SemTalk EON2003 Semantic Web Export / Import Interface Test

Christian Fillies
Semtation GmbH
cfillies@semtalk.com

Introduction

SemTalk is a MS-Visio based graphical modelling tool, which is used for a broad range of applications as there are Business Process Modelling, SAP Product Configuration and visual glossaries. Since it is based on an open extendable meta model new modelling tools can be created with reasonable effort. Most of these solutions make use of SemTalk's ability to represent ontologies or at least taxonomies in a visual way using MS-Visio and MS-Office clipart symbols. A typical SemTalk model is being published as HTML on the intranet or it is used to generate Word or PowerPoint documentation.

SemTalk Engine

The native modelling language supported by the SemTalk [1] consistency engine is settled somewhere in the middle between RDFS and OWL. It supports multiple inheritance, instances, object- and data type properties. Graphically we follow the approach of the UML tools with boxes for classes and labelled arcs for object type properties. Data type properties are being displayed inside the rectangle of the class. We prefer this relatively compact notation in contrast to the graphical DAML notation used in VisioDAML.
We experienced the SemTalk language constructs as being as complex and powerful enough to express most of the business problems in the SemTalk application domains. The majority of users who create ontologies are domain experts and not experts for description logic. Only a minority of the resulting models is going to be interpreted by machines (except for SAP Product Configuration, which also requires additional language concepts understood by SAP Internet Pricing Configurator).

SemTalk Interfaces

In collaboration with Ontoprise GmbH we have created an F-Logic export interface to communicate with Ontobroker™ and OntoEdit™ [2].
In collaboration with Network Inference Ltd. SemTalk has been customized to cover full OWL graphically [3]. Because the SemTalk engine has been left unchanged, it can not be used to check complex expressions, disjointness or equivalence. The Network Inference product "Construct™" is designed for reasoning on the graphically created OWL model with the Cerebra™ engine.

SemTalk has export- import interfaces to RDFS and DAML. The main goal of these interfaces is to make use of existing ontologies in various SemTalk modelling scenarios. These interfaces are limited to the language subset of the SemTalk engine. E.g. a DAML disjointness axiom is being ignored by the DAML parser, DAML lists etc. are not being recognized. This limitation applies to all DAML and RDFS imports described in the following chapter. For the OWL implementation these restrictions do not apply anymore:

Full OWL can be parsed and generated. We expect significantly higher quality of the import once all tools will support OWL. It is currently not planned to complete the SemTalk DAML export. All further development will be done on OWL.

Results of the Experiment

Screenshots of the resulting models are in the appendix. The resulting models will be made available on http://www.semtalk.com

Loom	We did not try to convert the Lisp files
OilEd	After fixing some issues on the SemTalk DAML import, a subset of the model could be imported. The OildEd model differs significantly from the other models because it makes frequent use of those DAML features which are not support by SemTalk for DAML: intersectionOf, unionOf etc. On the other hand this model is quite close to OWL. We tried to rename some XML elements to OWL, but finally failed to import it mainly because of the combination of "cons"-ed Lists and operators.
OntoEdit	• Since SemTalk has only an F-Logik export and not an F-Logik import function, the flo file could not be imported. • Using DAML import classes, instances and properties could be imported. Cardinalities are ignored.
OpenKnoME	We did not try to convert the Smalltalk files
Protégé	Using RDFS import. Ignored by SemTalk RDFS Import even if the SemTalk engine could represent them: • OverridingProperty • Cardinalities • Allowed Values / Defaultvalues • All Data types • Inverse properties are mapped as properties
Terminae	We did not try to convert the text / Oil files
WebODE	Failed to import classes as rdf:description with rdf:type Class
KAON	Successful import after manually removing the XML-namespace "a:"

The overall impression from a SemTalk standpoint is, that SemTalk failed to import DAML models with complex expressions. This issue has already been fixed for OWL, which is in turn not supported by the current versions of the other tools. SemTalk succeeded in importing taxonomies from all tools, which support DAML or RDFS.

From a business point of view the lack of importing models having axioms and rich logical expressions is not very relevant since those expressions are not included in the other SemTalk methodologies such as Business Process Modelling. Being able to import taxonomies with subclassing and properties is the main point for our current customers.

Being a graphical OWL editor has not been the major goal of SemTalk in the past. The first solution for OWL is the Construct version of SemTalk developed with Network Inference

early 2003. The intension of "Construct" is to replace the non-graphical OilEd by an easy-to use graphical tool.

The problems we found using the more sophisticated features of OWL in practice are, that:

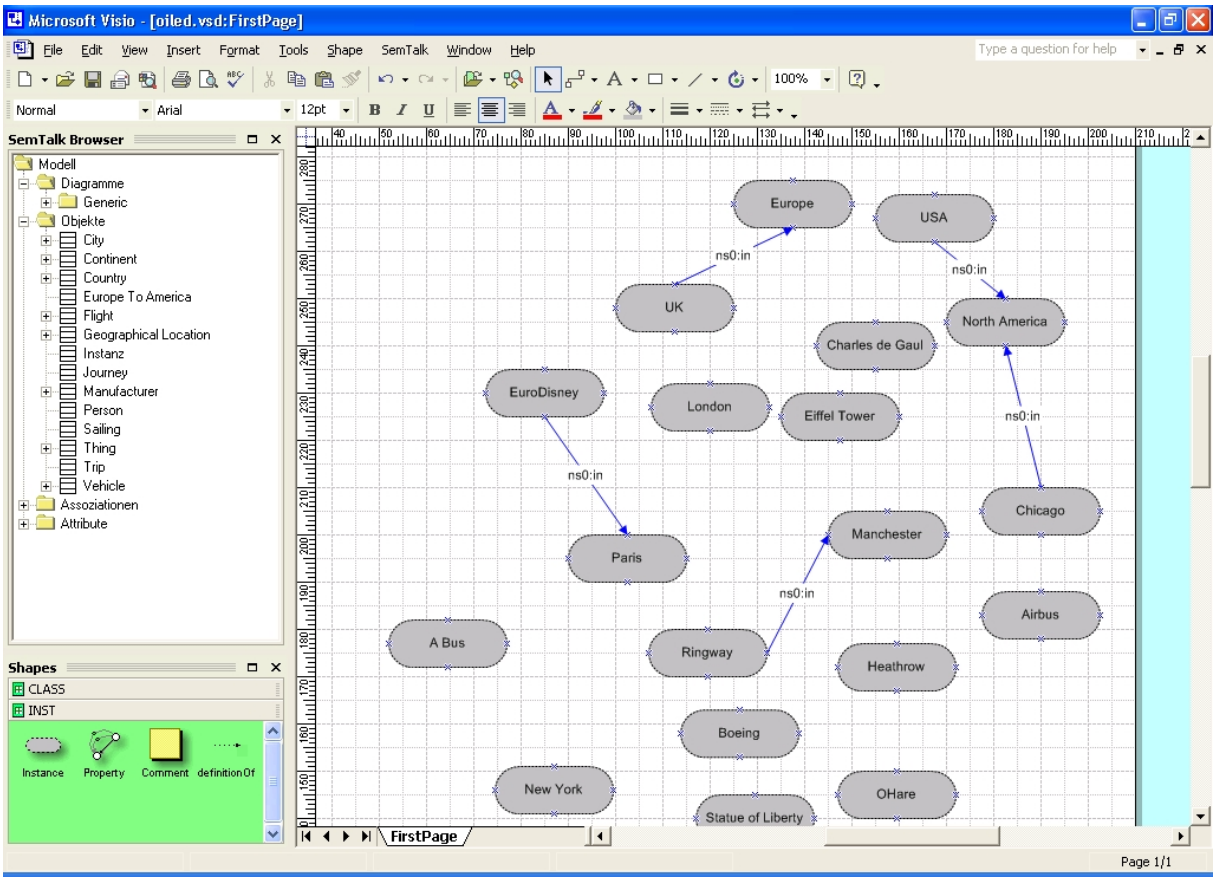
1. Most end users will not even try to understand description logic. Ontology modelling is very often ignored at all. The major problem which arises is how to use "subClassOf" properly. Concepts like disjointness, equivalence, one of etc. are not understood by casual users without further explanation.
2. A real WYSIWYG implementation with permanent and incremental consistency checking is needed to make it usable for a larger community, which none of the existing engines can provide yet.

References

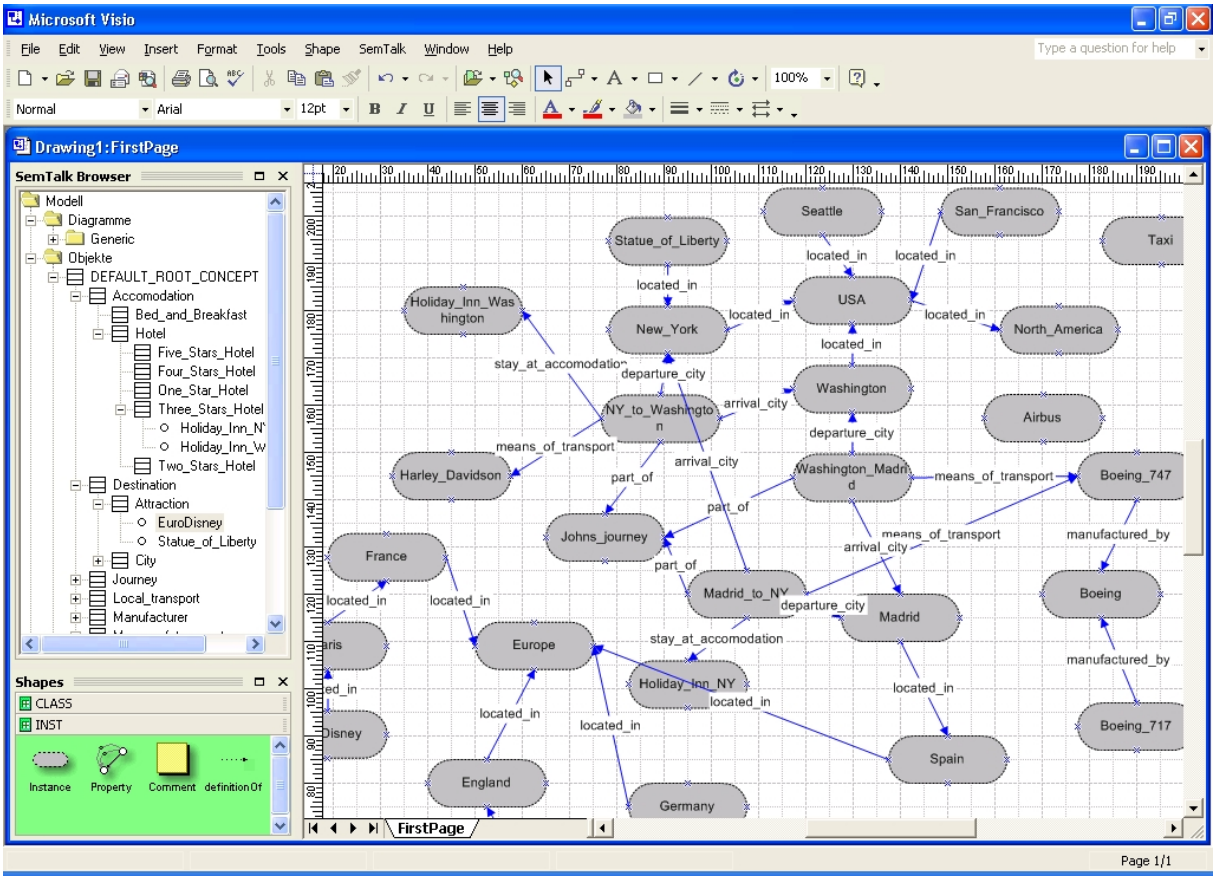
1. Fillies, C., Wood-Albrecht, G., Weichhardt, F.: A Pragmatic Application of the Semantic Web Using SemTalk, WWW2002, May 7-11, 2002, Honolulu, Hawaii, USA ACM 1-5811-449-5/02/0005
2. Fillies, C.; Sure,Y: On Visualizing the Semantic Web in MS Office, IV02 LONDON • ENGLAND
3. Fillies, C., Ng, G., Thunell, A.: Cerebra Construct: Inferences for End Users, WWW2003, May 20-24, 2002, Budapest, Hungary, Poster

Appendix Screenshots

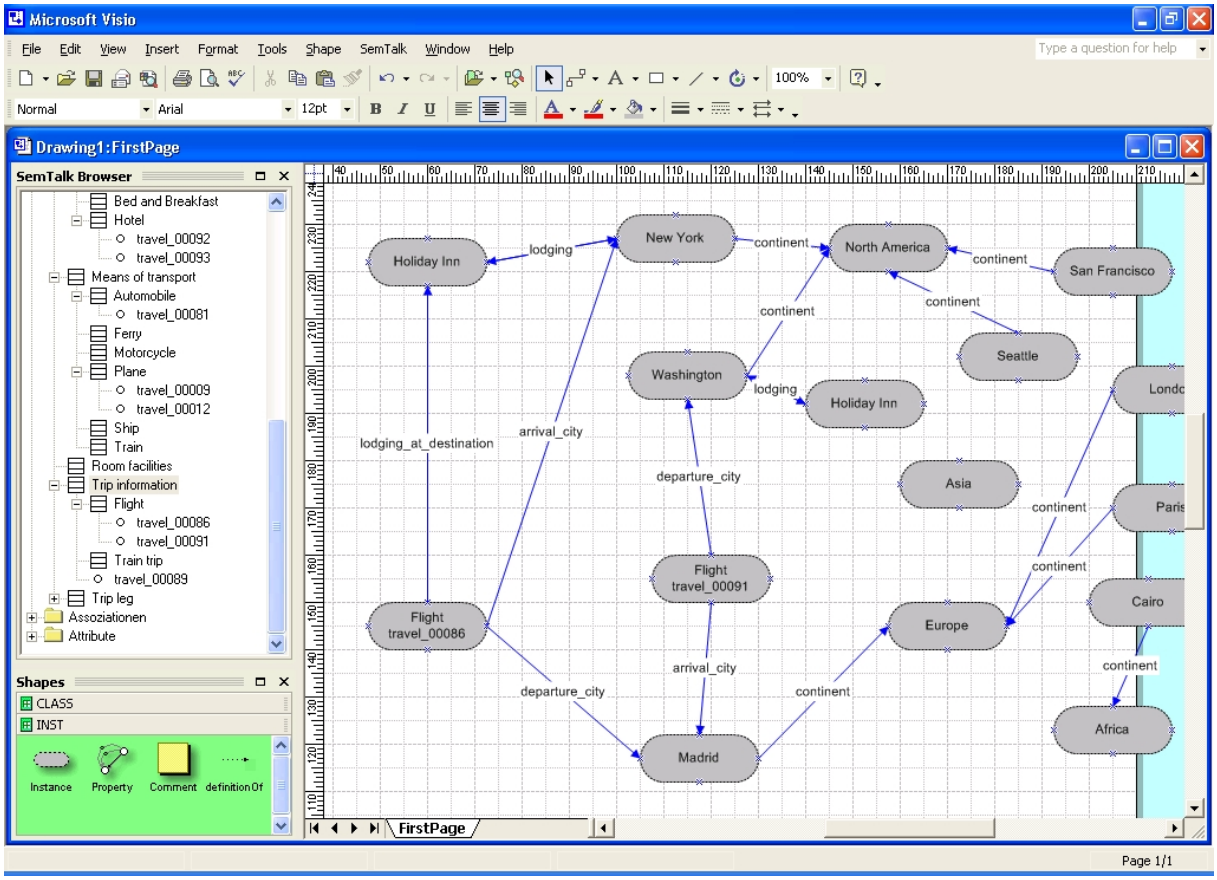
The following screenshots show results of imports from OilEd, OntoEdit, Protégé and KAON. The last screenshot shows a part of the OilEd model rebuild with the OWL shapeset made for Construct.



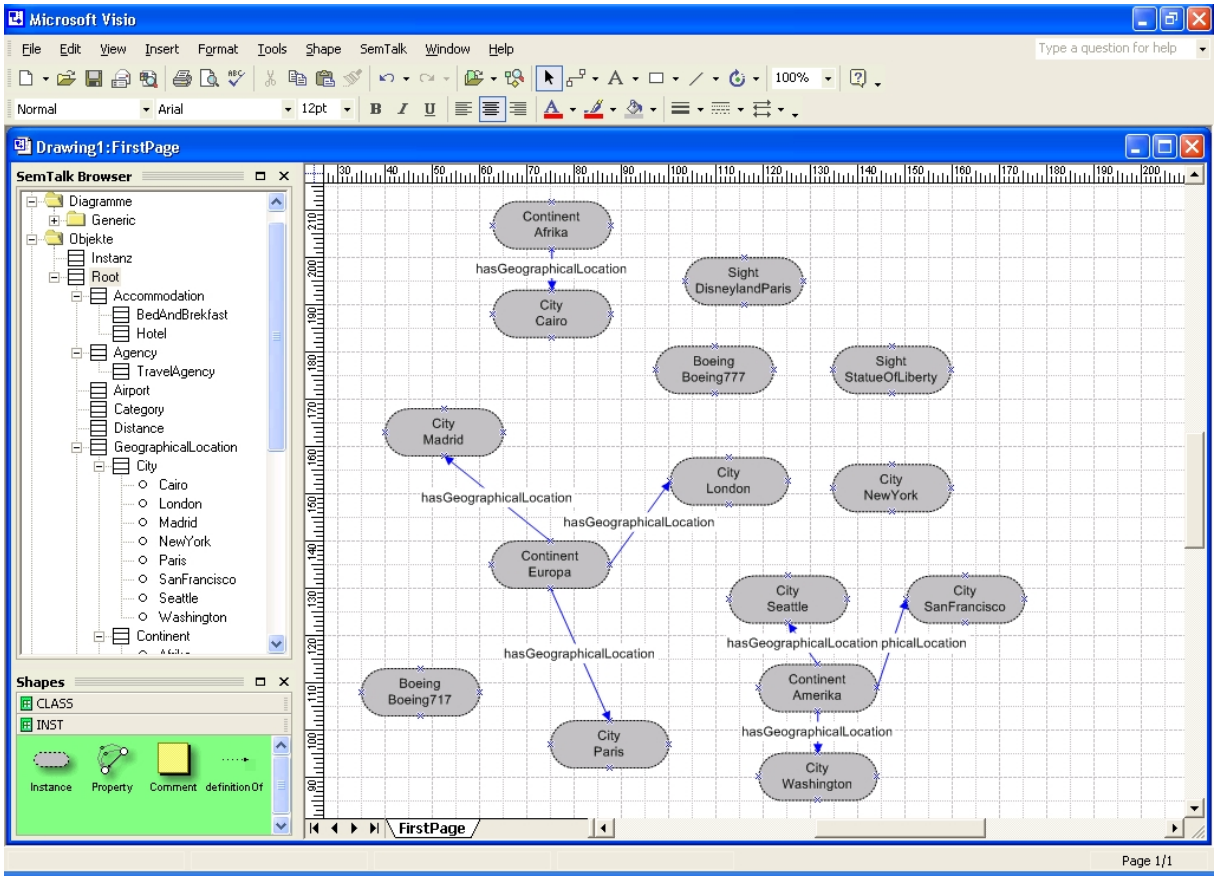
Screenshot 1 Oiled DAML Import



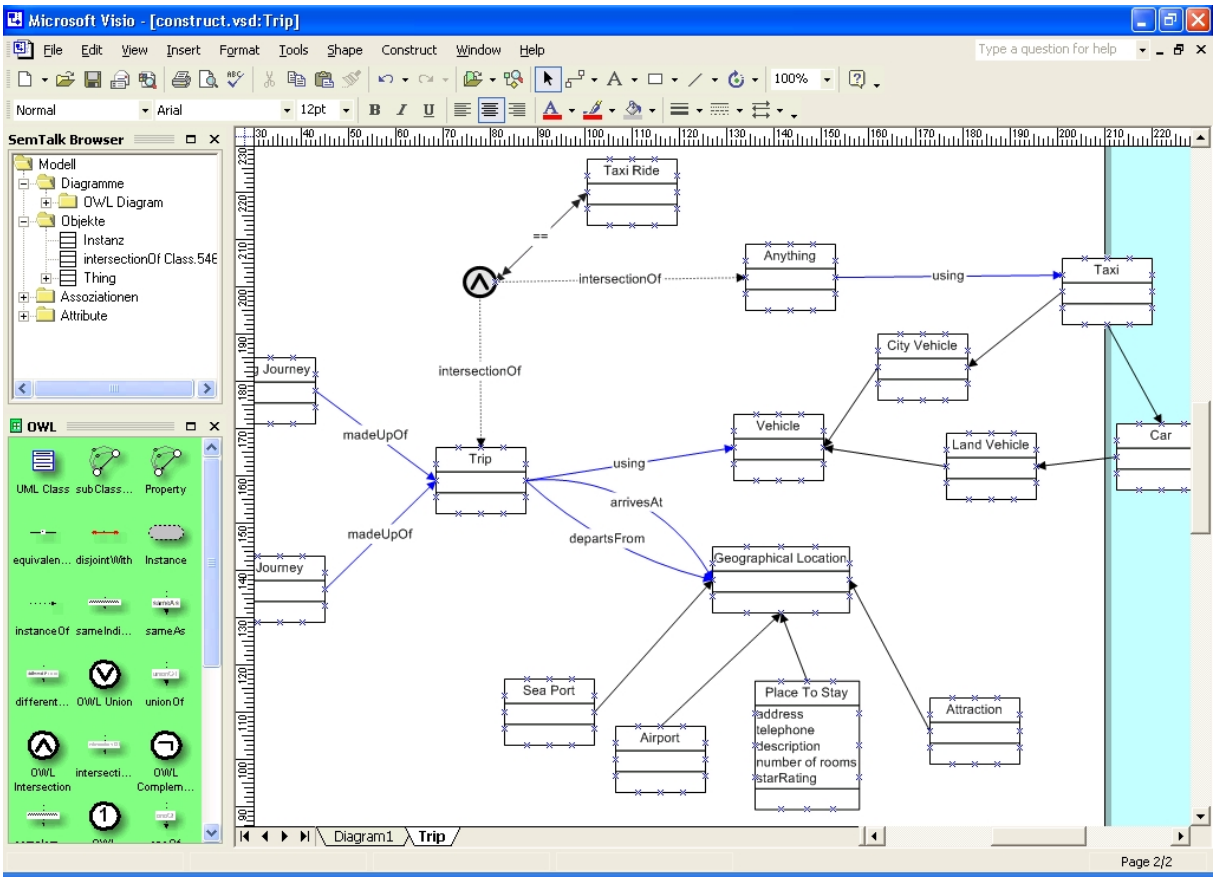
Screenshot 2 Instances of the OntoEdit DAML Import



Screenshot 3 Instances of the Protege RDFS Import



Screenshot 4 KAON DAML Import



Screenshot 5 Subset of the OilEd Model redone with the OWL Shapeset