Geophysical Research Abstracts
Vol. 15, EGU2013-6726-1, 2013
EGU General Assembly 2013

Europlanet/IDIS: Combining Diverse Planetary Observations and Models

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Planetary research involves a diversity of research fields from astrophysics and plasma physics to atmospheric physics, climatology, spectroscopy and surface imaging. Data from all these disciplines are collected from various space-borne platforms or telescopes, supported by modelling teams and laboratory work. In order to interpret one set of data often supporting data from different disciplines and other missions are needed while the scientist does not always have the detailed expertise to access and utilize these observations.

The Integrated and Distributed Information System (IDIS) [1], developed in the framework of the Europlanet-RI project, implements a Virtual Observatory approach ([2] and [3]), where different data sets, stored in archives around the world and in different formats, are accessed, re-formatted and combined to meet the user's requirements without the need of familiarizing oneself with the different technical details. While observational astrophysical data from different observatories could already earlier be accessed via Virtual Observatories, this concept is now extended to diverse planetary data and related model data sets, spectral data bases etc.

A dedicated XML-based Europlanet Data Model (EPN-DM) [4] was developed based on data models from the planetary science community and the Virtual Observatory approach. A dedicated editor simplifies the registration of new resources. As the EPN-DM is a super-set of existing data models existing archives as well as new spectroscopic or chemical data bases for the interpretation of atmospheric or surface observations, or even modeling facilities at research institutes in Europe or Russia can be easily integrated and accessed via a Table Access Protocol (EPN-TAP) [5] adapted from the corresponding protocol of the International Virtual Observatory Alliance [6] (IVOA-TAP). EPN-TAP allows to search catalogues, retrieve data and make them available through standard IVOA tools if the access to the archive is compatible with IVOA standards. For some major data archives with different standards adaptation tools are available to make the access transparent to the user.

EuroPlaNet-IDIS has contributed to the definition of PDAP, the Planetary Data Access Protocol of the International Planetary Data Alliance (IPDA) [7] to access the major planetary data archives of NASA in the USA [8], ESA in Europe [9] and JAXA in Japan [10].

Acknowledgement:
Europlanet-RI was funded by the European Commission under the 7th Framework Program, grant 228319 "Capacities Specific Programme" - Research Infrastructures Action.

Reference:
[1] Details to IDIS and the Europlanet-RI via Web-site: http://www.idis.europlanet-ri.eu/
[2] Demonstrator implementation for Plasma-VO AMDA:
http://cdpp-amda.cesr.fr/DDHTML/index.html
[3] Demonstrator implementation for the IDIS-VO: http://www.idis-dyn.europlanet-ri.eu/vodev.shtml
[4] Europlanet Data Model EPN-DM:
http://www.europlanet-idis.fi/documents/public_documents/EPN-DM-v2.0.pdf
[5] Europlanet Table Access Protocol EPN-TAP:
http://www.europlanet-idis.fi/documents/public_documents/EPN-TAPV_0.26.pdf
[6] International Virtual Observatory Alliance IVOA: http://www.ivoa.net
[7] International Planetary Data Alliance IPDA: http://planetarydata.org/
[8] NASA's Planetary Data System: http://pds.jpl.nasa.gov/
[9] ESA's Planetary Science Archive PSA: http://www.sciops.esa.int/index.php?project=PSA
[10] JAXAs Data Archive and Transmission System DARTS: http://darts.isas.jaxa.jp/