ESA Planetary Science Archive Overview and Inter-operability aspects

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Planetary Science Archive

- Available since March 2004:
  - [http://www.rssd.esa.int/PSA](http://www.rssd.esa.int/PSA)
- Active development, PSA 3.0 to come in December/January

- PSA Data Handling Team @ ESA-ESAC (Spain)
  - David Heather lead
  - Archive Scientist, setting up the requirements
  - Interface with Instrument Teams
  - Validating Data Sets

- PSA Development Team @ ESA-ESAC (Spain)
  - Christophe Arviset lead
  - PSA systems software development
PSA Main drivers

- All data in a single archive
- All data in PDS format
- Re-use other ESA archive work (e.g., astronomy)
- Modular and flexible architecture
- Interoperable
  - IPDA
  - Data Model PDS format
  - Data access protocol
PSA: one archive, several missions

- Huygens
- Smart-1
- Giotto
- Rosetta
- Mars Express
- Venus Express

All Data in PDS Format
All in PDS format

- Compatibility of long existing PDS format for all US planetary missions
- PDS format being taken up by IPDA
  - Compatibility with other planetary missions
  - Globalisation of planetary archiving standards
- Datasets produced by various Instrument Teams
- Need to validate and verify any volume / dataset according to:
  - Planetary Data System standards reference (PDS, NASA).
  - Specific PSA constraints and extensions.
- PVV ensures PDS/PSA compliancy in all datasets accessible from PSA.
  - PVV distributed to Instrument Teams for pre-validation
An open 3-tier architecture: 
Separate the Data from the Presentation

Standard GUI

Map Based GUI

DataSet Browser

External Archives / Applications

Middle Tier (Java / XML)

Inter-operability Module

Business logic: access to database access to data products

Meta Data in Database

DB Ingest

Data Products on hard disks

Christophe ARVISET
PSA Standard User Interface

- User friendly web access: Java Applet
  - http://www.rssd.esa.int/PSA

- Powerful queries, organized by panel
  - General query panels
  - Mission / instrument specific panels

- Hierarchical data presentation
  - 1 Dataset -> several dataproductions

- Public data accessible to all, proprietary data accessible only to privileged users

- Images preview (icons, full image)

- Quick download (1 click) at various processing levels, shopping basket retrieval
PSA Mars Map Based Interface

- Interface for Mars Express image data
  - [http://www.rssd.esa.int/PSA](http://www.rssd.esa.int/PSA)
  - Java Applet

- No need to be an expert
  - Easy for general public

- Area selection by mouse
  - Display images footprints

- Image download by 1 mouse click
  - Some are big (be patient! )

- Go back and forth to the standard interface to refine search parameters
PSA Data Set Browser Interface

- Opening Screen
  - Click on the instrument that interests you
  - Select the data set you wish to look at

- Browse through the directories to locate the files you want

- Right click the product you want to save etc. to bring up the menu

- Left click to view directly (where possible)
Interoperability ESA PSA – NASA PDS

- Prototype in development in the IPDA context
- From Mars Map Browser, select region of interest
- Contact PSA and PDS using the PDAP (Planetary Data Access Protocol)
  - Re-use of IVOA experience
  - Adapted to PDS
- Display NASA PDS and ESA PSA images
Interoperability aspects in Planetary

- IPDA has representatives from all national agencies active in planetary data collection

- Standards being defined in IPDA
  - Data Generation Process
  - Data access protocols (e.g., PDAP)
  - Data Model (PDS evolution)

- Closer link required between IPDA and EuroPlanet
  - In particular IDIS and IPDA standards

- Closer link required between Planetary and Astronomy
  - Registry
  - Access protocols
  - But very different Data Model and data generation process