Geosciences Node

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Geosciences Node Active Missions

- Odyssey, MER, LRO, MSL, MESSENGER
  - Quarterly releases are happening routinely (semi-annual for MESSENGER). No problems.
- GRAIL
  - Derived data were released July 1, 2014; final release July 1, 2015.
- MRO
  - New CRISM MTRDR (Map-projected Targeted RDRs) to be released.
    - Will probably be our most popular derived CRISM product.
  - MRO SHARAD team based at ASI have not delivered since December 2012.
  - U.S. SHARAD team members led by Bruce Campbell have begun producing derived data ("radargrams").
    - Release 1, July 11, 2014, covered Dec. 6, 2006-Dec. 15, 2007.
    - Release 2, Aug. 13, 2014, covered Dec. 16, 2007-Sept. 8, 2010.
    - Will have approximately monthly releases until caught up, then will continue on MRO quarterly schedule.
- Mars Express
  - MARSIS team at ASI have not delivered EDR or subsurface RDR data since June 2008.

InSight Archive Development

Revised development schedule:

Start	End	Task
Now	1/31/2015	Teams prepare first drafts of SISs, PDS labels
2/1/2015	3/31/2015	Teams prepare review-ready EDR SISs, sample products, PDS labels
4/1/2015	6/30/2015	PDS conducts EDR peer reviews
	7/1/2015	EDR peer reviews are complete
	8/18/2015	GDS 4.0 freeze
	3/8/2016	Launch
	9/20/2016	Landing

- Teams that delegate EDR production to MIPL may have a different schedule (cameras, Auxiliary Payload Sensor Subsystem (APSS)).
- The RDR schedule is TBD; some teams may do RDRs at the same time as EDRs.

InSight Archive Development

- Heat Flow and Physical Properties Probe (HP^3) and Radiometer (RAD) - Geo
  - Team is revising draft SIS. Geo is developing labels.
- Seismic Experiment for Investigating the Subsurface (SEIS) - Geo
  - Team is revising draft SIS. Geo is developing labels.
- Rotation and Interior Structure Experiment (RISE) - Geo
  - Team is working with EN and Dick Simpson to create PDS4 labels for raw (DSN TRK-2-34) data.
- Instrument Deployment Arm (IDA) - Geo
  - Project plans to archive these data as tables.
  - No details of product contents have been given yet.

Mars 2020 Rover

- Launch window July-Sept. 2020
- Preparation for later sample return mission
- Science objectives are focused on geoscience, therefore Geo is the logical choice for lead node

Instrument	P.I.	Archiving Node
Mastcam-Z	James Bell, ASU	Imaging
Engineering Cameras	JPL	Imaging
SuperCam	Roger Wiens, LANL	Geosciences
PIXL	Abigail Allwood, JPL	Geosciences
SHERLOC	Luther Beegle, JPL	Geosciences
MOXIE	Michael Hecht, MIT	Atmospheres
MEDA	José Antonio Rodríguez-Manfredi, INTA (Spain)	Atmospheres
RIMFAX	Svein-Erik Hamran, FFI (Norway)	Geosciences
SPICE		NAIF

PIXL = Planetary Instrument for X-ray Lithography. SHERLOC = Scanning Habitable Environments with Raman & Luminescence for Organics and Chemicals. MOXIE = Mars Oxygen ISRU Experiment. MEDA = Mars Environmental Dynamics Analyser. RIMFAX = Radar Imager for Mars' Subsurface Exploration. INTA = Instituto Nacional de Tecnica Aeroespacial. FFI = Forsvarets Forskning Institute.

PDS4 Work

- PDS4 Working Groups and Tiger Teams
  - Data Design Working Group
    - Acceptable Data Formats Tiger Team
    - Metadata Consistency Tiger Team
    - Geometry Working Group
    - NSSDC Working Group
  - Change Control Board
  - FTE load ≈ 0.35
    - Staff time supporting DDWG activities including tiger teams: ~ 20% of Guinness's time
    - Staff time supporting CCB: ~ 10% of Stein's time
    - Staff time developing PDS4 designs for InSight: ~ 5% of Slavney's time
    - Staff time upgrading registry software (a one-time task): ~ 8 hours

PDS4 Software

- Tools we use
  - Oxygen XML editor
  - Perl script to populate XML labels
- Tools we need
  - Conversion between PDS acceptable image formats and popular image formats
  - Human-readable display of XML label in web browser
  - Better XML editor tuned specifically for PDS4
  - Local Data Dictionary builder
  - Binary table reader

Backup

PDS4 Work

- InSight-driven development
  - Mission data dictionary
- Status of migration of PDS3 archives
  - Phoenix
    - Robotic Arm migration is complete.
    - TEGA migration is in progress.
  - Priorities for migrating other archives are still TBD.
    - We don’t plan to migrate everything we have.
    - We will wait to migrate accumulating archives until they are complete. These account for the bulk of our holdings.
    - Priority will be given to those archives that would offer users a greater benefit as PDS4 archives than they do now as PDS3 archives.

InSight Archive Development at Other Nodes

- Instrument Deployment Camera (IDC) and Instrument Context Camera (ICC) - Imaging
  - Schedule revised due to changes in the camera design and flight software updates. The peer review has been deferred from 8/14 to 4/15.
  - Updated Interface Control Document now in signature cycle.
  - Draft SISes for both the camera data and archive bundle are undergoing internal review by Imaging, MIPL and the InSight camera representative.
  - The Imaging dictionary is in good shape to support the camera raw data products. **Need the Geometry dictionary for landed data to be firm by 11/1/14** to adhere to current archive development schedule.
- Auxiliary Payload Sensor Subsystem (APSS; temperature, wind and pressure) - Atmospheres
  - SIS and label design in progress.
- Magnetometer (MAG) - PPI
  - SIS and label design in progress.
- SPICE - NAIF
  - NAIF will produce the SPICE archive, using the PDS4 standard.

Plans 2015-2019

Improved User Services

- Re-design web site based on a Content Management System
- Continue to improve ANB and ODE based on user feedback, e.g…
  - For ODE:
    - Simplify data product search
    - Add basic usage tutorials
    - Improve map visualization
    - Increase data download speed
  - For ANB:
    - Improve target/data colocation
    - Enhance interactive image processing
    - Provide additional data format transformations
- Network connectivity
  - Currently working with Washington U. network group to test high-speed data transfers using Aspera software
  - Recent test with GSFC moved ~1 terabyte of LOLA data to Geo in less than 9 hours. Average speed 281 Mbps (>10 times faster than FTP), peak speeds of 750 Mbps.
  - Speed depends on network support (Internet 2), firewall support, and fast data storage.
  - Tests are being done to support a proposal with other WU groups to ask the University to buy the Aspera license.
- Workshops
  - We continue to support workshops on popular data sets, as detailed in previous node reports.