et al., 2004] D. Roman, H. Lausen and U. Keller (eds): *Web Service Modeling Ontology*. WSMO Working Draft v0.3.

<http://www.wsmo.org/2004/d2/v03/20040708>

[Stollberg et al., 2004] M. Stollberg, H. Lausen, A. Polleres and R. Lara (eds): *WSMO Use Case Modeling and Testing*. WSMO Working Draft v0.1.

<http://www.wsmo.org/2004/d3/d3.2/v0.1/20040628/>

Acknowledgement

The work is funded by the European Commission under the projects [DIP](#), [Knowledge Web](#), [Ontoweb](#), [SEKT](#), [SWWS](#), [Esperanto](#) and [h-TechSight](#); by Science Foundation Ireland under the [DERI-Lion](#) project; and by the Vienna city government under the [CoOperate](#) program.

The editors would like to thank to all the [members of the WSMO working group](#) for their advice and input into this document.

