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Serving OGC-Compliant Maps of the Mars Express HRSC and SRC Data

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Being in its fourth year of operation, the HRSC/SRC instrument onboard ESA's Mars Express orbiter has acquired over 1400 images in colour and stereo during nearly 4500 orbits around the red planet. Approximately two thirds of the surface has been covered in a resolution of at least 200m per pixel. As the amount is rising, there is a fundamental need for interactive applications for visualising, selecting and analysis of data. Other instruments on recent orbiter missions are also constantly recording new images of Mars' surface, so that techniques for overlaying and blending of various instruments' datasets are needed. These techniques are already well defined by the Open Geospatial Consortium (OGC) and exploited by many applications. The aim here is to show the necessary steps to process Martian data and develop a prototype of such an interoperable data serving system which would be accessible through a website and using OGC-defined service connections. In this way, the HRSC and SRC data sets can also be made available for OGC-compliant mapping applications like e. g. NASA World Wind.

Currently, adequate images of HRSC are selected, brought to a common map scale and combined to a global Mars mosaic using VICAR software routines developed at JPL and DLR. This mosaic is converted to GeoTIFF or Erdas Imagine (HDA) format to make it accessible by spatially-enabled applications. To handle the large amount of data represented by a single image layer, the raster file is split into a number of smaller images connected by a geometric index file. Additionally, internal overviews are created, resulting in better display speeds for low resolution (global scale) map requests. The UMN MapServer environment finally provides access to the data by web applications and services and allows on-the-fly resampling into new projections.