



PlanetServer/EarthServer: Big Data analytics in Planetary Science

Angelo Pio Rossi (1), Jelmer Oosthoek (1), Peter Baumann (1), Alan Beccati (1), Federico Cantini (1), Dimitar Misev (1), Roberto Orosei (2), Jessica Flahaut (3), Piero Campalani (1), and Vikram Unnithan (1)

(1) Jacobs University Bremen, Bremen, Germany (an.rossi@jacobs-university.de), (2) Istituto Nazionale di Astrofisica, Bologna, Italy, (3) Vrije Universiteit Amsterdam, The Netherlands

Planetary data are freely available on PDS/PSA archives and alike (e.g. Heather et al., 2013). Their exploitation by the community is somewhat limited by the variable availability of calibrated/higher level datasets. An additional complexity of these multi-experiment, multi-mission datasets is related to the heterogeneity of data themselves, rather than their volume.

Orbital - so far - data are best suited for an inclusion in array databases (Baumann et al., 1994). Most lander- or rover-based remote sensing experiment (and possibly, in-situ as well) are suitable for similar approaches, although the complexity of coordinate reference systems (CRS) is higher in the latter case.

PlanetServer, the Planetary Service of the EC FP7 e-infrastructure project EarthServer (<http://earthserver.eu>) is a state-of-art online data exploration and analysis system based on the Open Geospatial Consortium (OGC) standards for Mars orbital data.

It provides access to topographic, panchromatic, multispectral and hyperspectral calibrated data. While its core focus has been on hyperspectral data analysis through the OGC Web Coverage Processing Service (Oosthoek et al., 2013; Rossi et al., 2013), the Service progressively expanded to host also sounding radar data (Cantini et al., this volume). Additionally, both single swath and mosaicked imagery and topographic data are being added to the Service, deriving from the HRSC experiment (e.g. Jaumann et al., 2007; Gwinner et al., 2009)

The current Mars-centric focus can be extended to other planetary bodies and most components are general purpose ones, making possible its application to the Moon, Mercury or alike.

The Planetary Service of EarthServer is accessible on <http://www.planetserver.eu>

References:

- Baumann, P. (1994) VLDB J. 4 (3), 401–444, Special Issue on Spatial Database Systems.
- Cantini, F. et al. (2014) Geophys. Res. Abs., Vol. 16, #EGU2014-3784, this volume
- Heather, D., et al.(2013) EuroPlanet Sci. Congr. #EPSC2013-626
- Gwinner, K., et al., Earth Planet. Sci. Lett., 294, 506–519, doi:10.1016/j.epsl.2009.11.007.
- Oosthoek, J.H.P, et al. (2013) Advances in Space Research. DOI: 10.1016/j.asr.2013.07.002
- Rossi, A. P., et al. (2013) XLDB Workshop Europe, CERN, Switzerland