The Planetary Science Archive of ESA. D. J. Heather[1], M. Barthelemy[2], C. Arviset[2], O. Witasse[1] and A. Rossi[1], [1]European Space Agency, ESTEC, Keplerlaan 1, 2201 AZ Noordwijk, The Netherlands, dheather@rssd.esa.int, [2]European Space Agency, ESAC, Villafranca del Castillo, 28080 Madrid, Spain

Introduction: Scientific and engineering data from ESA's planetary missions are made accessible to the world-wide scientific community via the Planetary Science Archive (PSA), see [1]. The PSA consists of several online services incorporating search, preview, download, notification and delivery basket functionality. Besides data from the GIOTTO spacecraft and several ground-based cometary observations, the PSA currently contains data from the Mars Express and Huygens missions. Independent reviews for the first Venus Express data are scheduled for spring 2008, and the first Venus Express data should be released on the PSA in late spring / early summer 2008. The first data release from the Rosetta mission are also expected to be released on the PSA by spring 2008. Preparation for the release of data from the Smart-1 spacecraft are ongoing.

Data Services: The focus of the PSA activities is on the long-term preservation of data and knowledge from ESA's planetary missions. Scientific users can access the data online using several interfaces:

1. Classical Interface

The Classical Interface (Fig 1) allows complex parameter based queries, providing the end user with a facility to complete very specific searches on meta-data and geometrical parameters. By nature, this interface requires careful use and a heavy interaction with the end-user to input and control the relevant search parameters.

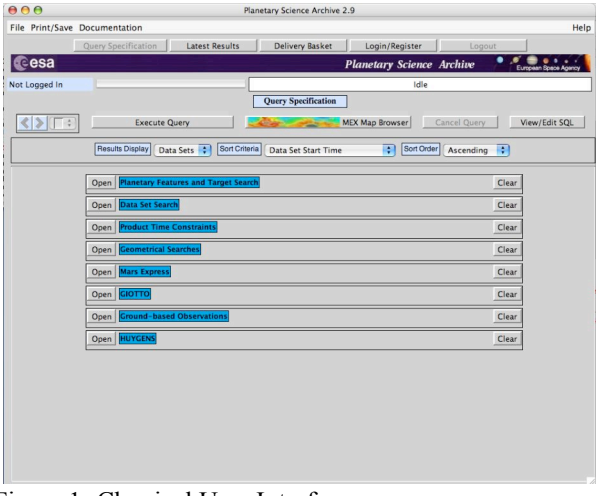

Figure 1: Classical User Interface

2. Map-based Interface

The Map-based Interface (Fig 2) is currently operational only for Mars Express HRSC and OMEGA data. This interface allows an end-user to specify a region-of-interest by dragging a box onto a base map of Mars. From this interface, it is possible to directly visualize query results. The Map-based and Classical interfaces are linked and cross-compatible. If a user defines a region-of-interest in the Map-based interface, the results can be refined by entering more detailed search parameters in the Classical interface.

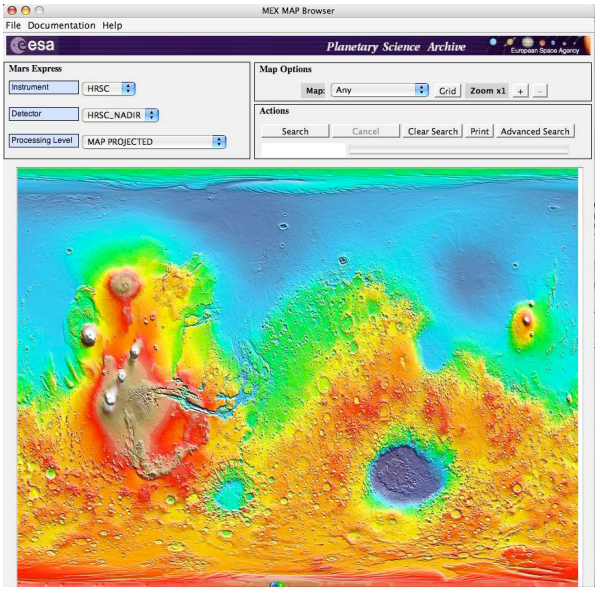

Figure 2: Map-based User Interface

3. Dataset Browser Interface

The Dataset Browser Interface (Fig 3) is designed for more experienced users, and allows for direct browsing and access of the dataset content through ftp-tree search. Each dataset contains documentation and calibration information in addition to the scientific or engineering data.

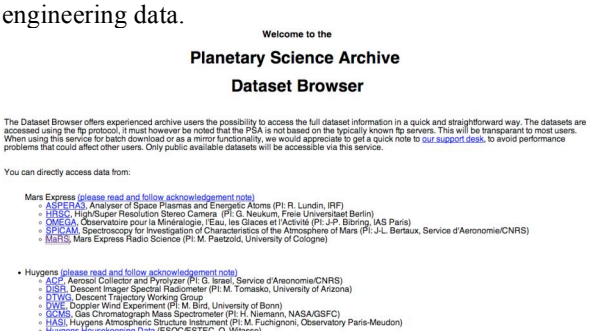

Figure 3: Data set Browser Interface

Data Processing: All data are prepared by the corresponding instrument teams, mostly located in Europe. PSA staff supports the instrument teams in the full archiving process, starting from the definition of the data products, definition of data labels towards the validation and ingestion of the products into the archive. To ensure a common archiving approach for all of ESA's planetary missions as well as to provide a similar data quality and standard for end users, a dataset validation tool was developed supporting the instrument teams in syntactically validating their datasets before delivering to the PSA. In future, a further validation step is envisaged at the PSA to ensure correctness, completeness and cross correlation of all information, label and data content, within a dataset.

Archive Approach: All data in the PSA are compatible with the Planetary Data System (PDS) Standard of NASA, and the PSA staff work in close collaboration with the PDS staff.

A PSA advisory body has been established in order to assess the continuing development of the PSA. The advisory panel aim to meet regularly, reviewing the progress on defined requirements and providing feedback on our activities.

New areas of data exploitation include attempts to standardize the way in which planetary data sets are constructed internationally. This is driving towards 'interoperability' of the data systems maintained at all Agencies archiving planetary data, and it is hoped that in the long-run any data can be obtained from any of the co-operating archives using the same protocol. Representatives from most major archiving agencies are members of the International Planetary Data Alliance (IPDA) [2], and regular meetings are now taking place as standards are discussed.

References:

[1] PSA Home Page, http://www.rssd.esa.int/psa.
[2] IPDA Home Page, http://planetarydata.org.