

VO DATA MODELS

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I/OA

- Find the data
- Get the data
- Combine the data
- Understand the data

IVOA

- Standards take a lot of effort but are worthwhile.
- Example: X-ray astronomy
 - File standards established 1990
 - Slow evolution, basically the same
 - All missions can use the same software (beyond a certain point in the analysis)
- New instruments -> you need extensibility
 - abstractions are key

IVOA

- Main IVOA efforts
 - Registry (search resources)
 - UCD, VOQL (search information)
 - DAL (retrieve)
 - DM (combine and understand)
 - Web/grid (remote workflows)

WG STATUS

- Spectral DM: document updated and reformatted
- Spectral DM Java library prototype nearly ready
- Characterization: CDS group held wide discussions. B. Thomas working on Quantity/Char/STC approach.
- 3D data: I. Chilingarian presenting approach based on SIA and Characterization
- Space-Time Coordinates: Arnold proposed STC-Lite for simple use
- Atomic Line Data: Osuna, Dubernet, etc. - first internal draft ready
- Source catalogs: early draft in preparation (Osuna)

Semantics and Structure in the VO

- UCDs provide a data dictionary, let you be relatively precise about what quantity is meant
- UCDs are enough if all you have is a single simple table
- UCDs imply a simple degree of structure, but only in a vague way
- DMs let software interoperate when complicated substructure is present.
- UCDs and DMs coexist.

DM strategies

- We need to deploy VO services useful for astronomers - so we must identify simple but useful things to provide, and model the interfaces
- DM model document -> class library and DAL access protocol -> implies transmission format
- Basic reusable DM components -
Characterization, STC, Curation, SEDCoord etc.
- Use these and UCD tree in other specialized models - AtomicLine, Planets etc.

Example: Heliospheric science

- Design issue: when does something need to be in the base libraries and when can it be in a specialized piece?
- e.g. planets: STC must have the hooks for describing planetary frames; query language must not assume everything is found by RA and Dec
- What can VO do that PDS etc. can't?

Heliospheric/planetary UCDs

- Have to think hard to make sure things are generic and therefore extensible: pos.topo not pos.earth or mars.topo...
- Class-instance issue: “comet” is a class, “Halley” is an instance - but is “solar” a class, or an instance of “stellar”? Is “galaxy” an instance of “source type”, or a class?
- Noun-adjective issue: “arith.rate;phot.count” instead of “phot.count.rate” - minimizes number of distinct UCDs
- Hierarchy issue: src.class.luminosity not src.lumclass, allows grouping of related concepts
- Generalization: what things will apply to extrasolar planets once TPF/Darwin/etc are flying?

VOs talking to each other

- IVOA, EGSO, IHY....
- It's hard enough for the IVOA folks to talk to each other - we must be realistic about the amount of coordination possible across VOs
- Ideally, common DM components would help a lot.
- At a minimum, expressing the mapping between the DMs offers a route to interoperability.
- Maybe now is the time to identify the relevant people and have an exploratory meeting