



D16.0v0.2 Languages for WSMO

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1. Introduction

The conceptual model and language for WSMO is described in [\[Roman et al. 2004\]](#). However, different applications need different logical expressivity. Therefore, the WSML working group will provide several variants of WSML with different logical expressivity. In [Chapter 2](#) we introduce these different variants and indicate in which deliverables they will be defined. In addition, different applications need different syntaxes. We introduce these various syntaxes in [Chapter 3](#)

Table 1 provides a short overview of the different languages, distinguishing between

the syntaxes for WSML and the WSML variants. The different WSML variants and the different syntaxes are described in more detail in the following chapters.

No.	Name
<i>Syntaxes for WSML</i>	
D2	Human-readable syntax for WSML
D16.3	XML syntax for WSML
D16.5	OWL/RDF syntax for WSML
<i>WSML variants</i>	
D16.6	WSML-Full
D16.7	WSML-Core
D16.8	WSML-Rule
D16.9	WSML-OWL
D16.10	WSML-Flight
Table 1: WSML Language Deliverables	

2. Semantical layering in WSML

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

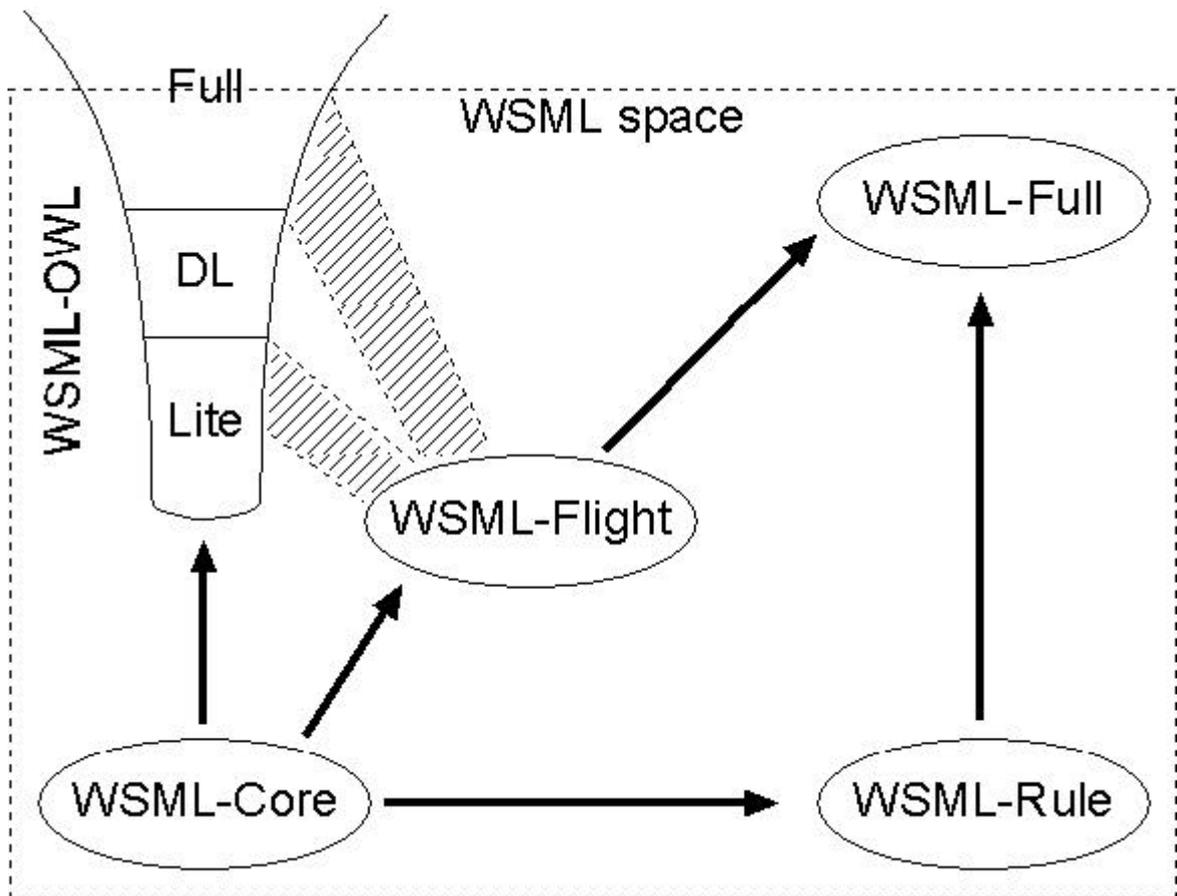


Figure 1. WSML Space

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 deliverable D16.7 [\[de Bruijn and Foxvog, 2004\]](#).

WSML-OWL

This language is an extension of WSML-Core to support the Web Ontology Language OWL [\[Dean and Schreiber, 2004\]](#). WSML-OWL follows the language layering of OWL, distinguishing the Lite, DL and Full species. However, as can be seen in Figure 1, WSML-OWL will not support OWL-Full completely. The semantics of OWL-Full was made unnecessarily complicated on order to give every possible RDF statement a meaning. WSML-OWL will be defined in deliverable D16.9.

WSML-Flight

This language is an extension of WSML-Core with several features from OWL Full, such as meta-classes, and several other features, such as constraints. WSML-Flight is based on OWL Flight, which is under development in deliverable D20.3. WSML-Flight will be defined in deliverable D16.10.

WSML-Rule

This language is an extension of WSML-Core that supports Horn Logic based on minimal model semantics. WSML-RL will be defined in deliverable D16.8.

WSML-Full

This language is defined in [\[Roman et al. 2004\]](#). It unifies WSML-Flight and WSML-Rule. The semantics of this language (if ever) will be defined in Del 16.6.

3. Syntaxes

The semantical variants of WSML all share the modeling elements of WSMO. They differ mainly in the kind of logical expressions one is allowed to use. Therefore the syntaxes for these variants will differ only slightly for the WSMO modeling elements. For usability reasons, a semantical variant may include language shortcuts for certain often-used logical expressions.

The three syntaxes for WSML are:

Human-readable syntax:

A human readable syntax for WSML. This syntax is defined in deliverable D2 [[Roman et al., 2004; appendix B](#)]. Examples of the use of this syntax can be found in [[Stollberg et al., 2004](#)]. This syntax is machine-readable with a specialised parser (which we provide as open-source software).

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 will be defined in deliverable D16.3 [[de Bruijn and Kifer, 2004](#)].

OWL/RDF syntax

An OWL/RDF syntax for WSMO will be provided in deliverable D16.5 to enable interoperability with current web ontologies (for which RDF(S) and OWL are the current recommendations).

References

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

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