Semantics & Theory

Question about the ontology of Astronomical objects

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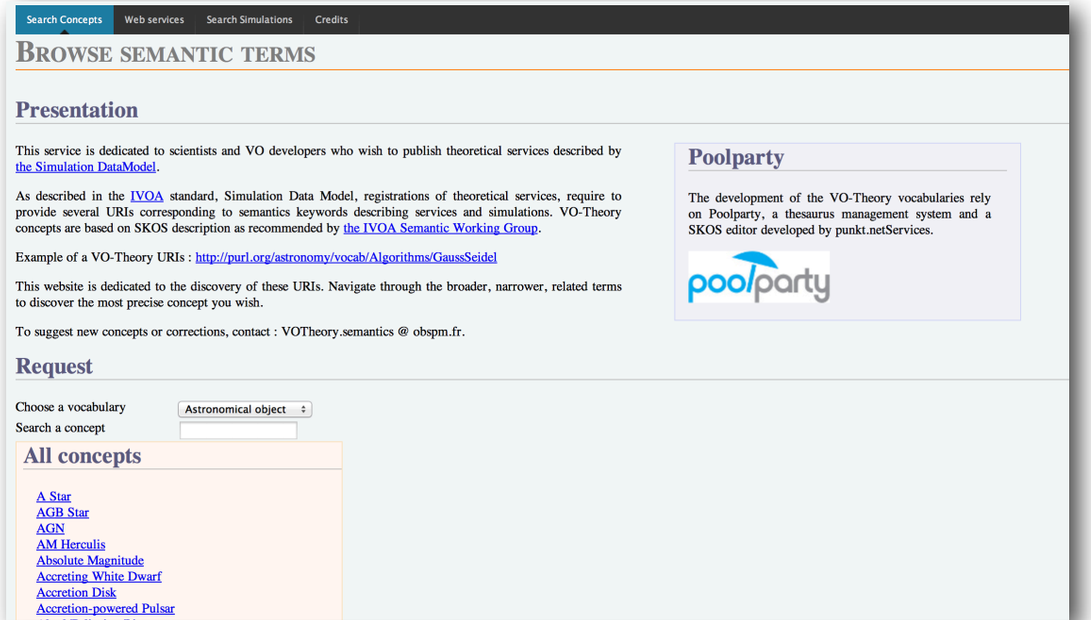
Reminder

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

Classes :

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



http://votheory.obspm.fr

Goals : use SKOS to discover simulations

Examples :

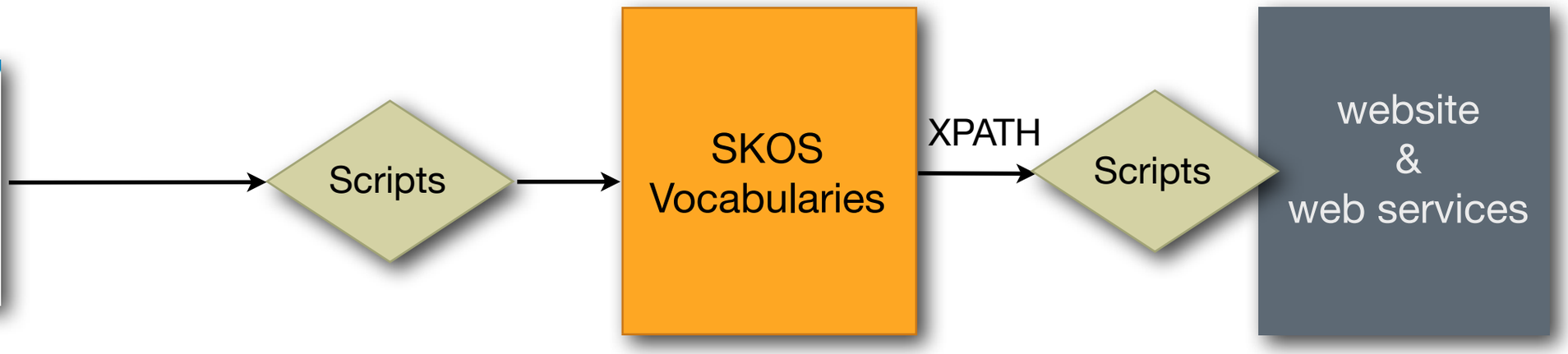
- *N-body simulations*
- *Models of large structures*
- *Spectra of O and B stars*
- *Models computing intensities of CO lines*

Two different kinds of vocabularies

- **Vocabularies build by the Theory I.G.**
  - Physical quantities
  - Physical processes
  - Algorithms
  - Representation Object Type
  - ...

poolparty

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

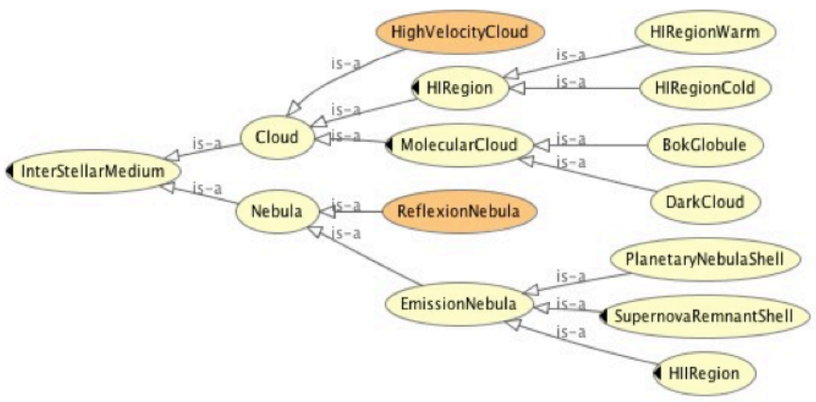
Theory I.G. uses the ontology (OWL) depreciated in SKOS

International Virtual Observatory Alliance

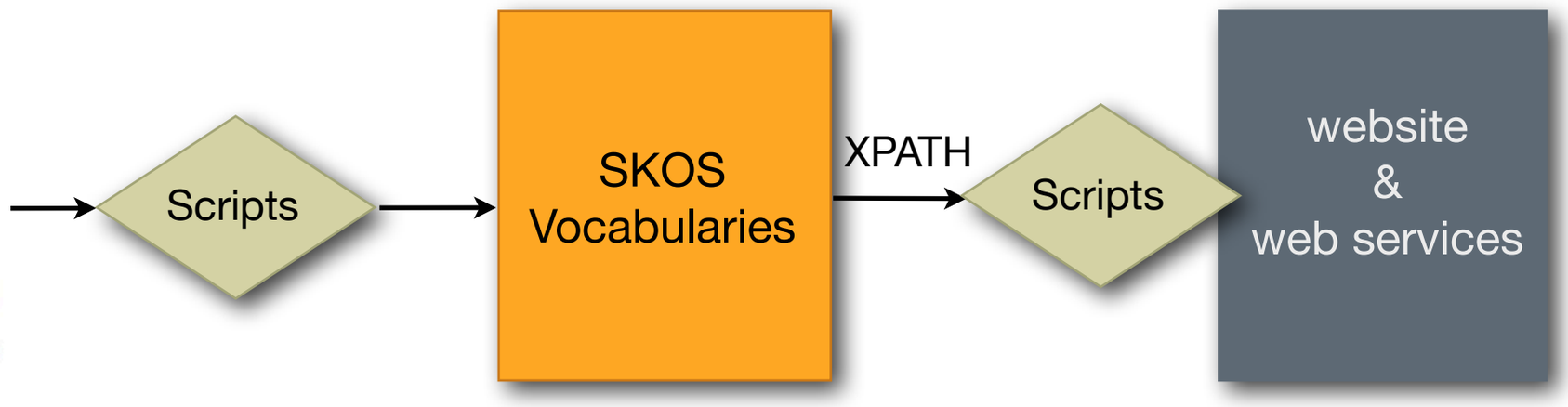
Ontology of Astronomical Object Types

Version 1.3

IVOA Technical Note 17 January 2010



OWL

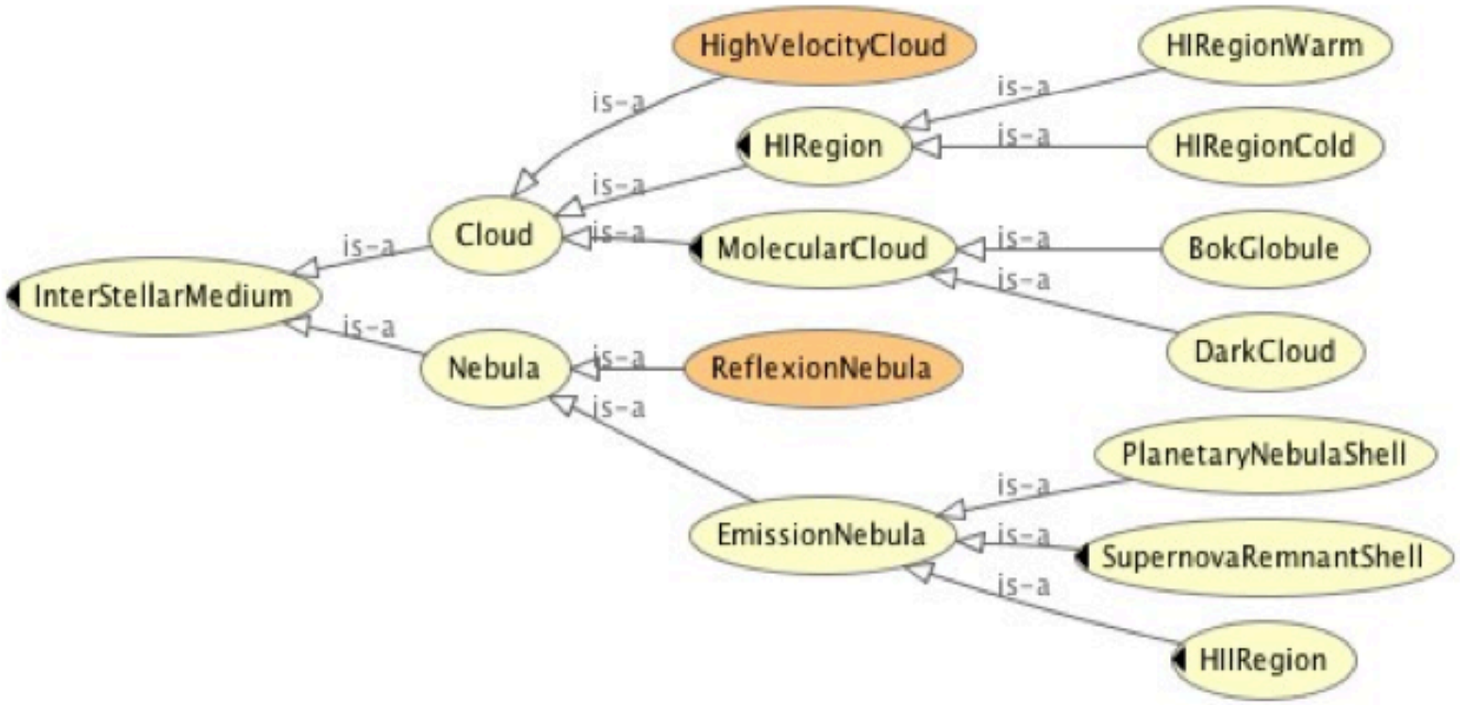


Requirement for Theory

- 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