PDS4 Mission Report: MAVEN

PDS Management Council
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PDS4 MAVEN Report: Overview

- MAVEN Status:
  - Mission Timeline
  - SIS Development
- PDS4 MAVEN Support:
  - Data Products
  - Tools
  - Peer Review

MAVEN Timeline

Date	Event
2013 Nov 18	Launch Window Opens
2014 Mar	Final SIS updates due
2014 Sep	Mars Orbital Insertion
2014 Nov	Start of Science Operations (5 weeks after MOI)
2015 Apr	First Data Delivery (6 months after Start of Science Ops)

Spacecraft Status

Launch!

SIS Development

- SIS's under development
  - 2 instruments have delivered draft versions
  - ATMOS supporting LADEE NMS SIS development; will be basis for NGIMS SIS
  - PF key parameters and raw data will require separate SIS's
- Final version (due Mar 2014)

MAVEN Data Products

Product	Data Format	PDS4 Data Object(s)
IUVS Raw/Calibrated	FITS Images	Header, Array_2D_Image, Table_Binary
NGIMS Calibrated	ASCII Tables	Table_Character
STATIC Calibrated	CDF	Header, Array_1D, Array_2D
SEP Calibrated	CDF	Header, Array_1D, Array_2D
SWEA Calibrated	CDF	Header, Array_1D, Array_2D
SWIA Calibrated	CDF	Header, Array_1D, Array_2D
LPW/EUV Calibrated	CDF	Header, Array_1D, Array_2D
MAG Calibrated	ASCII Tables	Header, Table_Character
Key Parameters	ASCII Tables	Table_Character/Table_Delimited
PF Raw	Telemetry	Header, Table_Binary
ACC	ASCII Tables	Table_Character
SPICE	SPICE Kernels	SPICE_Kernel

PDS4 Data Product Support

- **FITS Images**
  - ATMOS has done testing with simple FITS files.
  - ATMOS has provided sample PDS4 labels to IUVS.
- **CDF**
  - MAVEN has agreed to the CDF archive requirements.
    - Requirement part of archive SIS's.
  - PPI collecting tools for supporting CDF archiving:
    - Metadata display – cdfdump (GSFC), pds.cdf.CDF (PPI)
    - PDF4 compliance – pds.cdf.Check (PPI)
    - Compliant CDF – cdfconvert (GSFC)
    - PDS4 labels – igpp.docgen (PPI) + Velocity templates
    - Format Transformation – CDF to Table (PPI, dev.)
  - PPI has produced and validated sample PDS4 CDF labels using ARTEMIS data.

Stable/Tested | Needs Finishing/Testing | Not Ready

PDS4 Data Product Support

- **ASCII Tables**
  - ASCII tables have undergone widespread testing.
  - Table format verification tool
    - ditdos/write (PPI, dev) – converts table to VO Table
- **Telemetry**
  - PF raw data archive will be fixed format binary tables.
    - Data will be separated into individual APID's.
    - Data will be uncompressed.
  - The raw telemetry used by the instrument teams (interleaved, with compression) will be "safed".
- **SPICE Kernels**
  - NAIF will work with MAVEN in designing and archiving their SPICE products

Stable/Tested | Needs Finishing/Testing | Not Ready

Archive Support Tools

Archive Generation Support

- **Label Generation**
  - Generate Tool (EN)
  - XML generation/translation tool (ATMOS)
  - igpp.docgen (PPI)
- **Label Validation**
  - Validate Tool (EN)
  - oXygen or similar (off-the-shelf)

Peer Review

- MAVEN does not have any planned cruise data return.
  - Review of science data products will have to await the start of science operations at Mars.
- Peer review will be held in two stages:
  - The planned archive structure and products (as described in the SIS) will be reviewed during cruise.
  - Actual data products will be reviewed once they become available.

Additional Preparations

- ATMOS and PPI are coordinating development of their MAVEN archive webpages.
- PPI plans on using PDS3 data migration to develop tools and procedures that will facilitate the validation and archive of the MAVEN data sets.

Backup Slides

Requirements for Archival CDF

To ensure data in a CDF file will be in an archivable form

1) Create CDF compliant with version 3.4 or later.
2) Use single file CDF.
3) No compression (file or variable).
4) No fragmented variables (all data for a variable must be contiguous in the file).
5) Use only "zVariables" (also recommended by the CDF standard)
6) All data records are physical (record variance for data variables is "VARY")

To aid in the generation of PDS metadata it is advisable to include

1) CDF Tool compliant metadata.
2) ISTP/IACG compliant metadata.