Planetary Data System Management Council Meeting
22-23 August 2011
Roddy Conference Room, Shoemaker Building, U.S. Geological Survey
Flagstaff, AZ

Notes from PDS Management Council (MC) meeting by Dick Simpson. Executive Summary (this page) precedes Day 1 minutes. Action Items, in UPPERCASE RED, are embedded within the narrative and are also summarized after the Day 2 minutes. Logical grouping of discussion topics has been chosen over strictly chronological reporting.

Management Council attendees at USGS, Flagstaff. Kneeling (left to right): Anne Raugh, Chris Isbell, Lisa Gaddis, and Dick Simpson. Standing (left to right): Todd King, Steve Hughes, Lou Mayo (rear), Ed Grayzeck, Sue Lavoie, Mitch Gordon, Ray Walker, Chuck Acton (rear), Ray Arvidson, Mike A'Hearn (rear), Amy Culver, Susie Slavney, Mark Rose, Sean Hardman, Cori Schauer, Tom Morgan (white shirt), Joe Mafi (rear), Jay Trimble, Reta Beebe, Lynn Neakrase (rear), Nancy Chanover, Emily Law, Faith Vilas, Mark Showalter (rear), Dan Crichton, Ludmilla Kolokolova, and Patty Garcia. Photographer: Paul Geissler. (IMG_9081.JPG)

Executive Summary:

The primary focus of the MC meeting was the rapidly approaching PDS4 Build 2, the process by which it would be judged acceptable, and release of the system for operations. MC decided to use November for extensive evaluation, culminating in an Acceptance Review (AR) at the SETI Institute starting on 30 November; this will be the major agenda item for the previously scheduled two-day MC face-to-face meeting. Once the system is operational, new missions LADEE and MAVEN (and to some extent PHOBOS/GRUNT) can be supported; migration of PDS3 data to PDS4 can also begin. PPI and NAIF have massaged their data and believe a single operation can convert all of their holdings once PDS4 is stable. Faith Vilas will develop a migration plan for other Discipline Nodes (DNs), coordinating their activities and prioritizing data sets. Broad questions about interoperability with other space data systems, shared use of third-party software, and complexity of PDS4 product definitions were discussed

but found not to be compelling enough to delay Build 2. Development of a useful document set and training materials was recognized as a serious lien, however. DNs will be asked to participate during the Build 2 era by installing system software and exercising Registry Service and other software. Build 2 primarily enables data ingestion; Build 3 (summer 2012) will emphasize data search and distribution.

Each DN gave a 20-minute report on local activities; Radio Science and User Centered Design (UCD) were allocated 10 minutes. Data deliveries from on-going missions are mostly nominal; but redelivery of a few large, accumulating data sets because of new processing poses unique challenges. CASSINI-HUYGENS is making a special effort to deliver reduced products. JUNO was recently launched successfully, GRAIL is on the launch pad, and MSL is scheduled for launch in late November; archive planning for these is in various stages. Transfers of some DN holdings to the deep archive at the National Space Science Data Center have run into snags, but corrective action is underway. NAIF demonstrated WebGeoCalc and Celestia, prototypes of visualization tools; both look very promising and were given unanimous endorsement by MC.

A NASA Challenge, focused on PDS, brought ten times higher participation than any of the previous 50 competitions and some insights into how third-party tool developers might be motivated to support PDS4. The foundations for PDS reporting of web activity were reorganized, with final choices pending direction on report content from NASA HQ. An update on interpretation of International Traffic in Arms Regulations (ITAR) as they apply to planetary exploration was expected on 15 August but has been delayed. NASA HQ has approved a request that allows a planetary archiving booth at the Fall AGU— jointly operated by PDS, PSA, and IPDA — that is separate from the main NASA booth. PDS funding requests for FY12 have not encountered any unexpected resistance at NASA HQ.

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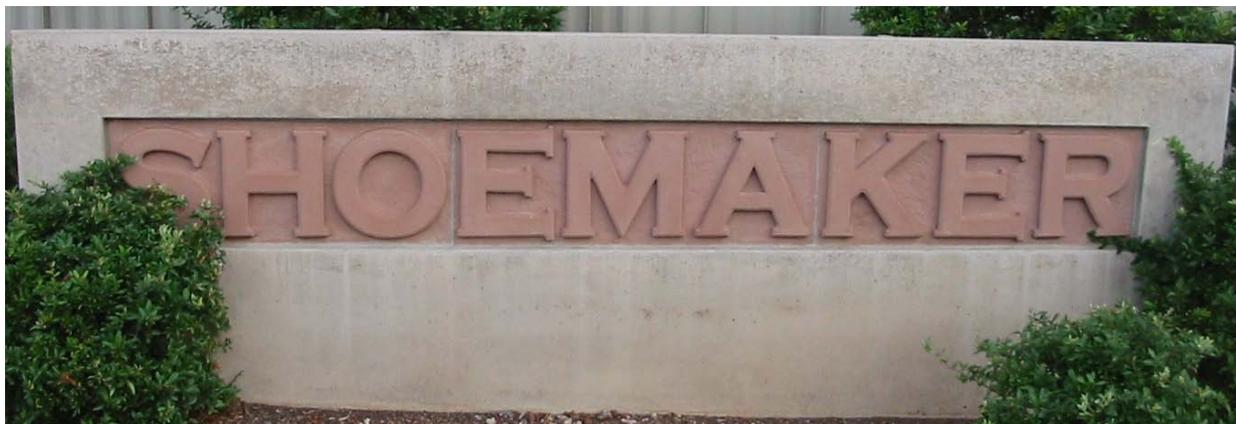
Marker outside the USGS Shoemaker Building, Flagstaff, AZ (IMG_9082.JPG).

Participants:

Chuck Acton (NAIF)	Sean Hardman (EN)	Mark Rose (UCD)
Mike A'Hearn (SBN)	Steve Hughes (EN)	Cori Schauer (UCD)
Scott Akins (USGS)	Chris Isbell (IMG/USGS)	Mark Showalter (RINGS)
Ray Arvidson (GEO)	Todd King (PPI)	Dick Simpson (RS)
John Bechtel (USGS)	Ludmilla Kolokolova (SBN)	Susie Slavney (GEO)
Reta Beebe (CS, ATM)	Sue Lavoie (IMG/JPL)	Bob Sucharski (USGS)
Nancy Chanover (ATM)	Emily Law (EN)	Jay Trimble (UCD)
Dan Crichton (EN)	Joe Mafi (PPI)	Faith Vilas (Deputy CS)
Amy Culver (IMG/JPL)	Mike Martin (Mgmt)[#]	Ray Walker (PPI)
Kristen Erickson (NASA)[#]	Lou Mayo (GSFC)	Dave Williams (NSSDC)[#]
Lisa Gaddis (IMG/USGS)	Tom Morgan (GSFC)	
Patty Garcia (IMG)	Lynn Neakrase (ATM)	[#]by phone
Mitch Gordon (RINGS)	Jordan Padams (EN)[#]	
Ed Grayzeck (PM; GSFC)	Paul Ramirez (EN)[#]	
Ed Guinness (GEO)[#]	Anne Raugh (SBN)	

Housekeeping and General Announcements (Gaddis):

Gaddis called the meeting to order at 9:05 AM local time, welcoming the group and providing an overview of the USGS facilities. Bruce Campbell, recently recruited from the National Air and Space Museum, is the new director of the Astrogeology Branch.

Chief Scientist Report (Beebe):

AGU: NASA HQ has approved a planetary archiving booth separate from the one-NASA booth; it will be a joint venture by PDS, PSA, and IPDA. The only requirement is that the NASA logo not be displayed. Morgan distributed a map showing possible booth locations; he will select one from among a small number of choices, subject to input from MC. Arvidson recommended that people who have volunteered to be at the booth have well-defined duties and not 'stand around.' There may be requests for PDS speakers at the main NASA booth; Arvidson wasn't sure anyone except Washington University students attended his 2010 talk, and Walker had a similar impression from his presentation. Lou Mayo has requested a separate meeting room for quiet consultation and for the PPI Node Advisory Committee meeting; the latter will be scheduled once the AGU program is published.

Cassini-Huygens: Nico Altobelli has been named the new Huygens project scientist; he wants to get better data into the public domain. There are ambitious plans for advanced Cassini-Huygens products beginning later this year.

Program Status (Grayzeck):

Program Executive Status: Knopf has been ill. He is preparing for the GRAIL launch; the window opens early in September. The spacecraft is on the launch pad and is in some jeopardy if Hurricane Irene heads toward Cape Canaveral.

ITAR: There was to be a review of ITAR at the State Department, posted by 15 August (http://www.pmddtc.state.gov); but it has been delayed. Paula Geisz expects some added flexibility in joint agency restrictions (such as between Canada and the U.S.). There is no change in the U.S. position with regard to federally-funded interactions with China, however.

Staffing: Phil Crane has retired from NASA Headquarters; Kelly Fast (previously at GSFC) has taken on his duties.

Funding: Annual Reports are due 1 October. The earlier reports are submitted, the sooner Knopf can get FY12 funds to DNs; NSSC will not process requests for new funding until the FY11 reports have been received. Knopf is hoping to get funding to nodes that will keep them operating to December. DNs should use their FY10 reports as templates for FY11.

PPBE: Comments were received from Green and Adams, and Knopf is optimistic about PDS funding for FY12. Knopf has been trying to combine PDS and 'lunar wedge' funding and has apparently been successful. LRO will be moved into the Discovery Program in 2013; status of LADEE is still being discussed. A'Hearn asked whether LRO will have to justify extension mission phases at the same level of detail as EPOXI; LRO had competed instruments within a pre-approved Exploration mission, but the mission itself has never competed for anything like Discovery approval. Grayzeck replied that is also still under discussion.

PDS 2010 Project Update (Crichton):

There was a second PDS 2010 system review in June, focusing on distribution issues. The review panel was impressed at how closely the implementation has followed the original baseline plan. The review report has been posted on the PDS 2010 web site:
http://pds-engineering.jpl.nasa.gov/pds2010/pds-system-review-II-board-report-draft.pdf
There were 8 RFAs, mostly focusing on philosophical and long-term issues.

There were four steps in the first major development phase; the second major phase begins with Build 2 in October. Crichton has mapped these into a schedule, showing major events and reviews, that follows NASA standard NPR 7120.8 for technology development; 7120.8 recognizes that PDS is science driven and not simply a software project (7120.5).

The ad hoc PDS3 information model has been replaced with a model that can be managed by modern tools. Product definitions, derived from four basic types, have been made rigorous. The goal is to make ingestion a largely automated process using XML tools for design, validation, and submission. PDS3 archives will be migrated to PDS4 with minimal human intervention.

The plan is to complete Build 2 in October, conduct an Acceptance Review (November), and release the system in January 2012. Once Build 2 is operational, migration of PDS3 holdings and new mission support (*e.g*., LADEE, MAVEN, and Phobos/Grunt) can begin. LADEE and MAVEN are especially attractive because their products are expected to be very simple. The last Tech Session agreed that migration should be a major discussion topic at a fall face-to-face meeting.

PDS Challenge, GRAIL, and MSL (Erickson):

Challenge: The first PDS Challenge closed in July; more people participated by an order of magnitude than in the previous 50 Challenges. The winner, Elena Shutova, lives in Kiev (http://community.topcoder.com/ntl/?p=493). A second Challenge closed today; Raugh said a winner has been selected, but she did not have details.

Major NASA Planetary Events: JUNO has been launched, GRAIL's launch window opens on 8 September, and MSL's launch window opens on 25 November. There are four days of activities scheduled around the GRAIL launch. Two PDS people will attend the MSL launch because their PDS Challenge suggestions were accepted; multi-day activities are also in the works for that launch.

PDS4 Data Model and DDWG Update (Gordon):

Gordon explained what is needed to create a 'build'. For each build, the Information Model is frozen; this allows generation of schema, examples, and documents for the build. Some human intervention is needed with examples and documents; over time, the amount of this

human participation should be reduced. Two or three weeks are needed after freezing before the next step can begin. Mitch then walked through a 13-month calendar (December 2010 through December 2011) to show the scheduled builds, reviews, and meetings.

Build 1b generated the most comments. There have been several distillations of those, including a recent prioritization of outstanding issues by Todd King and Mike Martin. Some remaining open issues will be addressed before Build 2, others will be addressed after Build 2, and some could be addressed beyond the Build 2 time frame. Some issues have been closed by implementation, others have been closed because it was decided the reviewer misunderstood what was intended or what was being done, and a third group was closed because DDWG disagreed with the recommendation — for example, DDWG thinks labels should be allowed to describe multiple objects, character tables should not be a subset of binary tables, and adopting design approaches being used by other space science archives doesn't work because other archives impose constraints (such as byte order) not acceptable to PDS.

Mike Martin complained that DDWG doesn't understand the recommendations he has made (such as table definitions and using VOTABLE); Todd King acknowledged that there are time constraints (implementation must move to the current schedule), but he is also concerned that DDWG is closing design options that could be very valuable later. Martin noted that the other space science communities are converging on designs that are not object-oriented, and PDS4 is going to be isolated; he believes a couple months of additional work (with assistance from a small number of outside data modelers) after Build 2 could solve most of the problems. Hughes countered that the changes being proposed are not 'simple' tweaks; he added that the comments from two system reviews have been very favorable and no one on those panels questioned object-oriented modeling. Martin is not convinced the reviewers understood the internal workings of the new system.

A'Hearn wondered whether MC is being asked to evaluate technical decisions that were made two years ago. Grayzeck said any substantial delay in releasing PDS4 will be resisted at HQ. Simpson suggested studying the problem areas after Build 2. Arvidson asked what Martin's top five issues are. Mike replied that cumbersome nomenclature for products is one problem; PDS4 terms don't translate well into terms used in the wider community.   The model being presented to users is too complex. We also need 1-2 pages of technical description (rather than a dozen documents). Walker asked whether there is any reason MC can't say we will look at these questions seriously in the next 'sandbox'; but Martin is worried about alienating customers by going public with Build 2. Gordon wondered whether Martin's problems are 'big' problems. Martin agreed that LADEE and MAVEN are simple and would not be major obstacles if significant changes are needed in PDS4. But other data providers and users will also be coming on board; the net investment in Build 2 will be considerable when all of the players are considered. Responding to a question from Gordon, Slavney agreed that she was not comfortable with PDS4 after her 1b assessment; although she felt better after attending a subsequent Tech Session, she is still concerned about having to explain PDS4 to others.

Specific Open Issues: Documentation issues remain; the document needing the most help is the *Data Providers' Handbook*, which has been restarted three times since the 1b assessment. New structures may not work with DSN and some other data. The model is being implemented

in XML schema 1.0, but there is a move toward version 1.1; the latter has important advantages, but it is not yet 'recommended' by W3C. A PDS4 nomenclature review is needed. Perceived complexity needs to be mitigated; but Mitch argued that the number of product schemas is not unreasonable — a little larger than in PDS3, but more focused.

PDS Schemas (Crichton and Rose):

PDS4 needs schema files, which are used to generate label templates for each product type. PDS decided to create its Information Model separately so that it is not tied to any specific XML schema implementation. As noted above, one question on the table today is whether to use XML Schema 1.0, XML Schema 1.1, or something else.

Rose and others have been reviewing the implementation of PDS4; they are concerned about the complexity presented to users. It is hard for a single person to get his/her arms around the new system; less complexity (more uniformity in definitions across the system) will make PDS4 more attractive to tool developers, data providers, and data users. There are additional issues associated with the fact that PDS4 includes both general and 'targeted' products.

Mike Martin said that non-object oriented data systems typically need 2-5K lines of code for implementation; HDF4 is object-oriented and needs about 18000 lines (EN has reduced the number of PDS4 lines in the past month and hopes to have the total down to a few thousand when the code is finally mature). A'Hearn noted that simple, well-defined products are very appealing; and this was what he thought we had at the beginning. Martin added that FITS has only three objects (images, ASCII tables, and binary tables); the image is multi-dimensional from the beginning.

Showalter said he can see reasons why users might prefer to know that their data have only two dimensions and work with them on that basis. Martin repeated that there is a lot of overhead associated with defining the extra classes needed for 2-D as opposed to N-D and that outside software may not be easily adopted to work with the subclasses.

Arvidson asked where this discussion leaves us. Crichton said we have a process and we are tapping outside expertise for evaluation and recommendations; this includes suggestions from Todd King, Mike Martin, and Mark Rose. The basic design will not be changed for Build 2, but it should be possible to find simplifications later. Martin said HDF5 and CDF provide capabilities that are not accessible to PDS4; perhaps the data dictionary needs to be parceled out to DNs rather than forcing everyone to work within a single, unified framework. There could be science advantages if GEO, for example, aligned with Earth sciences rather than PDS.

Build 1c Assessment (Hughes):

The 1c Assessment was conducted early this summer with help from about 15 people, mostly associated with IPDA; they represented a mix of data users and data system builders. There were two phases: document review and prototyping. Comments on documents (157) were

generally favorable, but with warnings about completeness and consistency. Comments on prototyping (31) were also generally positive; but there has been nothing from Heather and Martinez at PSA, who are expected to do the most prototyping. These results are being used to improve materials for Build 1d (being frozen today).

Build 1d Assessment (Beebe):

The Build 1d assessment is targeted mainly at external data suppliers and system developers. They will review selected documents and suggest improvements, identify gaps, support DDWG, and provide future advocacy for PDS4. There are about 20 people who have signed up, some as volunteers (including representatives from MAVEN, LADEE, and CASSINI) and some by recommendation from DNs. The review should be completed by mid-September with results available in time for the October MC telecon.

System/SDWG Update (Hardman):

The Registry Service will track, audit, locate, and maintain 'artifacts'. Products will be registered using the Harvest Tool; the Search Tool allows users to find data of interest, based on metadata captured by the Harvest Tool. There will also be Security, Report, and Monitor Services to authenticate, document, and provide status information, respectively. Services will be implemented using COTS or Open Source software products.

Tools: Design, generate, validate, and catalog ingest tools provide functionality in various areas. The generate tool has been prototyped at IMG and ATM, because of perceived needs at those DNs. The catalog ingest tool is needed for registering PDS3 catalog files with the Registry Service.

Design Process: Level 4 and 5 requirements can be traced back to Level 1, 2, and 3. Scenarios have been derived from a number of sources. Search should support PDS and PDAP protocols at a minimum; PDAP wants VOTABLE, but PDS4 Search will initially support only VOTABLE metadata (which is all it needs).

Development: Current development is focused on Build 1d, including stress testing. Build 2 additions including the Search Service, a tool suite for early adapters, and support for PDS3. Each DN has been asked to download core system components locally (Registry Service, Harvest Tool, and Registry User Interface); this will help identify system issues prior to Build 2. ATM and IMG (at both JPL and USGS) have exercised previous builds. The Tomcat server automatically sets up a Derby data base; MySQL is also automatically compatible, but Hardman is interested in experience with others. Deploying core components to DNs will be phased once the AR has been completed; at that point DNs can begin registration of PDS3 products using the Harvest Tool. Incremental builds are expected after release of Build 2.

PDS3 Support: The Harvest Tool supports both PDS4 and PDS3 registration; in the latter case, PDS3 labels are converted to PDS4 proxy labels, which are like minimal labels — they

don't capture information from the data description part of the original label. Later 'migration' of PDS data sets includes generation of full PDS4 labels, which will include all of the original information (and more).

Demonstrations: The PDS3 catalog data base has been migrated to PDS4; there are 6514 products currently in the Registry. Hardman showed several different ways to display the information available — including an interface, which returns data in a format identical to that produced by the PDS3 system. Issues include errors in the original PDS3 data base. The Report Service is implemented using Sawmill software; it can be used on DN and cross-DN logs — mostly using data from IMG and EN so far; GEO logs are in a different format. After seeing some of the reports, Showalter asked whether the requirements on DN logs have changed; the answer is 'no' — EN is only experimenting with different ways to process the data. There was a follow-up question about filtering domain names; Mike Martin believes that some filtering is helpful if it identifies the primary PDS customers. Raugh noted that many legitimate users come in through pools, home, etc. Showalter believes that trying to eliminate 'hobbyists' may not be right; their downloads could be just as important in moving planetary science forward as downloads to *.edu domains. A'Hearn noted that 95 percent of downloads at some sites are to 'hobbyist' addresses. Several suggested that raw logs be sent to EN, where uniform filtering and processing would be applied. CRICHTON SUGGESTED HAVING EACH DN SEND RAW LOGS TO HARDMAN, WHO WILL ANALYZE THEM ONCE HE HAS DATA FOR THREE MONTHS. HARDMAN NEEDS TO SPECIFY FORMAT FOR INCOMING LOGS; KNOPF NEEDS TO SPECIFY WHAT HQ ACTUALLY NEEDS IN TERMS OF OUTPUT METRICS.

What Missions Need from PDS4 (Beebe):

Mission needs have been assessed using input from several sources. LADEE has set up bimonthly telecons regarding data and PDS4; ATM has begun developing LADEE-tailored schemas. MAVEN has produced ICDs and a data management plan, but not much specific to PDS4. PHOBOS/GRUNT cannot drive PDS4; launch is scheduled for 11 November but the mission data production is poorly understood.

LADEE has unusual data requirements; the spacecraft trajectory is so close to the lunar surface that acquired data will be used for almost immediate orbit correction. This requirement plus the short cruise time mean that LADEE must have a fully operational pipeline in place before launch.

Data Migration (Law):

Decisions will be needed soon on what to migrate, when, and how. The current plan is for on-demand data migration: each DN sets priorities, possibly using a specially designed migration tool. System-wide coordination can be synchronized with future Standards releases. Law requested a face-to-face Tech Session (probably in early 2012) to discuss migration, share experiences, and establish a coordinating group. A configuration management repository for

sharing migration tools could be set up in the Build 2 time frame. Crichton views this as a pilot project, in which we are testing PDS4 and its tools ourselves.

Gordon thinks we need something useful that can be offered in the Build 3 time frame — the first release with significant search capabilities. We will need some high-demand data sets migrated; it will be easiest to migrate data from completed missions. Lead nodes will need to step forward to take charge of these migrations. Slavney is concerned about high-demand on-going missions, such as MRO, which delivers 1 TB of PDS3 data every few months.

King recommended that MC appoint a migration working group to deliver a plan to the November MC meeting. Martin suggested that original data providers be notified when migrations take place. Showalter asked whether there should be a peer review of newly migrated data sets; Walker thinks this is appropriate if data files themselves have been modified, but it is not necessary when only metadata have been migrated. Raugh thinks Hardman should set system requirements for labels of migrated data sets. BEEBE RECOMMENDED THAT VILAS WOULD BE AN IDEAL CHOICE TO COORDINATE THE MIGRATION PLANNING PROCESS; RAUGH SUGGESTED THAT EACH DN SEND VILAS A TOP 6 LIST OF MIGRATION CANDIDATES.

IPDA Update (Crichton):

COSPAR recognized IPDA in 2010 as an official body for defining planetary science archiving standards. The current IPDA Steering Committee is chaired by Yasumasa Kasaba; Crichton is next in line — to take office at the meeting next month (Caltech, 14-16 September). Some European groups (not affiliated with government agencies) are becoming more involved; there are about two dozen regular participants, but no one from China is expected in September.

IPDA is using more regular telecons. Crichton would like to see it improve the international standards process, but the fact that IPDA has no resources of its own makes this difficult except to the extent that participants can contribute. Tom Stein has expressed concern that IPDA cannot develop anything; this does not bother Crichton so long as members move toward coordination and development can be carried out in parallel by those members who do have resources. PDS4, EuroPlanet, and IVOA are key collaborative items, each promoted by interested individuals. There will be project reports at the September meeting; any which have become dormant will be dropped.

WebGeoCalc Demonstration (Acton):

This tool has been developed by NAIF and UCD as an alternative to using the SPICE Toolkit software within traditional programs. NAIF had its own tool with a GUI interface and has worked with UCD to generalize it and make it Web accessible. WebGeoCalc makes SPICE available to people who don't want to develop software, it can provide validation for calculations carried out by traditional software, and it can be used to prototype new geometrical calculations. Output is available in several forms: screen displays, saved files, Excel-compatible ASCII files,

and plots. The tool can calculate something at a specific time; it can also find all the times when a specific geometrical condition is true. The user can chain calculations. The GUI shows inputs, outputs, saved outputs for re-use, and kernels used in the calculation.

Acton would like feedback: would WebGeoCalc be useful to the space science community, and what improvements could be made? PROVIDE CONTACT INFORMATION FOR POSSIBLE EVALUATORS TO CHUCK. AND TELL KNOPF AND GRAYZECK WHETHER THIS IS A USEFUL TOOL. There are lots of possible added functions; the version available today is primitive in what it can do and its output. Current funding is from AMMOS; but it runs out in 2012.

Demos: Mark Rose demonstrated four calculations, addressing the following questions. (1) When does ODY encounter Phobos? (2) List ODY equator crossings. (3) When can MER Opportunity see ODY? (4) Find Cassini Titan encounters; compute distances and sub-spacecraft locations on Titan for those encounters. The web interface asks for the type of calculation, the mission, the target, the observer, date and time (single or range), time increment, light time correction (or none), reference frame, and whether a plot is desired. Moving the cursor over a plot reveals specific values, which can be expanded. When there are multiple SPK files, the user can select; but how does the user choose? Users cannot presently select kernels on their home machines (this is a JPL security issue since WebGeoCalc runs on a NAIF CPU). Operations kernels are not nearly as well organized as archival kernels. Shape models will be available, but they have not been fully implemented in SPICE.

Showalter is not convinced WebGeoCalc will be useful for locating data; that information should be available through other data sources (such as product labels or data bases of label information). But Mark's view was not universally shared. There was general agreement that the tool would be valuable in providing overviews of missions and in considering feasibility of future experiments.

Action Item Review (Morgan):

EN 2011-08-22/E (Crichton, ASAP): A new EN Directive, derived from 2010-12-10/06, reads "Develop a web page explaining how to acknowledge use of PDS materials; include a suitable PDS logo which could be copied and used elsewhere."

Discussion of the November Acceptance Review was diverse. What should be covered, what is the role of MC, and what are the acceptance criteria? Should MC members themselves use PDS4 as part of the review, or should testing be assigned to staff, or both? Crichton suggested distributing the Concepts Document early; but Raugh warned that there are sections, currently marked as "TBD", that she wants to update. THE MC TELECON ON 14 NOVEMBER SHOULD INCLUDE A STATUS REVIEW OF THE AR. WRITTEN COMMENTS FROM THE AR SHOULD BE DUE SHORTLY AFTER. THE 30 NOV MC SHOULD FOCUS ON "ACCEPTANCE".

PPI, GEO, and SBN have had difficulty interacting with NSSDC. Morgan suggested asking Dave Williams to call in tomorrow for an NSSDC report.

Executive Session (Beebe):

There was extended discussion of how to address comments raised by Mike Martin, the level of their importance, and the time scale on which the issues should be resolved. Crichton agreed to put together a recommendation to be discussed at the beginning of Day 2.

Adjournment:

The first day's regular session was adjourned at 17:30. The Executive Session was adjourned at 17:58.

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San Francisco Peaks and entrance to Buffalo Park, next to the USGS, Flagstaff, AZ (IMG_9083.JPG).

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Faith Vilas (Deputy CS)
Ray Walker (PPI)
Dave Williams (NSSDC)[#]

[#]by phone

PDS4 Data Formats (Crichton):

PDS4 has four fundamental data types: array base, table base, parsable byte stream, and encoded byte stream; these are captured explicitly in the Information Model. The model allows extensions from the fundamental structures, which means addition of metadata within an XML file; there are no changes in the fundamental structures at the data level. The amount of extension is not crucial to the data model; PDS4 developers are willing to let DNs decide — possibly in conjunction with missions and other data providers.

Array base has 2-D and 3-D extensions; each has three further extensions. Parsable byte stream also has three extensions. Table base has extensions for binary and character, each of which has extensions that allow groups of fields.

A'Hearn recalled early discussions in which PDS said the new system would have limited numbers of data types and that providers would be required to deliver those. Although he can see how the current design limits the fundamental structures and allows flexibility in use, he is concerned that the end result isn't as simple as he was expecting. However, FITS and VICAR (both widely used) would be difficult to accommodate in a more severely controlled format environment. As an aside, Mike then noted that a ROSETTA camera captures image pixels in a right-to-left order — not a common storage choice, but PDS4-compliant.

Crichton proposed the following policy on adherence to PDS4 Formats: "Data providers delivering archival data to the PDS shall ensure their data is captured in one of the PDS4 fundamental data structures. Furthermore, metadata describing the structure of the data shall reuse one of the existing metadata format specifications provided in the PDS4 standards." Slavney endorsed the goals behind the policy but said that large data handling organizations such as MIPL will find compliance difficult; we need to help them. No action was taken on the proposed policy.

Todd King noted that 'tabular data' can appear in either table base (fixed-length fields) or parasable byte stream (comma-delimited fields) formats; this may be confusing.

A'Hearn then questioned whether the existing extensions cover all of the array possibilities — for example, a set of images in which the image data are in one plane, longitude corresponding to each image pixel is in a second plane, and latitude in a third plane. He doesn't want to load three separate image files in order to interpret the data in the first plane.

Arvidson said he feels better about the current direction, based on today's discussion; but he emphasized that documentation will be critical in proper use of the new standards and system. From his mission experience, he feels that it is doubly important to make sure that missions create products in PDS-compliant formats at the beginning rather than generating the archive near EOM. Beebe noted that new mission proposals must include a full accounting of data handling costs; proposers will need help from PDS to estimate these costs.

Node Report – Atmospheres (Beebe):

PDS4: Shannon Rees and Matias Roybal are developing prototypes for migration of PDS3 data to PDS4. An early version of the PDS4 Registry Service has been installed.

Mission Support: ATM will support JUNO, which was launched and deployed successfully for cruise. ATM will review the MSL/REMS archive design, but Beebe needs more reviewers. There are bimonthly LADEE telecons; there is an emphasis on PDS4, and XML templates have been designed.   On MAVEN, ATM is leading only with the UV instrument; unfortunately, the PI is not involved and others on the team are pushing data formats that are not PDS-compliant. EXOMARS-MATMOS needs a better working relationship with ATM. MRO, MSGR, and CASSINI are nominal except for CASSINI/CIRS V3.0, which is taking time to validate.

CASSINI: User guides are in progress, pushed by the Project Manager; detailed calibration information will be included. Guides will be delivered as DOC files (or another format specified by PDS). Gerry Schubert has decided to process RSS data; he has been pushing Asmar/Connally on their writing, but Beebe has seen little output. The new RSS Team Leader is Dick French. Higher-order CASSINI products are being encouraged by mission management, which provided additional funding to several teams. CASSINI investigators are discovering that their own metadata are inadequate; a metadata retrieval project is being considered for additional funding in FY12. Beebe is collecting search scenarios that might help in this task.

Node Report – Geosciences (Arvidson):

Mission Support: GEO is lead for ODY, MER, MRO, LRO, MSL, and GRAIL; there are nearly 60 separate data sets. MSL is nearly on track; the fact they can no longer change hardware is allowing them to think more about data. Launch is in November; Mars arrival is August 2012. GRAIL launches in September and is in lunar orbit March-May 2012. The team is small and has not been able to deal with archiving while preparing for launch. Archive planning has been deferred until data are in hand.

Utilities: *Analyst Notebooks* exist for MER, Phoenix, Apollo, and LCROSS. New capabilities have been added for MER, including a mosaic viewer and context recovery. A *Notebook* is planned for MSL, which will include interactive traverse maps and a mosaic viewer. A *Virtual Astronaut* prototype allows 3-D simulation with color. *Orbital Data Explorer* is available for most recent Mars, Mercury, and lunar missions. ODE V3.0 Beta will be released this fall; in the future, a UPC link will be added and more missions will be supported.

Node Advisory Committee: The NAC (Jim Bell, Larry Crumpler, Dick Morris, and Jeff Andrews-Hanna) met recently; it recommended increased GEO visibility, acquisition of spectral libraries (*e.g*., Roger Clark's), and some of the enhancements mentioned above. The spectral libraries will help people writing proposals. Most customer requests have been answered successfully. GEO is responsible for about 65 percent of the downloads from Imaging.

Grayzeck noted that only scattered negative comments about PDS reach NASA HQ these days; the situation seems much better than several years ago.

NSSDC Delivery Status: A 350-pound storage device was received from NSSDC, but it fell apart in shipping, there were no instructions, and the requested IP address was not set. After 8 hours of effort, GEO personnel gave up on installing it; NSSDC was contacted but has not been able to help get the system working. GRAYZECK WILL FOLLOW UP WITH NSSDC.

Node Report – Imaging (Gaddis):

Mission Support: IMG is expecting reprocessed data from Chandraya'an M3. IMG also receives data from CASSINI, ODY, MER, MRO, MSGR, and LRO. Total holdings are approximately 300 TB. The CASSINI *Radar Users Guide* was recently delivered; it is over 100 pages. The JPL Photojournal continues to be successful; applications for using it on hand-held devices are now available.

PDS4: Culver briefly explained a process for migrating imaging data from PDS3 to PDS4; one problem is volatility of the PDS4 framework. IMG has not decided how to handle products with attached labels, line prefixes and suffixes, and similar problems. Based on recent discussions, Gaddis believes the cartographic chapter in the *PDS Standards* may need to be revised significantly; the hope is to be more specific about what data providers deliver.

Infrastructure: Unified Planetary Coordinates and GIS shape files are being added. Map-a-Planet was given two years of funding to improve navigation and viewing performance, streamline addition of products, and upgrade the architecture. About 30 data sets are supported by Map-a-Planet, and another 10 are queued; priorities are based on recommendations received at forums such as LPSC.

Node Report – NAIF (Acton):

Staffing and Support: Sam Krening joined NAIF about three weeks ago. Nat Bachman and Ed Wright do most development. Boris Semenov handles mission operations. PDS provides about 56 percent of NAIF funding; AMMOS and missions are also significant contributors.

PDS4: NAIF plans to convert all holdings to PDS4 in a single operation, once the new system is stable. A few bugs will be corrected in existing holdings at the same time.

Community Interactions: Consulting is a major part of NAIF activity; science users and mission personnel both get help. There are always challenges in explaining how the system works. Acton wants to revise the training curriculum so there are separate classes for novice and advanced users (or maybe a finer granularity of experience). The next class is in Pasadena 13-15 September and is already oversubscribed; some participants will be from Europe, raising the question of what obligations NAIF has to reach outward to international planetary scientists. A

class on the East Coast was considered; but there were no expressions of interest from centers that might have supported such a class.

Core SPICE Development: There is now an alpha-test Java Native Interface (JNI) Toolkit. New shape models are being developed; they have been used on Hayabusa, DAWN, Rosetta, MEX, and PhSRM. Any shape model archived in PDS can be ingested. NAIF has started using Celestia, an open source animation tool with a long learning curve but very nice results. It can be used to show the progress of a mission, spacecraft orientation, and some fields of view information. Acton wonders whether this might be useful for future archives; he doesn't know the output format. Chuck ran a short demonstration. Acton asked if NAIF should try to extend SPICE to allow projection of an instrument field-of-view using geometric calibration results for that instrument; how far should SPICE go in this direction?

Mission Support: A restoration of Magellan data is nearly ready for ingestion. All active missions seem to be going well. New missions (MSL, JUNO, GRAIL, MAVEN, and SMAP) are planning to use SPICE. Status of LADEE, OSIRIS-Rex, Mars 2012, and Mars 2018 is unknown. There is no sign of final products from LCROSS; Morgan noted that any future improvement in LCROSS files will have to come from a data analysis program, but Acton is very skeptical because of the nature of the missing data. The cognizant person on LCROSS has moved to LADEE, promising contact with NAIF; but Acton has heard nothing. NAIF has reported LCROSS as "red" for many months; LADEE is "?". Chuck wondered whether more can be done to translate the fever chart reports into action.

International Missions: Archive increments from MEX and VEX are slowly coming in. ISRO wants more training. RSA cooperation is good on lunar and Mars missions. JAXA support for VCO SPICE was canceled after VOI failure; the Hayabusa archive was prepared mostly by NAIF, and other activities are not clear. YINGHUO-1 has shelved plans for using SPICE, but there may be intervention by RSA.

Feedback: (1) NAIF WOULD LIKE FEEDBACK ON WEBGEOCALC. (2) DOES PDS NEED SPICE CAPABILITIES NOT CURRENTLY AVAILABLE? (3) SHOULD PDS STRIVE TO HAVE INSTRUMENT TEAMS DELIVER A COMMON SET OF PARAMETERS, WHICH WOULD MAKE SEARCH EASIER AND MORE CONSISTENT (THIS WORKED AT ESA FOR MEX, BUT TRANSLATING TO VEX WAS MORE CHALLENGING)? (4) SHOULD IPDA DROP SPICE FROM FURTHER CONSIDERATION? (5) HOW SHOULD SPICE TRAINING BE IMPROVED? SHOULD NAIF CONTINUE WORK WITH CELESTIA. (7) ARE OTHERS IN PDS (E.G., IMG) ALREADY WORKING ON PIXEL PROJECTION SOFTWARE? Regarding (3): Showalter doesn't trust instrument teams to compute geometrical parameters, although some are very good; perhaps PDS should assume responsibility for defining and computing the common parameters.

Gordon wondered whether it is time to recommend that NASA require delivery (if not use) of SPICE. But there may be resistance from NASA centers (such as Ames) and others that have not historically used SPICE. This could be a tough sell for Grayzeck at HQ; but overall cost savings could be significant. Acton thinks a better requirement would be that projects

provide "high quality ancillary data;" LRO has not done well and ISRO deliveries have not been useful, though both are nominally SPICE missions.

Node Report – RINGS (Showalter):

Community Interaction: Gordon's live demo of OPUS was well received at the Cornell Rings Workshop (27-29 July) despite being scheduled during a lunch break.

Mission Support: CASSINI CIRS delivered data set V3.0; RINGS participated in the peer review, is redesigning the conversion pipeline to handle the new format/content, and will be generating a new data set with fixed length records. RINGS now distributes calibrated versions of all CASSINI images. RINGS has proposed to CASSINI an expansion of OPUS to support all optical remote sensing data sets for all disciplines.

Development: A Django/Python server is up and running. REST-based product delivery is in development; the file extension and optional parameters define what is returned. "version=n" selects one of several product versions, if there is more than one. OPUS 1 has been frozen except for adding more data; OPUS 2 will have new capabilities and a new interface, which Mark demonstrated. He hopes to have an alpha version on line shortly.

Node Report – PPI (Walker):

Mission Support: MSGR is going well; changes to data sets have been made and approved. The mission moved its own September release date for the first orbital data a week earlier to give proposers the chance to meet a ROSES deadline. DAWN liens from the March 2010 review have been resolved. The next delivery (November 2011) will include Vesta data; but there is no PDS-approved pipeline, so the entire delivery will be subject to peer review. Routine data deliveries continue from CASSINI. MAG RDR data were peer reviewed in January, and serious problems were found. MIMI has revised its EDR format, and a new review will be required. A draft INMS user guide has been received. Planning for higher-order MAPS archive products is under way; 'movies' of plasma motion are striking. MEX ASPERA data are being delivered; PPI also receives MARSIS data. LRO/CRaTER is a poster child for good archiving; an ITAR problem has been cleared. MGS/MAG high-resolution data through August 2005 have been delivered.

Future Missions: JUNO SISs have been reviewed and revised. PPI has taken over lead node responsibility for MAVEN; its science data management plan has been released, and SISs are expected in December. Archiving people have been equally divided between preferring ASCII tables and CDF; Walker would like a good and stable PDS4 alternative to offer. An MSL/RAD peer review is being organized. A proposal for UCLA to work with China's YINGHUO-1 mission is awaiting approval by NASA.

Past Missions: PPI is still waiting for KAGUYA data. Gaddis has been able to download some imaging data (orders are limited to 3GB each), but she doesn't think KAGUYA personnel

are being supported to do further work. VG1 and VG2 PLS solar data have been updated; LECP data are in preparation at the FTEC sub-node. GALILEO MAG high field data have been recalibrated; PLS magnetospheric moment data have been received. VENERA 15/16 ionospheric electron density profiles have been received.

Deep Archive: PPI currently has backup at the University of Iowa, but a third copy of PPI holdings is supposed to be at NSSDC. Getting data to the NSSDC deep archive has been very frustrating; turn-around times have been glacial. Aside from threats to descope NSSDC, Walker believes there needs to be a new relationship between PDS and NSSDC.

PDS4: PPI has reorganized its holdings so everything is at a common V3.8 level; this will make migration to PDS4 much simpler and faster. PPI will move as soon as PDS4 is stable. PPI support for PDS4 will continue into 2012, but the effort requires careful management so that PDS4 work does not impact other activities.

Facilities: PPI storage has been upgraded, and a portable RAID delivery to Iowa is planned.

Community Outreach: A group of secondary school students in the UK has been using Cassini PPI data to study Saturn's magnetosphere. They have organized themselves using Facebook, where their discussions and results are also posted. Walker met the student leader at AOGS; Ray had assumed from the exchanges that he was their teacher.

Node Report – SBN (A'Hearn):

Mission Support: EPOXI data have been reviewed; all 11 data sets have been 'certified', but it will be difficult to get all liens resolved by the 13 September PMDAP deadline. Asteroid data sets (18) were reviewed on 31 May. STARDUST NExT data have been delivered and are under internal review; peer review in October is probable. ROSETTA data from the Steins encountered have been reviewed.

Local Activities: Ferret 2 will be demonstrated at DPS. A new SBN web site was deployed last week. SBN survived the 5.8-magnitude Mineral, Virginia, earthquake an hour before this report was presented.

PDS Challenge: HQ proposed SBN as host for the August 2011 NASA Challenge; the IHW data set was selected, which is a diverse collection of observations. The question is how to search efficiently through so many products from so many sources. A winner has been selected; Raugh does not know who it is, but she believes it may be a Ukranian. Raugh found her involvement to be very educational since the contestants are completely neutral on the subject matter but are very skilled with software; this may provide some insight into how PDS4 should be presented to potential tool developers.

Problems: PDS4 is a drain on staff. No ROSETTA data have been received from the VIRTIS instrument; no data have been received from any instrument for the Lutetia encounter.

Arranging PDS4 training for PHOBOS/GRUNT has not been successful. Lien-resolved data from the DAWN Mars flyby have not been received.

Node Report – Radio Science (Simpson):

Simpson briefly reviewed facilities, staffing, and the scope of PDS work at Stanford; there have been few changes in these areas over the past year. He then spoke to a number of circumstances that are combining to put unusual pressure on PDS Radio Science: the need to port 30 years of radio science and PDS software from a Sun system to a Mac Mini, the need to develop PDS4 utilities (mostly labeling and volume organization software) while maintaining PDS3 capabilities, the need to make progress against a long-standing restoration backlog, and the shortage of resources at both RS and other DNs to deal with peer review and ingestion because of demands from PDS4. He illustrated the situation by mentioning a Magellan raw data set that has been awaiting final review at GEO, an attempt to recover Galileo raw data sets that would go to ATM, and 300 GB of VEX DSN raw data which have been waiting for review at ATM for nearly a year. Ironically, a proposal for Stanford to take on all of the VEX radio science archiving was rejected by PMDAP because deliveries would have been to the PSA and the panel felt PSA throughput performance was not adequate. Simpson has no solutions, but warned that RS may be less visible in the next year because all of the changes will require an altered focus.

Node Report – Users Centered Design (Rose):

Google: UCD received Google funding to investigate improved search techniques; but there were no results applicable broadly to PDS. There is more funding this year and additional work is going into image searches and planetary content analysis; for example, how can scientists find data of interest among a large collection of (primarily) Mars and lunar images?

PDS4: An Object Access Library (OAL) is being developed jointly with EN. PDS4 visualization is being developed, partly to test the OAL. Rose is tracking schema development, with emphasis on simplification and uniformity; recommendations and observations are being given to DDWG. The Volume Validator is being updated for PDS4.

User Survey (Schauer):

Schauer presented the main results from the user survey at the last MC meeting. Topics worth following included the PDS mental model and improving scientific search. Since variations on search were not addressed directly in the original survey, UCD is following up with in-depth interviews of at least 11 people across several nodes who mentioned broad search topics (ATM-3, RINGS-2+, GEO-3, IMG-TBD); SCHAUER IS LOOKING FOR MORE PEOPLE TO INTERVIEW. Gaddis asked whether users of Google Mars or Google Moon might be interested in helping; but Rose noted that only Google knows who those users are. Gaddis then suggested going after users of Planetary Atlas or ODE. Schauer proposed a subsequent report to MC in November (or later, if there is a conflict with the PDS4 Acceptance Review).

College Investigator Research Program (Morgan):

Morgan, on behalf of Sue Hoban, reported that the program is back in operation, largely as it was in previous years. It will be administered through the University of Maryland – Baltimore. Proposals are being received now. Contact Sue for details (susan.hoban@nasa.gov).

Future Meetings (Morgan):

Next MC Meeting: The SETI Institute is planning to support the next face-to-face meeting on 30 November-1 December. Because of Wednesday morning teaching, Ray Walker will arrive about 1 PM on the first day; attendees should not plan to leave Thursday afternoon since the PDS4 Acceptance Review is expected to take two full days. SETI has moved about 1.5 miles since it last hosted MC; there are no hotels or eating places within easy walking distance of the new site, but RINGS will provide suggestions, maps, etc. as the time approaches. The usual support (*e.g*., WiFi and telecon) should be in place for the meeting.

Spring 2012: A'Hearn agreed to host a March-April meeting; the spring break at Maryland is 18-25 March. The Centennial cherry blossom festival will run five weeks this year; whether there will be congestion in College Park is not yet clear. Raugh expects large numbers of Japanese (and other) visitors in the Washington area. A'Hearn will investigate logistical matters; Arvidson offered GEO as the backup if SBN cannot host. POTENTIAL ATTENDEES SHOULD CONSULT CALENDARS AND REPORT POSSIBLE DATE CONFLICTS.

Executive Session (Beebe):

Beebe would like to recruit a few more people for the Build 1d review — especially people who develop data systems. SEND HER NAMES OF NEW CANDIDATES.

Beebe asked whether there are questions about the steps leading to the PDS4 Acceptance Review; A'Hearn had some reservations, but he said he had no alternatives to offer. No other suggestions were made.

There were follow-up discussions on the UCD user survey. Additional studies on user search needs and behavior may not be useful in the PDS4 era — it is not clear whether the people being surveyed are representative of PDS users and whether the questions being asked are relevant to interface design. On the other hand, there was strong support for Rose's recent initiatives, such as with WebGeoCalc and DDWG schema uniformity. Grayzeck noted that UCD funding beyond FY11 has not been guaranteed. If MC wants to influence that decision, a short message to Knopf would be appropriate. Beebe, Morgan, and Grayzeck will consult on such a message; Grayzeck offered to convey sentiments orally while a written version is being composed.

Beebe asked what MC should do to bring Vilas up to speed before she formally takes over as Chief Scientist in September. Acton suggested providing her with written proposals from the 2009 Senior Review. FY11 annual reports could also be helpful. Beebe suggested listening in on DDWG telecons, but those may be unpleasantly technical.

Morgan wondered whether DDWG would lose its purpose once Build 2 is released; perhaps it should be phased out. Simpson believes there are still a lot of details for DDWG to fill in; also, there are likely to be incremental releases after Build 2 to clear bugs and make improvements. But it may be time to review DDWG's future in 6-9 months. A'Hearn wants to get his SBN people back from DDWG; Simpson reminded MC that the *Data Providers' Handbook* and *Standards Reference* still need a lot of work, so some DN personnel will remain occupied while others can gradually get back to regular duties. Arvidson wants access to current versions of PDS4 documents; LAW WILL DISTRIBUTE THE LINK TO THE BUILD 1D COLLECTION.

Walker remains concerned about the possible descoping of NSSDC. NSSDC receives about 100 requests for data each year; but data distribution is no longer one of its primary functions. Several key people, including Jim Green, have said they are opposed to the descoping; but there is an NSSDC decision-making vacuum at HQ. Acton is not concerned; he believes three non-NSSDC copies of each SPICE data set is sufficient. Also, NAIF data sets are compact and easy to manage. Other DNs, especially those using NSSDC for backup of accumulating data sets, could be severely impacted. DNS WITH CONCERNS SHOULD FORWARD THEM TO WALKER, WHO WILL MAKE SURE THEY GET TO THE RIGHT PEOPLE IN NASA. Arvidson and Gaddis would prefer to make alternate arrangements for third-copy backup that do not involve NSSDC.

Acton asked whether Crichton's Powerpoint this morning could be expanded into a primer for PDS4; the slides could form the basis for an introductory training unit. An example would make this slide set more concrete. DAN SHOULD DISTRIBUTE THE SLIDES TO THE MC. Simpson noted that Dan's slides focus on one topic; there are several other topics that novice users will need to know. Showalter recommended that Crichton omit the word "format", which triggers strong, and often contrary, reactions from listeners.

As part of a final review of action items, MC gave unanimous endorsement to NAIF's continuing development of WebGeoCalc and testing of Celestia.

Adjournment:

The second day's regular session was adjourned at about 14:00. The Executive Session was adjourned at 15:00.

Planetary Data System Management Council Meeting
22-23 August 2011
MC Action Items
Ordered by date of origin; current status is given in red;
action items which have been overstruck will be removed from future versions of this list.

~~2010-12-10/01 (DNs, as needed): Report funding problems to Knopf.~~

~~2010-12-10/05. (Grayzeck; 23 Nov): Determine the NASA official negotiating the ExoMars Trace Gas Orbiter MOU with ESA; establish contact and report status to MC periodically.~~ The HQ contact is Ramon DePaula

2010-12-10/06. (Grayzeck, Knopf, and Trimble; ASAP): Contact Chris Kemp (NASA CTO for WWT) to determine whether PDS identification can be added to web sites and other material when PDS has been a cooperating partner in the development. Chris Kemp has left NASA; contact Ross Beyers to find out who is next in line. Re-assign to Grayzeck and Trimble.

~~2010-12-10/12 (MC, Morgan; next MC after report delivery): Review results of Sylver survey/report.~~ Agenda item for August MC meeting.

2010-12-10/13 (Knopf; after delivery of user survey report): Request improvement list from Crichton of complaints that are being addressed in PDS4. Add to August MC agenda.

~~2010-12-10/14 (Beebe; after report delivery): Assemble responses from DNs~~ Done.

~~2011-03-29/01 (MC; ASAP): Decide whether to have a PDS4 Acceptance Review and, if so, how.~~ There will be an AR in November; the MC F2F will evaluate the results (the de facto Acceptance Review). Topics to be addressed and acceptance criteria will be discussed at the 12 September MC telecon.   See below for follow-up action items.

~~2011-03-29/02 (Williams, 9 May): Compile and post a comprehensive list of PDS data sets both now at NSSDC and also scheduled for future delivery with their PDS DATA_SET_IDs and expected delivery dates (as appropriate).~~ Williams has posted a list at https://oodt.jpl.nasa.gov/wiki/download/attachments/13008901/Dsid-Volumeid-Volumesetid-Volumeverid.xls; but dates aren't included. Dave needs pending dates from DNs.

~~2011-03-29/03 (Schauer, Trimble, and Crichton?; as appropriate): Include definitions of terms such as "browse," "centralized," and "guidance" in the final report on the user survey.~~ Completed in May.

~~2011-03-29/04 (Crichton, Beebe, and Vilas; 9 May): Present a PDS4 operational readiness review plan.~~ Subsumed by 2011-03-29/01 and subsequent discussion.

2011-03-29/05 (Walker; ASAP): ~~Collect comments from MC on the effects of descoping NSSDC on PDS operations; the comments will be posted on basecamp.~~ Walker will discuss in his PPI report tomorrow.

2011-03-29/07 (K. Simmons and ATM; as appropriate): ~~Preserve PVO Halley observations during UV restorations.~~ Karen Simmons has been asked to do it; not an MC issue otherwise.

2011-03-29/08 (Grayzeck; ASAP): Explore ITAR issues involving the Canadian Space Agency and MATMOS. Awaiting HQ update on NASA ITAR policy.

2011-03-29/09 (Knopf and Grayzeck; ASAP): Discuss definitions of "red" and "green" for mission status reports, send out results to MC, and post results on the PDS website. Not raised during PPBE briefing by Grayzeck and Knopf. But Morgan believes this was merely a re-synchronization within PDS for uniformity of reporting. Remains open.

2011-03-29/12 (SBN; ASAP): ~~Post a delivery schedule for DAWN SBN data sets, analogous to the schedule posted on the IMG web site.~~ Done.

2011-03-29/13 (DNs and Management; ASAP): ~~Send feedback to Acton on questions in NAIF node presentation (slide 11).~~ No response to Acton; remains open.

2011-06-13 (All; ASAP): ~~Send candidate agenda items for the August meeting to Morgan.~~ Moot

2011-07-11/01 (Node PIs, as appropriate) ~~Bring up any issues or questions involving annual reports with Bill Knopf.~~ Moot.

2011-07-11/02 (C. Schauer, ASAP) ~~Add legend to usability report.~~ Done.

2011-07-11/04 (Morgan, ASAP) ~~Send out email to find out who needs a breakout room at AGU.~~ Mayo has requested a room.

2011-07-11/05 (Grayzeck, ASAP) ~~Inquire at HQ about the possibility of a separate PDS booth at AGU.~~ Done; separate PDS/PSA/IPDA booth approved.

2011-07-11/06 (Morgan, ASAP) Get on Jonathan Rall's calendar on a feasible date to discuss certified data and talk to Max about how to make the meeting effective. Morgan has drafted a request, but it needs revision. A'Hearn will accompany Morgan on the delivery. Remains open.

2011-07-11/08 (All; ASAP): ~~Send EPSC-DPS requirements to Morgan.~~ Done.

2011-08-22/01 (DNs, early Sept): start sending raw web logs to Hardman, who will analyze them once he has data for three months.

2011-08-22/02 (Knopf, ASAP): Specify what HQ actually needs in web reports.

2011-08-22/03 (Vilas, ASAP): Develop a PDS3 to PDS4 migration plan so that DN activities are coordinated and PDS3 data sets are prioritized.

2011-08-22/04 (DNs, per Vilas' schedule): Provide Vilas with prioritized lists of PDS3 data sets for migration.

2011-08-22/05 (DNs, ASAP): Provide contact information for possible WebGeoCalc evaluators to Acton.

~~2011-08-22/06 (DNs, ASAP): Tell Knopf and Grayzeck whether WebGeoCalc appears to be a useful tool~~. DONE by acclamation during executive session.

2011-08-22/07 (Morgan, early September): Add criteria for the Acceptance Review to the 12 September MC telecon agenda.

2011-08-22/08 (Morgan, early November): Add Acceptance Review status reports to the 14 November telecon agenda.

2011-08-22/09 (Morgan, early November): Make the Build 2 Acceptance Review the main item on the MC agenda for 30 November-1 December.

2011-08-22/10 (Grayzeck, ASAP): Get NSSDC help for GEO with their storage device.

2011-08-22/11 (All, ASAP): Respond to Acton's request for feedback on NAIF/SPICE direction (WebGeoCalc, new SPICE capabilities, define common parameters that will be provided with instrument data, drop SPICE as an IPDA project, and SPICE training suggestions, Celestia, and pixel projection).

2011-08-22/12 (All, ASAP): Send recommendations to Schauer of people who could contribute to the follow-up survey on 'search'.

2011-08-22/13 (Williams, ASAP): Work with DNs to develop a process to ensure that deep archive submissions flow smoothly and that status is reported to MC face-to-face meetings.

2011-08-22/14 (All, ASAP): Potential attendees should consult calendars and report possible conflicts to Morgan for an MC meeting at SBN during the week of 19-23 March 2012.

2011-08-22/15 (A'Hearn, ASAP): Investigate logistical issues associated with hosting the MC in the 19-23 March 2012 time frame.

2011-08-22/16 (All, ASAP): Send contact information for additional Build 1d reviewers to Beebe.

2011-08-22/17 (Grayzeck, Morgan, and Beebe; ASAP): Convey MC recommendations on UCD direction to Knopf.

2011-08-22/18 (All, ASAP): Send CASSINI search scenarios to Beebe, which can be used to support the metadata retrieval project.

Planetary Data System Management Council Meeting
22-23 August 2011
Directives to EN
Ordered by date of origin; current status is given in red;
EN directives which have been overstruck will be removed from future versions of this list.

2010-12-10/D. (Crichton, 11 Feb): Develop an integrated storage strategy, including storage service, which can take advantage of PDS 2010 after deployment. Add to the October MC agenda.

2010-12-10/E. (Crichton, 11 Feb): Ask PMWG to benchmark different data movement techniques and to set storage thresholds of different storage architectures. Add to the October MC agenda.

~~2011-03-29/A (Crichton, TBD): To develop a better way to track reviewer comments from the Assessment 1c.~~ Done; presented by Hughes earlier in this meeting..

~~2011-03-29/B (Crichton; ASAP): To start a list of policies that may need to be revised under PDS4~~. Proposed policies posted on PDS 2010 web page.

~~2011-03-29/C (Rye; ASAP): Implement the revised SCR 3-1166 that was approved as part of the superseded/draft/accumulating data package (Attachment A).~~ Implemented for PDS3..

~~2011-07-11/A (Crichton; 22 Aug): Present PDS 2010 System Design Review II report to the August MC meeting~~. Posted on the PDS 2010 web site..

2011-08-22/A (Hardman, ASAP): Specify format for raw web logs.

2011-08-22/B (Hardman, early November): Begin analyzing raw web logs from DNs using report criteria specified by Knopf.

2011-08/22/C (Crichton, October): Distribute stable PDS4 documents as soon as available to Acceptance Review participants.

2011-08-22/D (Crichton, 31 Oct): Set the deadline for written Acceptance Review comments to be shortly after the 14 November MC telecon.

2011-08-22/E (Crichton, ASAP): Develop a web page explaining how to acknowledge use of PDS materials; include a suitable PDS logo which could be copied and used elsewhere.

2011-08-22/F (Law, ASAP): Distribute an e-mail to clarify DN contacts for interactions with NSSDC.

2011-08-22/G (Law, ASAP): Distribute the link to Build 1d documents to the MC list.

2011-08-22/H (Crichton, ASAP): Distribute slides from the Day 2 presentation on PDS Data Formats to the MC list.

2010-08-22/I (Law, ASAP): Find and post the list of PDS4 improvements which address problems identified in the UCD User Survey.

2011-08-22/J (Law, as needed): Remind nodes to report pending NSSDC deliveries approximately quarterly (two weeks before each MC F2F). Updates could be made to an XLS on the wiki.

2011-08-22/K (Hardman, ASAP): Identify which capabilities of the Registry Service he wants to exercise with migrated PDS3 data.

2011-08-22/L (Walker, as needed): Forward PDS concerns regarding NSSDC descope to appropriate NASA officials.

Original (Simpson): 2011-08-26
Geise changed to Geiss (Arvidson): 2011-08-27
NSSDC section of GEO report revised (Arvidson): 2011-08-27
Geiss changed to Geisz (Grayzeck): 2011-08-28
Revision of ITAR section under Program Status (Grayzeck): 2011-08-28
Corrected spelling of Paul Geissler's name in photo caption (Simpson): 2011-08-29
Revised LADEE discussion under What Missions Need from PDS4 (Beebe): 2011-08-29
Added Action Item 2011-08-22/L on Walker (Beebe): 2011-08-29
Corrected scattered typos, punctuation errors, wording choices, etc. (Beebe): 2011-08-29
Clarified relationship of NAIF and UCD on developing WebGeoCalc (Acton): 2011-08-29
Corrected PDS fraction of NAIF funding (Acton): 2011-08-29
Corrected NAIF preference for three non-NSSDC copies of SPICE archives (Acton): 2011-08-29
Clarified Mike Martin's positions on pages 6-7 (Martin): 2011-09-01
Added System Review II draft report URL (Crichton): 2011-09-06
Converted all Operational Readiness Review references to Acceptance Review (Simpson): 2011-09-06
Typo corrections and minor editorial improvements (Simpson: 2011-09-06
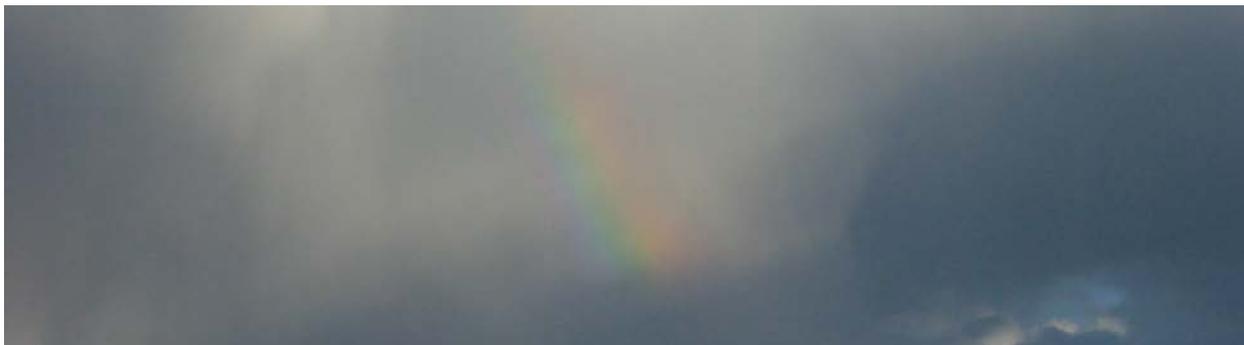
Virga rainbow from the Salsa Brava parking lot, Flagstaff, Monday evening (IMG_9084.JPG).