

PDS Geosciences Node Report

Management Council Face-to-Face Meeting

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PDS Geosciences Node
September 29, 2015

What's New – Geo Major Initiatives

- **Missions**

- **Mars InSight Lander, launch March 2016, first release April 2017**

- HP3 and RISE peer reviews are in progress; others not started
 - Analyst's Notebook under consideration by Project
 - Discussion of AN prompted InSight Project to consider adding documentarian function for operations
 - Amended Archive Plan to include archiving of engineering telemetry data

- **Mars 2020 Rover, launch summer 2020**

- Draft archive plan ready; most ICDs between PDS and teams are in place
 - PDR has been rescheduled from September 2015 to February 2016
 - IDS (Instrument Data Services, aka MIPL) will generate EDRs for several instrument teams; some are still in discussion
 - Sample cache archive planned to include details about drill samples collected for later retrieval (time, location, before/after images, other measurements)

Mars 2020 Sample Caching

- **Mars 2020 will collect drill cores, place them in caches, and drop them in designated locations for retrieval by a later mission.**
- **Documentation of sample collection and cache placement to include:**
 - Unique identifier and description of drill core
 - Location of drilling event
 - Date and time of drilling event
 - Location of cache in which sample was deposited
 - Date and time of cache drop
 - List of observations related to drilling event
 - For each observation, its unique identifier (e.g. PDS data product LID), description, time, and type (e.g. “pre-drill image”)
 - Report of rationale and context for drilling event, following standard format similar to that used by Ocean Drilling Program reports
 - End-to-end tracking of drills from plans to uplinked sequences to data products
- **Project has designated Returned Sample Science archive representative.**

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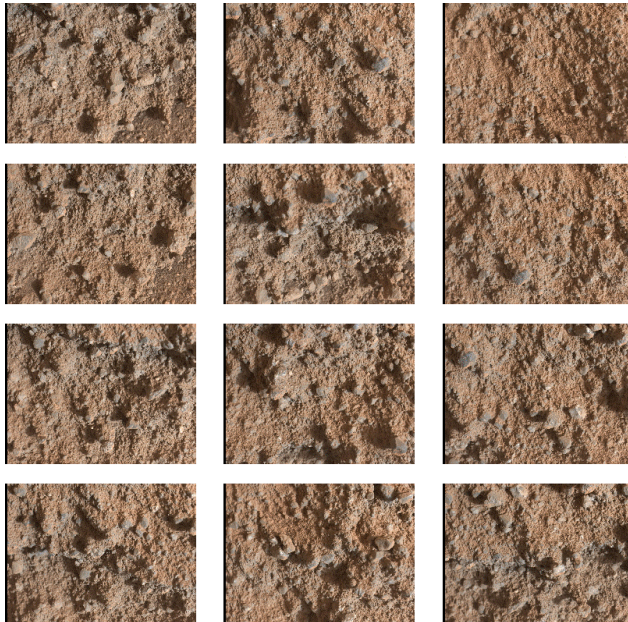
- **Discovery mission?**
 - Step 1 selection is in Sept. 2015; final Dec. 2016
- **New Frontiers mission?**
- **Instruments on missions**
 - Bepi Colombo MORE (Mercury Orbiter Radio Science), Co-I Sami Asmar, JPL
 - ExoMars 2018 MOMA (Mars Organics Molecule Analyzer), joint development by Max Planck and Goddard
- **Individual data providers**
 - 8 PDART and MDAP selections in 2014
 - 39 proposers for PDART, MDAP and other programs in 2015
 - The Geosciences Node Spectral Library will receive contributions from many of these providers
- **Ralph Milliken, Brown Univ., submitted a PDART 2015 proposal (with Arvidson as Co-I) to convert RELAB spectral library to PDS4**
 - If selected, will help design and develop interface to RELAB, and serve as a mirror site
 - RELAB spectra will be incorporated into Geosciences Node Spectral Library

- **PDS4 development**
 - **Spectral Library Data Dictionary**
 - Local dictionary for laboratory spectral measurements
 - Capture metadata about the samples and measurement conditions
 - **Geometry Data Dictionary**
 - **Mission dictionaries for InSight and Mars 2020**
 - Coordinating with Imaging Node on InSight dictionary
 - **Tom Stein assumes role of CCB Chair 12/1/15**
- **IPDA**
 - **Tom Stein is now Deputy Chair**

- **WURN (Washington University Research Network)**
 - Geo Node is a key participant in the University development of an institutional research network funded by the University and NSF.
 - Initially will provide a high speed (10 Gb/s) internal network and connection to Internet 2 shared by research groups with large scale data movement requirements.
 - Geo Node testing of data movement technologies was instrumental in WU decision to purchase Aspera data transfer software.
 - Have already tested Aspera for LRO LOLA and MRO CRISM deliveries.
 - Will begin offering Aspera capability for all Geo Node data providers starting in October 2015.
 - Hope to use Aspera to transfer large data sets to NSSDCA, ~60 TB by 12/31/15
 - Next phase will increase speed to 40 Gb/s, fully operational by late 2016.

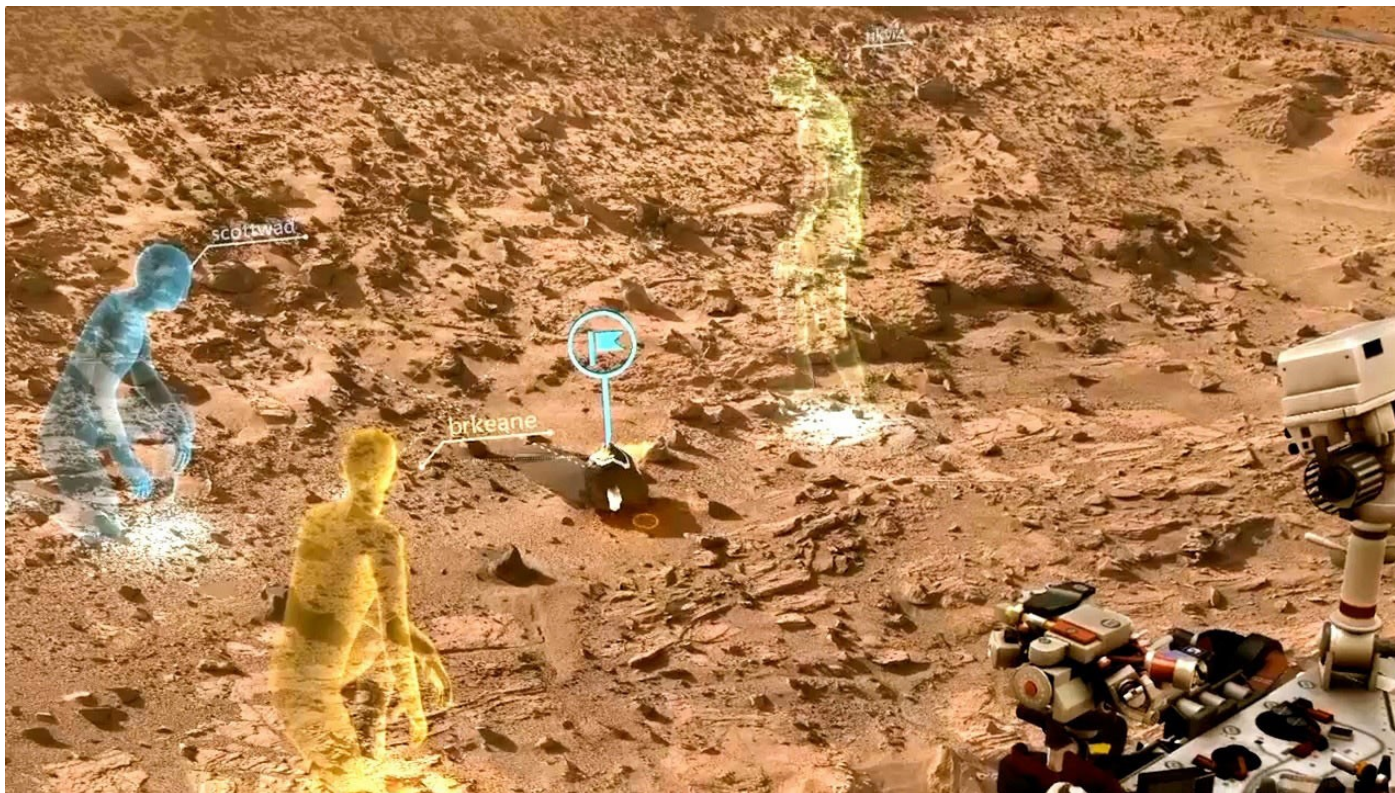
- **Geosciences Node web site redesign**
 - Make it easier for new and returning users to find what they want
 - Allow for easier updates, monitoring and maintenance
- **Analyst's Notebook Notes**
 - New collaboration tool for Analyst's Notebooks to allow users to register for accounts, keep private notes on data of interest, and share comments, links, questions and annotated images with self-defined peer groups

- **Analyst's Notebook Context Mosaics**
 - The MSL AN includes Geo-produced context mosaics where none exist in the PDS archive, using the free Microsoft Research ICE (Image Composite Editor).
 - Will expand to MER AN.



What's New – Geo Major Initiatives continued

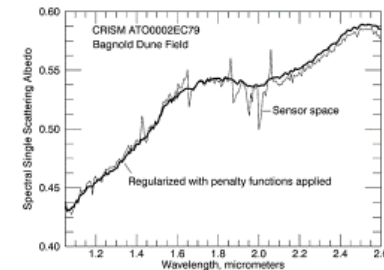
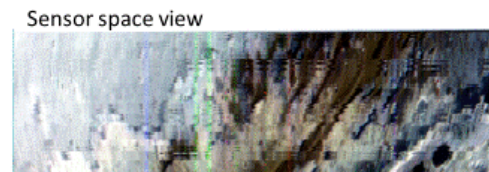
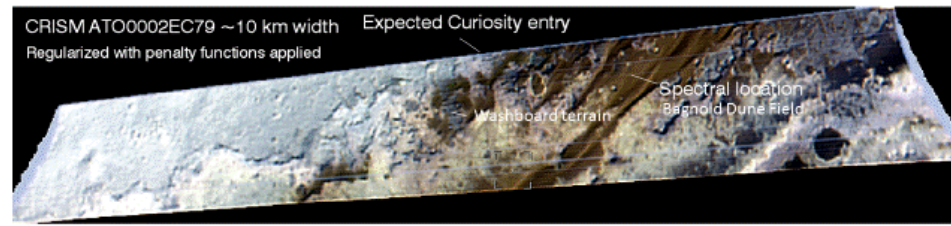
- Incorporation of JPL / Microsoft HoloLens into the Analyst's Notebook to visualize stereo image data sets



- **ODE improvements**
 - **Combine separate form- and map-based searches into single interface**
 - **Enhance search by using facet filtering techniques by incorporating Solr search platform**
 - **Use ArcGIS query layer interface to improve map load performance and support additional search filters without requiring map rebuilds**
 - **Work with EN and other interested nodes to develop consistent PDS REST interface protocol**



Joseph O'Sullivan
Samuel C. Sachs Professor of
Electrical Engineering,
Washington University School of
Engineering



Prof. Joseph O'Sullivan, Dept. of Electrical Engineering, WU

- Co-Investigator in the new 5-year PDS Geosciences Node effort
- Expert in advanced data processing with emphasis on retrieval of signal in presence of noise
- Has already provided advice on MRO CRISM data processing and also Opportunity Alpha Particle X-ray Spectrometer data sets
- Will be available to help validate new data sets before ingestion and posting
- In addition, will provide advice to the community on a case-by-case basis

Migration Plans FY 2016-17

- **Data sets to be migrated from PDS3 to PDS4**
 - **CRISM Spectral Library**
 - **MGS MOLA (Laser Altimeter)**
 - Still a popular data set although several years old
 - Will be a good test case for ingesting PDS4 data into ODE
 - **Remaining Phoenix data sets**
 - Robotic Arm already migrated
 - Working with funded MDAP proposal to migrate TEGA data
- **Other data sets to be considered**
 - **Selected MESSENGER data sets**
 - **Derived Radio Science data set (for example, GRAIL)**

Interactions with Individual Data Providers

- **The Geo Node procedure is:**
 - Determine whether the proposed data set belongs at Geo; if not, direct the proposer to the appropriate node.
 - Explain what is involved in creating a PDS archive (e.g. <http://pds-geosciences.wustl.edu/dataserv/proposerhelp.html>).
 - Send a letter of acknowledgement to be included in the proposal.
- **It's important that PDS nodes present a consistent message to individual proposers asking for advice.**
 - For example, the Imaging Node followed our lead on their web page for proposers.
 - We should have a good answer to the question “How much work will this be?” (that is, help them figure out costs).
 - We shouldn't write their proposals for them (unless paid to do so).

Potential Issues Over Next 24 Months

- **InSight**
 - Peer reviews are taking longer than expected. Only HP3 and RISE progressing.
- **PDS4 Registry**
 - How should Geo be making use of “The Registry”?
 - Should we be registering individual PDS3 products? What’s the plan?
 - How can Geo get access to other nodes’ registries?
- **FY15 Annual Report is due at end of reporting period, right?**
- **CAN reporting requirements**
 - Specific requirements for reporting web access and data downloads?
 - Any changes to monthly report requirements, e.g. report cards?

- **No problems to report at the three Geo Node data nodes:**
 - LRO LOLA Data Node, MIT/GSFC
 - Odyssey GRS Data Node, Univ. Arizona
 - Odyssey TES Data Node, ASU
- **All are funded by external sources, not Geosciences Node**

Backup

Priority for Migrating Data Sets to PDS4

Priority from highest to lowest:

1. **Data sets whose users would benefit from tools available only in PDS4**
2. **Data sets of targets where a new mission to that target will archive data in PDS4**
3. **Data sets whose products already comply with PDS4 standards and need nothing but PDS4 labels**
4. **Data sets whose products need to be reformatted to comply with PDS4 standards**
5. **Data sets that are not widely used.**