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Theory session
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Presentation by H. Wozniak

AGENDA

- 1 - Semantic
- 2 - SNAP

What has been done from Victoria to Moscow

See : <http://www.ivoa.net/twiki/bin/viewauth/IVOA/InterOpMay2006Theory>

- Semantics

Preliminary list to describe simulation / code / dataset

A draft exists : update 14 september

Status : near completion

Some difficulties remain: physics / algorithm / description /

-SNAP

WD 0.1 C. Ghueller

particles +extension to mesh simulations (grid): hydro etc ...

near completion

- Data modeling

- Data formats

Theory group should do the list of the various formats used in each community

Jonathan's remark : Do not try to be comprehensive in a first step.

Theory semantics

Applications : codes and datasets

Name of the code:

Some problem for nameless codes

=> Registering should impose a name as the bibcode for codes corresponding to a paper.

Jonathan : Maybe it would be useful to have a secondary optional names ?

Problems of codes of codes : Example stellar synthesis

Need to provide Provenance of the datasets used for the secondary codes.

Herve : We should say at which level the code is compared to others.

Franck : This is an endless problem for example for codes using thousands of microscopic atomic and molecular physics data. Franck's suggestion : Need to be provided only in the documentation.

Jonathan : There is no clear limit between datasets used in a code coming from a huge simulation code and those which are just the required parameters.

Version du code

Several ways to deal with versioning

- date
- number in the name (Ex Gadget2)

Jonathan : Can be useful to do search by version sometimes.
Need also a release date different from the version.

Physics

Physical Objectives

General indications of what has to be modeled. (that is not the object)
Example: "evolution / formation / merging / stationnary state "

Physical Process

Detailed description of the physical processes
Need to do a list based on MNRAS/VO-Event
Need to cut the list or too long

Jonathan : We should determine which are the required process to describe the physics. No need to go in too much details.

Franck : Too detailed processes should go in the documentation.

Subject : Simulated Object

Algorithm

List of algorithms

Need to reducccce the list

Jonathan : No need of details. Just need to differentiate codes.

Theory group should think what will be the used of this field. If it is only used by humans, details algorithms should go in the description and be searchable by a google search.

Time Evolution

Flag

Protocol

Need to know if a code is parallel

UCD: comp.protocol

Usefull : for grid

??? : Grids are "souples" and there should not be any problem.

Long discussion with Jonathan, Franck and Mireille, Herve to know what has to be provided: all libraries, compiler, system, In the case of codes which source is downloadable, all informations to know what is required should be provided.

No clear conclusion : These informations must be provided but should be organized carelefully (dixit Fabrice)

Metadata :

- Type of results

- snapshot, animation, table, fits, catalogue d'objets, ...
- Result format
 - Format of the result
- algorithm parameters
 - Same as above for algorithm
- physical parameters
 - Physical parameters used
 - Long discussion because of a misleading of the theory group between UCDs and utypes.
 - We should not invent new UCDs for all parameters.
 - Herve gave the example of Hubble constant which would be interesting to be provided and tagged by an UCDs.
 - Franck remarks that in this case, codes modelling chemistry may have to provide all the thousands of chemical reaction rates as physical parameters.
 - Clearly, we have to think more carefully to this point.
 - Advice from Francois : We have to think on the point of view of an external user to determine what he might requires.

Bernard : We should also provide the number of version with any dataset...

Note: At a point in the discussions, it appeared that a webaddress is required towards the service, either for downloadable codes or full documentation. This used to be in the mailing list but disappeared from the document.

SNAP

- Main goal to retrieve a subset of simulation data
- Espace 3D
- cutout service

- 1 - Query on registry to find dataset
- 2 - return a list of candidats
- 3 - query on the data
- 4 - Choose a data : region/volume/ ...
- 5 - Data renvoyes en VOTable

Generalization of SNAP ?

- Example from Herve : Can we have 3D space where axes are not positions but physical quantities (density, ...)
- Jonathan gave an example.

particle/mesh

DRAFT : version 0.1

- 1- Search for available simulations and data

- 2 - Identification of subset of interest
- 3 - Snap request
- 4 - Data staging and delivery

Rem from Francois: To describe axes we should use STC (Space / Time / Coordinates)

Mireille's question : Can we choose a zone with something else than position as a high density region ?

Herve's answer : For the moment no.

Advice from Mireille, the VO-theory group should not forget to come back from time to time to the USECASEs.

Franck