A 5th thematic node in SA-IDIS: Planetary Dynamics & Extra-Terrestrial Matter

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Abstract

A fifth thematic node is being developed to complete the coverage of planetary science activities in IDIS. It will encompass both planetary dynamics and study of extra-terrestrial matter, and will be implemented by VO-Paris Data Centre. The node can be reached at:

http://voparis-europlanet.obspm.fr/

VO-Paris Data Centre

VO-Paris Data Centre (VOPDC) is a consortium of French research institutes. The main contributor is the Paris Observatory. Since 2002, VOPDC has been an active participant in the development of the astronomical VO, both at national (ASOVF) and international (IVOA) levels. In FP7, VOPDC is now a participant in EuroPlaNet IDIS activities, in the JRA4 (data models and added value services) as well as in the service activity (thematic node).

Scheduled activity in SA-IDIS

As defined in the EuroPlaNet proposal, the first role of the nodes in FP7 is to contribute to a central resource list in planetary science (currently accessible at http://europlanet.cesr.fr/n7/res). To meet the goal of the project, this resource list should promptly evolve towards a registry system similar to those existing in the IVOA. VOPDC contributes in the frame of JRA4 to a description system which will allow interoperability between data resources, and therefore to retrieve data of interest automatically.

Another role is to make the outputs of some other EuroPlaNet work packages available to a wide community. The areas of interest for this node include JRA1/task 2 (planetary dynamics aspects), and possibly some facilities in TNA2 (those related to planetary surfaces, especially when providing spectroscopic data or chemical analyses). The aim is to integrate the corresponding data in the IDIS system, so as to make them available easily in context.

Other activities will focus on providing access and support to VO-related tools, and on providing web implementation for new data bases developed in the institutes involved in VOPDC, mostly IMCCE and LESIA.

Services

VO-related tools of interest for planetary science will be accessible through the VO-Paris node, including user interface, documentation and references, and possibly use cases. This includes:

- references to selected, existing VO software tools (either online or to be downloaded).

- main interface to services developed at VO-Paris, such as Skybot, SSODnet… Skybot is a service of dynamic ephemeris allowing to identify moving objects in telescopic image archives; SSODnet is a VO-like data system using simplified infrastructure.

- a VO web portal demonstrator, addressing the local data resources in a first step. One of the goals of VOPDC is to connect ephemeris services with observational data bases. The demonstrator will therefore also serve as a use case to develop data access protocols, interoperability, and a future registry system.

- data access utilities, in particular a software library to read imaging and spectroscopy PDS-formatted data under GDL (open source environment). This is intended to complement the PDAP protocol to access ESA's Planetary Science Archive and similar data sets.

Data resources

VOPDC will also provide web implementation and VO support for new data resources developed

locally as by-products of research activity. Those encompass a much wider thematic field than the node, reflecting the activity in the local teams (IMCCE and LESIA). Although implemented at VOPDC, these resources will be accessible and referenced by the other IDIS nodes, whenever relevant, through their VO layer. The scheduled data resources are the initial scope of the VO web portal demonstrator. They include:

- Comet ephemeris data base
- Natural satellites data centre
- Nançay cometary database, from decametric spectroscopy
- Vertical profiles of Titan's atmosphere (from CIRS/Cassini), to be extended to other data sets (Mars…) in the future
- 20 years of CCD imaging of Solar System objects from Pic du Midi 1m-telescope, with Skybot indexing
- Molecular database (properties of molecules of cometary interest)
- Virtis/Venus-Express archive, similar to PSA's with complementary derived data such as wind maps... Test implementation of PDAP protocol
- Historical images from Meudon 1m-telescope
- the Encyclopedia of Exoplanets

As mentioned previously, existing data sets are use cases to study the extension of existing data models to planetary data, as well as the adaptation of existing VO-tools in this context. The node will be reachable on-line within summer 2009.