

Standards Change Request

Use of Externally Maintained Formats in PDS Archives
Elizabeth D. Rye

SCR 3-1054
Sept. 13, 2005

Problem:

As part of the effort to develop standards for the use of the JPEG 2000 compression format, it became clear that there have traditionally been implicit assumptions in the PDS underlying our use of externally supported and maintained formats. However, these assumptions are not documented anywhere in the Standards Reference.

Proposed Solution:

This SCR attempts to establish a consensus for the assumptions we've been operating under and codify them in a new chapter of the Standards Reference.

Requested Changes:

1. Add a new chapter entitled "Use of Externally Maintained Formats in PDS Archives" to the Standards. The new chapter is attached below.

Impact Assessment:

The impact of this SCR on PDS software and tools should be minimal, because it merely codifies existing practice that has never been explicitly stated. Of course, the Standards Reference will need to be updated as described above.

Additional Information:

None.

Chapter X. Use of Externally Maintained Formats in PDS Archives

The PDS has frequently made use of externally maintained formats for its archive products because of their widespread popularity within a portion of the scientific community. Sometimes these formats can co-exist alongside PDS formats through the use of detached labels, such as for FITS, ISIS, or VICAR images; but sometimes they are incompatible with traditional PDS formats. Such is the case for compressed data and some document formats.

The PDS has a relatively unique goal of maintaining data in formats that will remain accessible over multiple decades. Users must be able to easily extract useful science data from PDS products long after software and computer platforms, commonly in use at the time an archive was created, have become obsolete.

This goal is usually not shared by the maintainers of external formats. The PDS has no control over these formats and any updates or changes that may be made to them. Therefore, care must be taken when using these formats to ensure that the long term goals of the PDS are met.

The following rules shall therefore apply to the use of external formats for PDS archive data:

1. The data product must be compliant with the externally maintained format.
2. The product meta-data must include an indication of the version of the external format with which the product complies.
3. The PDS must have detailed documentation regarding the external format at the version level of any products in its holdings. If practical, the documentation should be included in the archive.
4. If the product will not be archived in a standard PDS format:
 - a) Software, in the form of source code and executables for each PDS supported platform, must be included in the archive.

- b) The algorithms used in conversion (e.g. of ISIS to PDS) or decompression (e.g. MOC compressed to traditional raster image) must be documented and included in the archive.
5. All science related meta-data must be stored in either the PDS label or the index table, not just in format specific headers.
 6. All external formats used in PDS archives must be available for use by the PDS and its users on a royalty and license fee free basis (i.e., not encumbered by licensing agreements). There must be no intellectual property rights issues involved with the format in question.