

Semantics & Theory

Question about the ontology of Astronomical objects

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Reminder

Simulation Data Model uses SKOS concepts to tag published theoretical quantities.

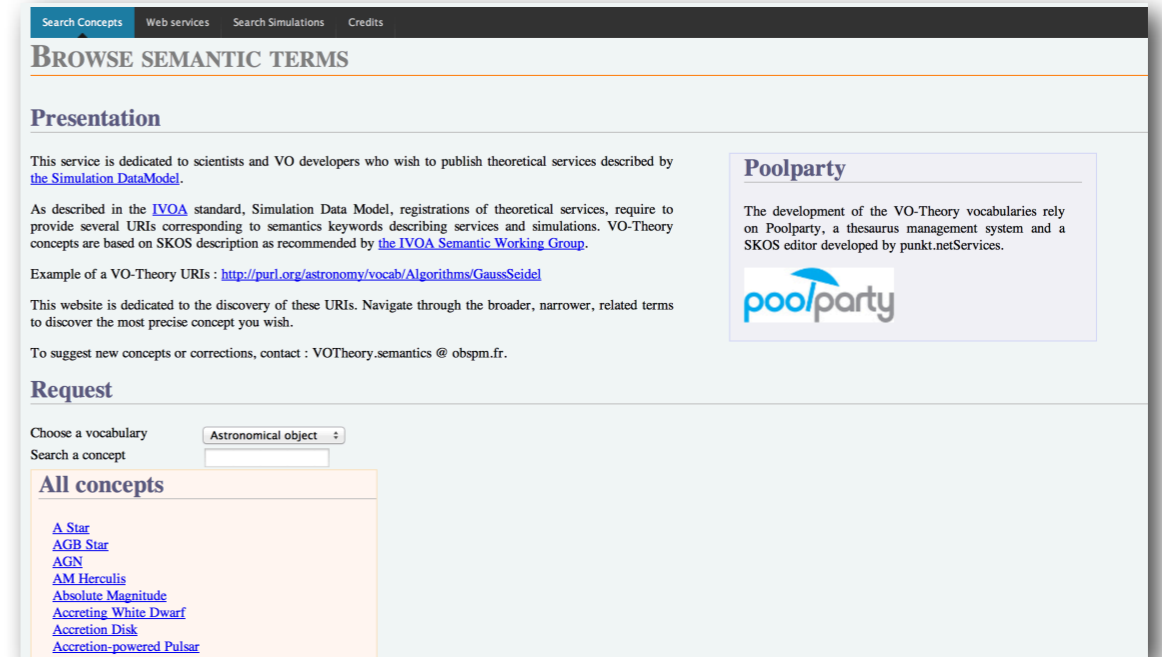
Classes :

- Physical quantities
- Physical processes
- Algorithms
- Representation Object Type
- Astronomical objects
- ...

Goals : use SKOS to discover simulations

Examples :

- *N-body simulations*
- *Models of large structures*
- *Spectra of O and B stars*
- *Models computing intensities of CO lines*



The screenshot shows the 'BROWSE SEMANTIC TERMS' page on the VOTheory website. The page has a navigation bar with links for 'Search Concepts', 'Web services', 'Search Simulations', and 'Credits'. The main content area is titled 'Presentation' and contains text explaining the service's purpose and its reliance on the IVOA standard and SKOS. It includes an example of a VO-Theory URI and contact information for suggestions. A 'Request' section features a dropdown menu for 'Astronomical object' and a search input field. Below this is a list of 'All concepts' with links to various astronomical terms like 'A Star', 'AGB Star', 'ACN', 'AM Herculis', 'Absolute Magnitude', 'Accreting White Dwarf', 'Accretion Disk', and 'Accretion-powered Pulsar'. A 'Poolparty' logo and description are also visible on the right side of the page.

<http://votheory.obspm.fr>

Two different kinds of vocabularies

- **Vocabularies build by the Theory I.G.**

- Physical quantities
- Physical processes
- Algorithms
- Representation Object Type
- ...



<http://poolparty.biz>

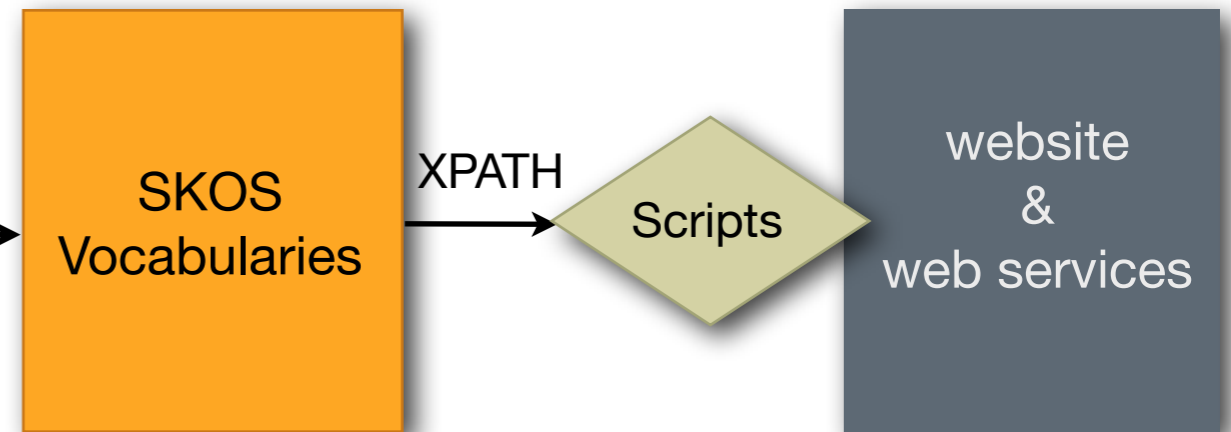


Use Poolparty

- to enter concepts
- to define relationships

Scripts

- Get SKOS vocabularies
- Correct URIs for IVOA
- Relationships between vocabularies



Two different kinds of vocabularies

- **Vocabulary derived of the Ontology of Astronomical Objects**

- Astronomical objects

Theory I.G. uses the ontology (OWL) depreciated in SKOS

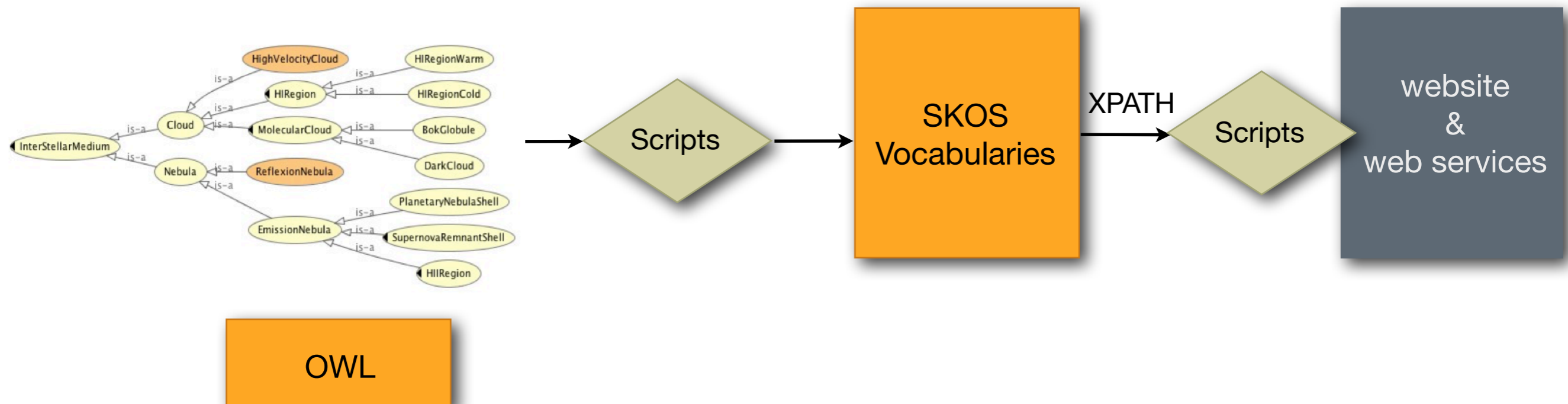


*International
Virtual
Observatory
Alliance*

Ontology of Astronomical Object Types

Version 1.3

IVOA Technical Note 17 January 2010



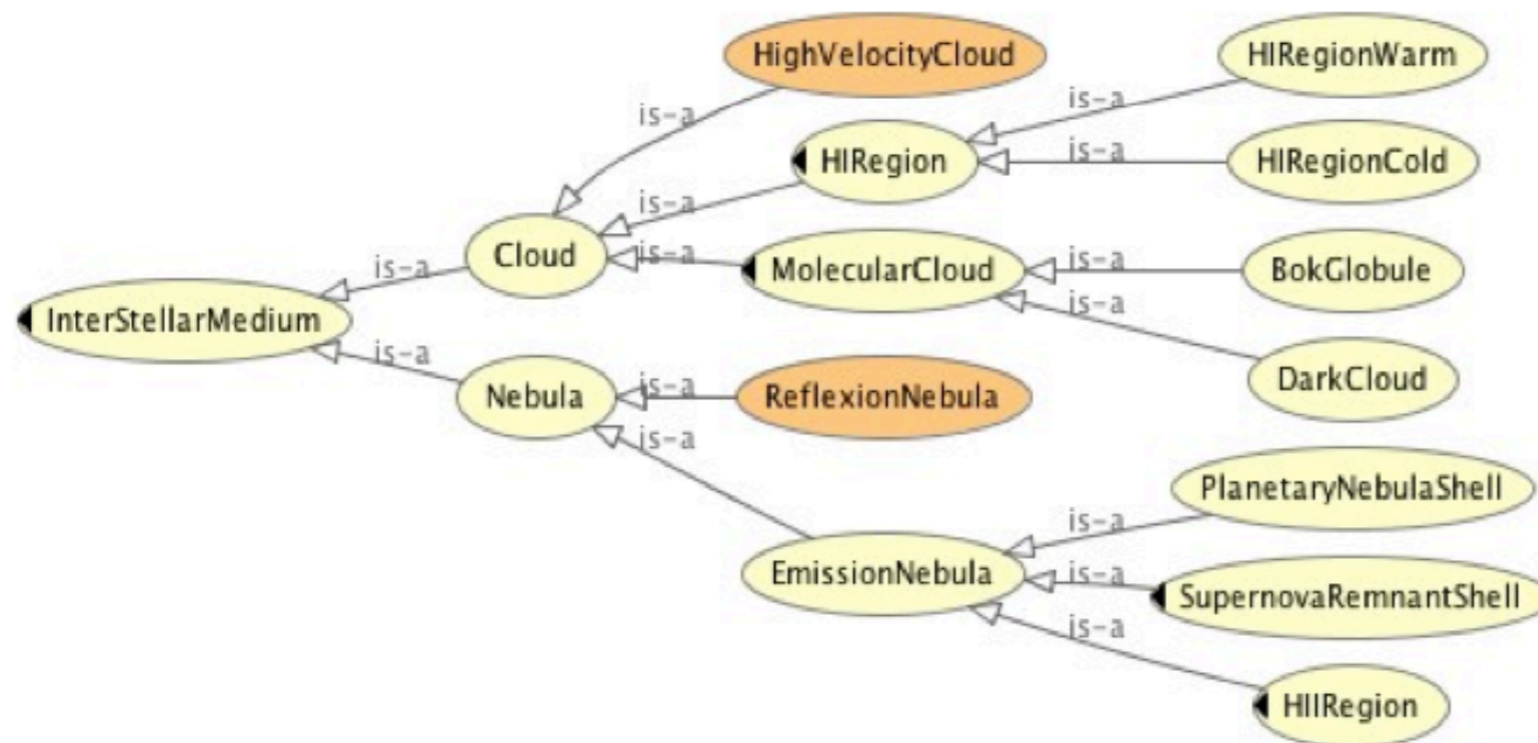
Requirement for Theory

- The ontology is not precise enough to describe simulations

Theory I.G. needs :

- Fine description of astronomical objects
- More elements of astronomical objects

Example for the interstellar medium :



Need :

- Diffuse cloud
- PDR
- Star Forming Region
- Class 0, Class 1, Class 2, ...
- Damped Lyman alpha system
- ...

It is difficult (impossible) to build a full ontology from scratch

Missing concepts are discovered when users / publishers need them.

Question

- How to make evolve the *vocabulary / ontology* of astronomical objects ?

Solution 1 :

Modification of the ontology with a similar procedure as for UCDs

Advantages :

- the vocabulary would be managed by experts of semantics
- only one reference : the ontology

Disadvantages :

- Would it be an heavy process to add terms to the ontology ?

Solution 2 :

Modification of the SKOS vocabulary by Theory I.G. then suggest modifications of the ontology

Advantage :

- fast evolution processe since Theory I.G. can add terms on the fly

Disadvantages :

- heavy work difficult to do by Theory I.G. alone
- more work to transform the SKOS vocabulary in OWL later