



International Planetary Data Alliance

IPDA Update



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Mission of IPDA*

- “Facilitate global access to, and exchange of, high quality scientific data products managed across international boundaries”
- Support construction of compatible archives
- Support sharing of tools and software services
- Define “data standards within the IPDA, including the data models and derived dictionaries, based on the NASA Planetary Data System (PDS) that is the de-facto standard for all planetary data at the time of the IPDA founding”

* Extracted from IPDA Charter, July 2007

Steering Committee Members : 2013-2015

28 Members

12 Countries / International Institutions

Technical experts group

~20 Members

General activities

Annual meeting, usually in August, 20-30 participants

Regular teleconferences every 2 months 10-20 participants

Participation in related meetings : **COSPAR**, EGU, AGU, EPSC, etc...

IPDA Website <https://planetarydata.org>



Focus in 2011-2015 (selection)

- Development and Coordination with PDS on the next generation PDS (PDS4) to enable construction of compatible planetary archives
- Development of a Planetary Data Access Protocol to access planetary archives
- Development of international registries to enable registration and search of data, tools and services
- Standards related to geometry and navigation

Moscow Meeting

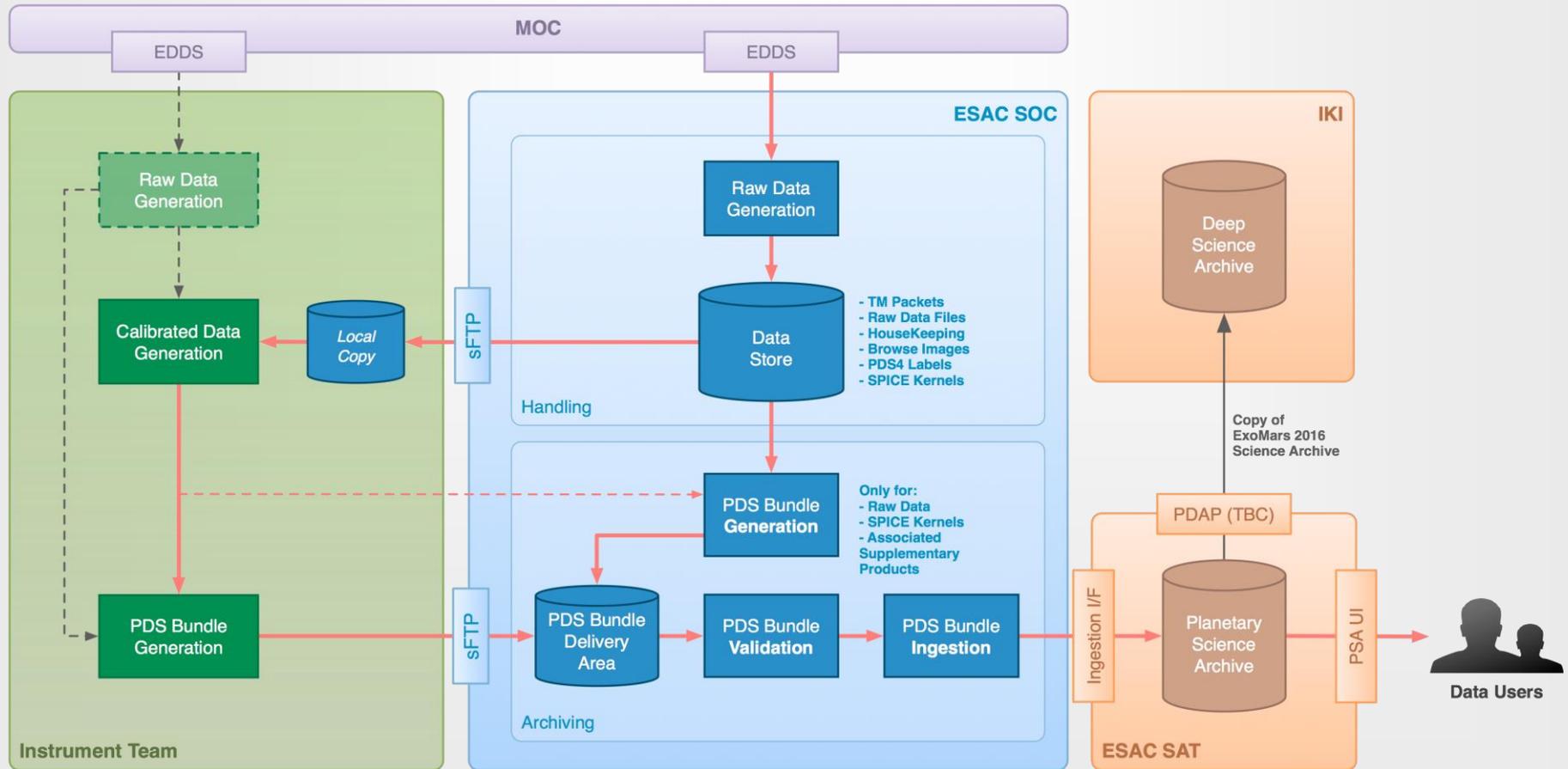
- Held at IKI, August 9-10, 2014
- One day focused specifically on PDS4 adoption and use
- Second day on overall archiving activities and coordination
- Small, but representation from ESA, JAXA, ISRO, IKI, CNES/IPSL, and NASA
 - Actually allowed for good discussions



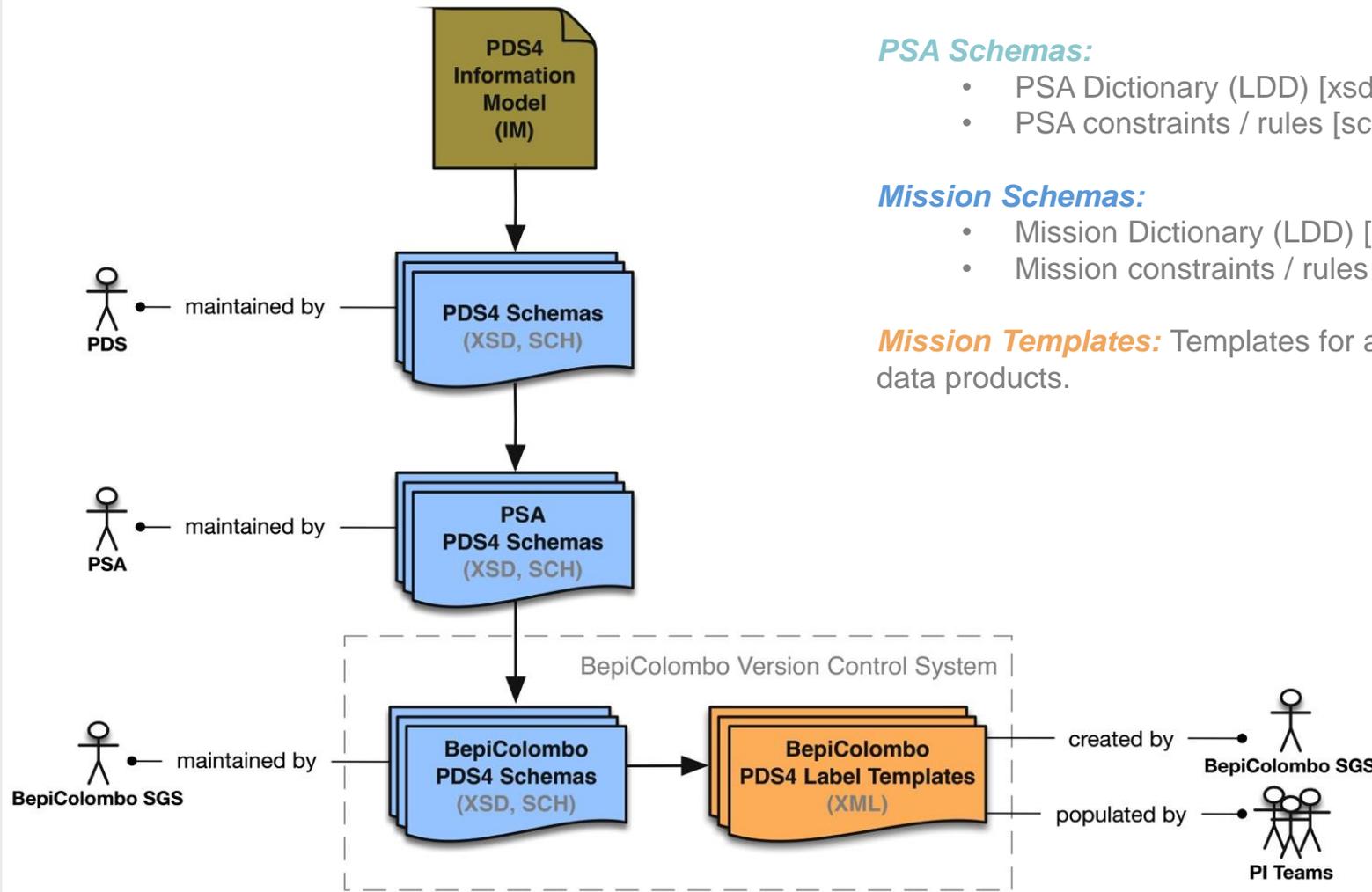
ESA

- PDS4 Missions
 - ExoMars: Joint mission between ESA/IKI
 - 2016 mission archive, to be hosted by ESA/PSA
 - 2018 mission archive, to be hosted by IKI
 - Working jointly on complete data access / sharing, and preparation of some data pipelines within the archiving setup
 - Requirements and design review passed (including archiving plans)
 - Aiming for early 2015 “archive demonstration” with PDS4 test data
 - BepiColombo: Joint mission between ESA/JAXA
 - Working on interoperable access / sharing of archiving tasks; agreement in process
 - Data pipelines will be within the BepiColombo archive system.
 - JUICE: nothing started yet
- Key concerns/needs
 - Management of archive / PDS4 implementations must be fully cooperative at an international level.
 - Common validation (tools, processes)
 - Coordination at common and discipline levels of information model
 - Training

Data Flow / Archiving Functions (ExoMars)



BepiColombo PDS4 Implementation



See “Detailed Implementation Discussion” presentation.

Archiving Guide

2 APPLICABLE STANDARDS

2.1 PDS Standards

2.1.1 *PDS4 Requirements for BepiColombo*

The combination of the documents listed below give the set of common requirements that apply across PDS.

- The [PDS4 Data Dictionary](#) (DDDB) is the fundamental reference for definitions of classes and attributes (see PDS4 terminology in section 2.1.2).
- The [PDS4 Information Model](#) (IM) is the fundamental reference for PDS4 structure; its requirements can be validated automatically using eXtensible Markup Language (XML) schemas.
- The [PDS4 Standards Reference](#) (SR) is a compilation of policies, rules, and other PDS4 constraints that are not given explicitly in the previous references.

BepiColombo has defined ***mission-specific requirements*** (highlighted in red in the present document) that further constrain — but do not conflict with — the common PDS4 requirements. These specific rules apply to all BepiColombo science data to be ingested and preserved in the BepiColombo archive.

PDS4 Schemas

All requirements, data structures and permissible values mentioned above are available in the form of XML Schema and Schematron files, which can be used to automatically validate the PDS4 labels. Common [PDS4 schemas](#) (common requirements) are supplied by the PDS. Specific BepiColombo PDS4 schemas (mission specific requirements) are supplied by the SGS. See Annex E for more information on the PDS4 schemas.

JAXA

- Mission Status
 - AKATSUKI
 - Format: PDS3 (FITS + Detached PDS3 Label)
 - Development of Level-1 pipeline is finished and it works continuously.
 - Level-2 pipeline is now under development (Discussion of FITS keywords).
 - HISAKI
 - Format: FITS (the ground observation manner)
 - HISAKI does not use DSN, and NAIF ID for SPICE kernels is managed by JAXA.
 - Hayabusa-2
 - Format: **PDS4**
 - The Hayabusa-2 project defines PDS4 team in Hayabusa-2 mission.
 - BepiColombo MMO
 - Format: **PDS4 (with CDF)**
 - ESA/JAXA working on interface agreement
 - Others
 - Viking Lander 2 Seismic Data will be released in 6 months from DARTS.
- Key concerns/needs
 - Public access to archived data
 - Training

JAXA PDS Compliance Level

Level	Meaning	Detail	Comment
1	Formatted data	The data format is in PDS, but it is not well documented.	Most of documents in Japanese
2	Formatted and well-documented data	The data format is in PDS, and information is well documented. But the peer-review is not performed.	
3	Peer-reviewed data	The data are peer-reviewed, but the data are not distributed from PDS website.	In PSA of ESA, the review process is identical.
4	PDS distributed data	The data are distributed from PDS website.	Copyright discussion is required.

ISRO

- Mission Status
 - Mars Orbiter Mission (MOM)
 - PDS3 archive
 - Pipeline developed for all 5 payload instruments
 - Plan to use MOM data to learn PDS4
 - Chandrayaan-2
 - PDS4 archive
 - Plan to develop pipeline for 5 payloads
- Key concerns/needs
 - PDS4 startup (training, consultancy, tools, etc)

IKI

- PDS4 Missions
 - As discussed, ExoMars and JUICE
 - Coordination occurring from PSA
 - Replicated copies of data
 - Mars 2016: hosted by ESA
 - Mars 2018: surface mission hosted by IKI; rover data hosted by PSA
 - Phobos R mentioned, but limited details

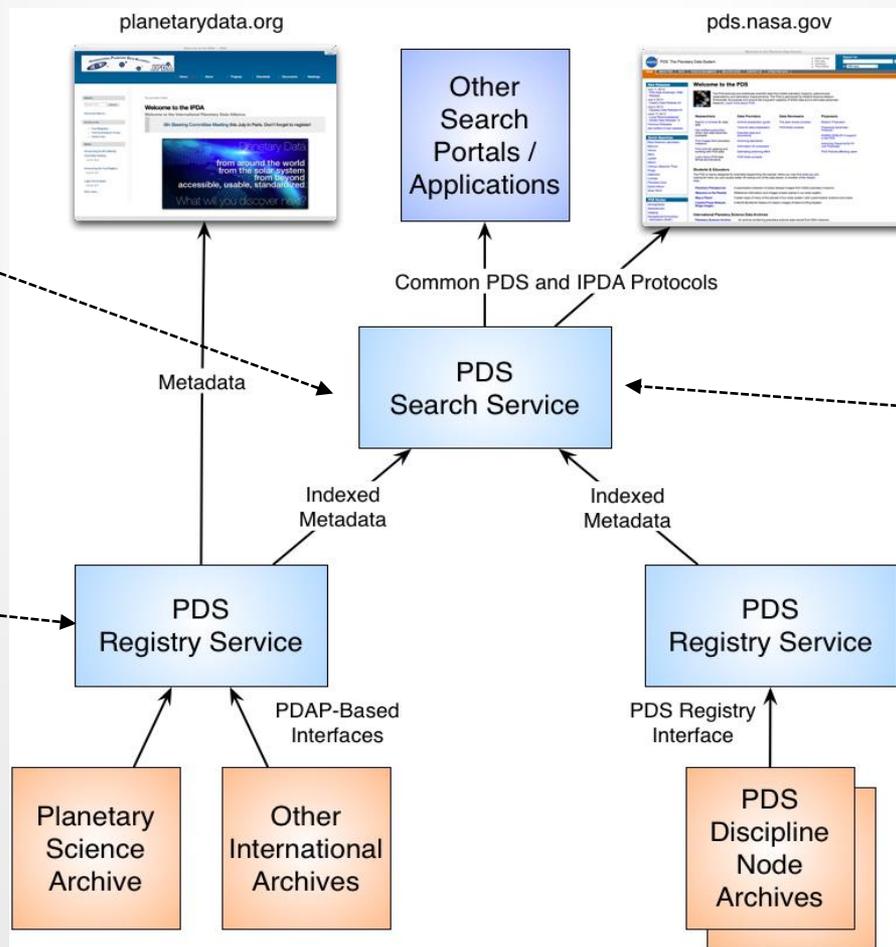
International Search/Access

- Presented at the meeting
- Documentation for interfacing with the PDS4 Registry and Search Services posted to the IPDA Standards website.
- Provided PDS4 Registry Service software to IPDA members for installation and use in their local environments.
- Streamlined the process for harvesting PSA metadata and resolving anomalies.
- Discussed ranking strategies and fixed vs dynamic metadata
- Discussed integration of Chandrayaan-1 data into the PDS4 system at pds.nasa.gov

Architecture

Search Service supports the PDS and PDAP protocols enabling development of other portals and applications on this infrastructure.

Registry Service directly supports the IPDA Tool Registry interface.



Search Service indexes metadata from multiple Registry Service instances to support a given search interface.

Search for Venus Express Via Web-Based Interface

The screenshot shows the PDS Search Results page for the query "venus express". The page title is "PDS: Search Results". The search bar contains "venus express" and the results are displayed as "1-50 of 533 results (0.013 seconds)". The results are listed under the heading "Data Sets and Information".

Refine Your Search

- Agency**
 - ESA (504)
 - NASA (29)
- Type**
 - Data Set (527)
 - Instrument (4)
 - Instrument Host (1)
 - Investigation (1)
- Target**
 - Planet (437)
 - Other (115)
 - Calibration (17)
 - Comet (8)
 - Satellite (2)
 - Asteroid (1)
- Investigation**
 - Mars Express (365)
 - Venus Express (115)
 - International Rosetta Mission (47)
 - Magellan (1)
- Instrument**
 - Radio Science (363)
 - Magnetometer (12)
 - Other (5)

Search Results

"venus express" Search [New Search](#)

1-50 of 533 results (0.013 seconds)

Data Sets and Information

- Data Set: VENUS-EXPRESS VENUS MAG 4 EXTENSION2 V1.0**
Information about VEX-V/Y-MAG-4-EXT2-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-4-EXT2-V1.0 - starting 2008-12-06T00:01:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 2 EXTENSION2 V1.0**
Information about VEX-V/Y-MAG-2-EXT2-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-2-EXT2-V1.0 - starting 2008-12-06T00:01:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 4 V1.0**
Information about VEX-V/Y-MAG-4-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-4-V1.0 - starting 2004-10-31T22:00:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 4 EXTENSION1 V1.0**
Information about VEX-V/Y-MAG-4-EXT1-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-4-EXT1-V1.0 - starting 2006-10-31T00:04:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 2 EXTENSION1 V1.0**
Information about VEX-V/Y-MAG-2-EXT1-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-2-EXT1-V1.0 - starting 2006-10-31T00:04:00Z
- Data Set: VENUS EXPRESS SKY/VENUS SPICAV 3 SOIR EXT1 V3.0**
Information about VEX-Y/V-SPICAV-3-SOIR-EXT1-V3.0
VENUS EXPRESS - VEX-Y/V-SPICAV-3-SOIR-EXT1-V3.0 - starting 2006-10-31T00:03:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 2 V1.0**
Information about VEX-V/Y-MAG-2-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-2-V1.0 - starting 2004-10-31T22:00:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 3 EXTENSION2 V1.0**
Information about VEX-V/Y-MAG-3-EXT2-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-3-EXT2-V1.0 - starting 2008-12-06T00:01:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 3 EXTENSION1 V1.0**
Information about VEX-V/Y-MAG-3-EXT1-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-3-EXT1-V1.0 - starting 2004-10-31T22:00:00Z
- Data Set: VENUS-EXPRESS VENUS MAG 4 EXTENSION3 V1.0**
Information about VEX-V/Y-MAG-4-EXT3-V1.0
VENUS EXPRESS - VEX-V/Y-MAG-4-EXT3-V1.0 - starting 2009-12-07T22:02:00Z

Agency facet allows users to select between ESA and NASA results.

PSA data sets currently link directly to a PSA web-based interface.

Future work includes providing a jump page similar to how PDS data sets are handled.

Outreach and IPDA Networking

- EPSC/DPS 2011
 - IPDA Session
- PV 2011
- AGU 2011-2014
- LPSC March 2012
- VAO April 2012
- 2012 Planetary Data Workshop
- COSPAR 2012, 2014
- LPSC 2011-2014
- EPSC 2013-2014
- IVOA 2014



AGU 2011

Major Takeaways

- All agencies engaged in PDS4 now
 - ESA/PSA is interfacing with IKI and JAXA
- Coordination of a common validation tool and processes a priority for PSA
 - They have and will continue evaluating the PDS4 “validate tool”
- All like the CCB, however, they did note that coordination of PDS4 discipline model updates is an interest
- Interest by all in forming a PDS4 training class
 - Would like to have another training like we did in May 2013 at JPL for IPDA members
 - Also interested in a broader class perhaps connected to the data workshop

Thank you for your attention
Спасибо за внимание