



Developing The International Planetary Data Alliance (IPDA)

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International Activities
for the enhancement of the research and exploration activities
in the worldwide planetary community, since 2006.

Under the SC-B of COSPAR



Objectives of the IPDA

- Give scientific communities world-wide access to data archives
- Reduce cost of archiving and distributing science data
- Ensure reusability of science data across time
- Ensure reusability of science data across agency/mission/instrument boundaries
- Make it simpler to coordinate archiving processes and plans across international missions and archives
- Improve and increase services offered



History : 2005 - 2009

NASA Standard : Planetary Data System (PDS) - In 1980s, a data system was set up for planetary related data (ground-based, laboratory data, space data).

ESA Standard : Planetary Science Archive (PSA) - ESA adopted the PDS-Standard. NASA/PDS and ESA/PSA worked together to establish the IPDA.

The 1st IPDA meeting was held at ESA/ESTEC, by world data archivers in planetary sciences. We agreed to establish the basic scheme. (2006)

The 2nd (Caltech@Pasadena), 3rd (COSPAR@Montreal), and 4th (ASI@Rome) meetings, we established and achieved several international projects toward our common targets.

In the 37th COSPAR meeting in 2008, the IPDA received the support resolution from **the Science Commission B**.



PDS & IPDA

- The world-wide science community uses the PDS archive and is used to the standards.
- Constrained budgets across agencies drives collaboration and use of existing standards.
- Missions are few-and-far between, creating a demand to access all archives.
- The past practice of ingesting all international data into PDS isn't feasible
 - Agencies need to retain provenance of the data
 - Ineffective use of funds and resources

*Progress Report - The International Planetary Data Alliance (IPDA):
Activities in 2008-2010 *Space Research Today*, 176, 40-45, Dec. 2009.



The 4th Steering Committee Meeting

July 2009 at ASI, Rome



INTERNATIONAL PLANETARY DATA ALLIANCE (IPDA)

<http://planetarydata.org/>



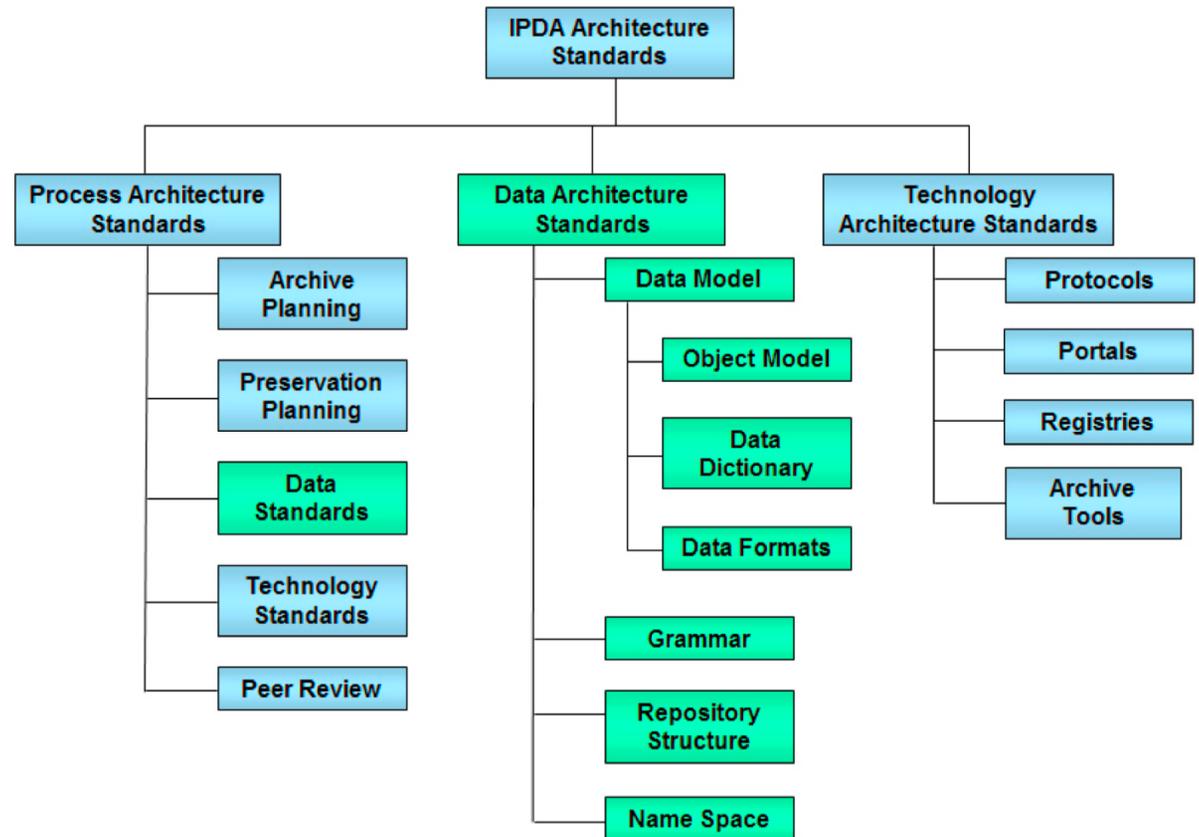
IPDA Key Requirements

1. IPDA will form an international alliance that will actively work with data providers who use its standards for archiving science data from planetary science missions
2. IPDA will facilitate global access to international planetary science data archives
3. IPDA will develop, maintain and publish standards for archiving and sharing planetary science data among international archive systems
4. IPDA will promote use of shared tools and services across archive systems in order to support scientific collaboration



IPDA Architecture Development

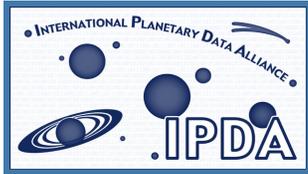
- In 2008, IPDA developed a system architecture model for the IPDA derived from the IPDA requirements
- IPDA as a system is a heterogeneous, distributed, service-oriented system with distributed data and services at IPDA member sites



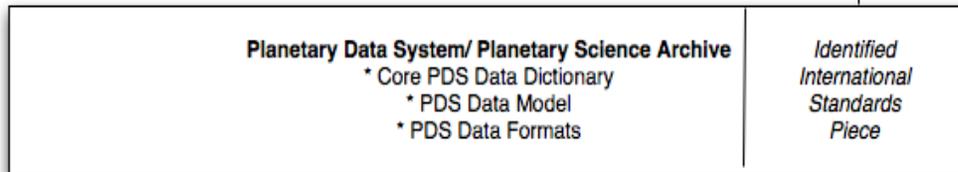
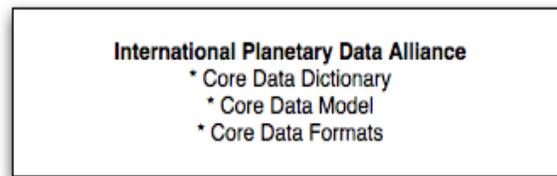


IPDA Process Architecture

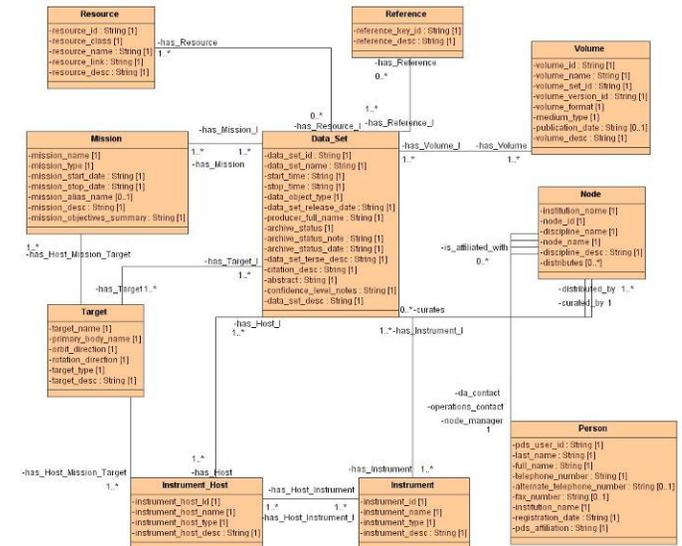
- Archive Planning
 - Common approaches for working with data providers, particularly on an international basis
 - NOTE: A 2009 project is to begin to identify this process leveraging the PDS Archive Process Guide (APG)
- Standards management
 - Management of the top-level standards for the planetary science community including both data and technical standards to support interoperability
- Preservation
 - Approaches for long term management of the data
- Peer review of data
 - Common peer review processes, particularly for joint, international missions



International Data Standards



Standards Structure (IPDA and Agency Level)



Data Object Model

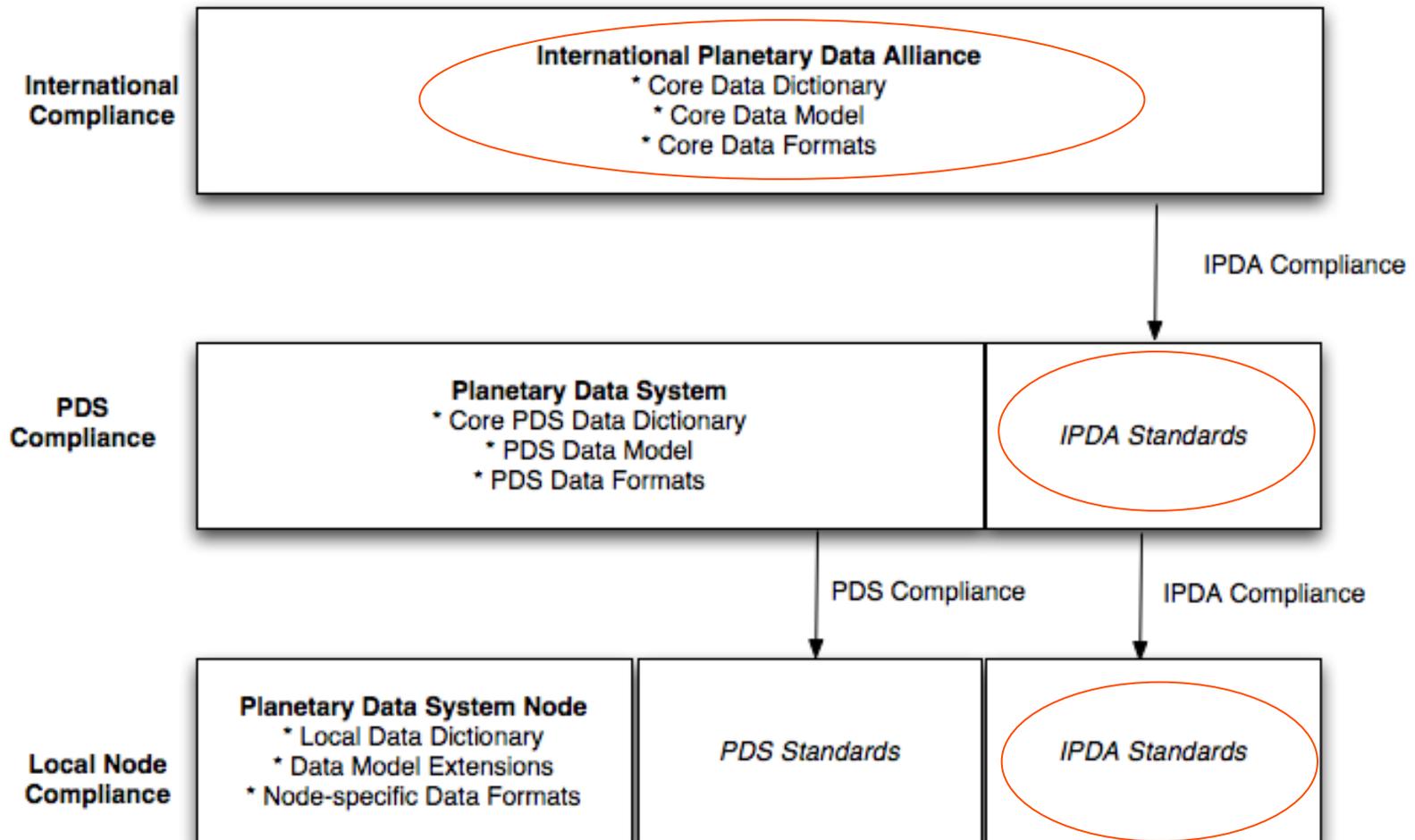
- Collaborating with PDS on a next generation set of IPDA Data Standards
- Developing a mechanism for management of the standards at an international level
- Structuring standards to better manage *namespaces*
- Align existing agency standards and processes with the internationalization

INTERNATIONAL PLANETARY DATA ALLIANCE (IPDA)

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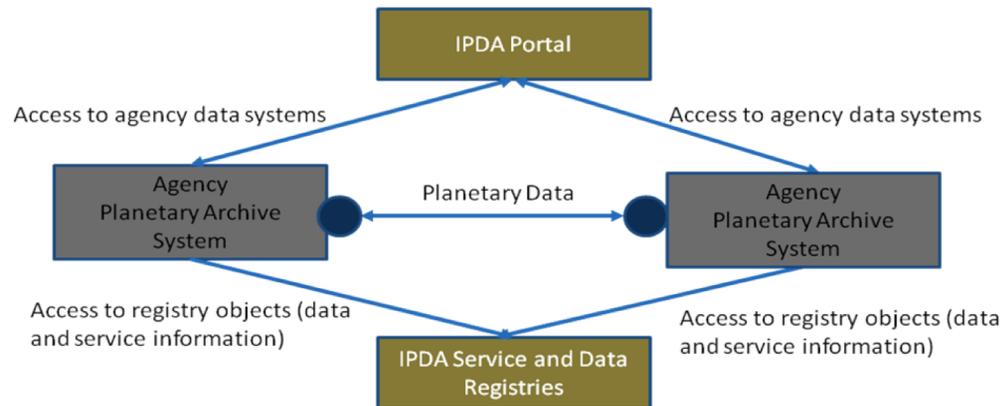


Agency Example:PDS Alignment to International Standards





Technical Architecture of IPDA



- Technical architecture includes key components
 - A portal for news and links to other IPDA systems
 - Registries that capture data standards, standard values, IPDA services, and data
 - Protocols for accessing and sharing data via PDAP
 - Shared archiving tools (validation, design, viewing)



IPDA Registries

- Service Registry: Manages information about IPDA Services
 - these manage definitions of IPDA services that are available
- Metadata Registry: Manages information models and associated information objects
 - this is the IPDA data dictionary published as an online registry
- Resource Registry: Manages information about standard resources
 - these could be standard parameters such as mission, instrument information, etc with a PDAP interface
- Data Registry: Generalized registry of information objects
 - these could be the agency data catalogs with a PDAP interface

You are here: Home

QUICK LINKS

- Technical Experts Group
- Useful Links

UPCOMING EVENTS

 PV 2009 Conference
 Madrid, Spain,
 Dec 01, 2009

[Upcoming events...](#)

NEWS

 Website Redesign
 and Relaunch
 Apr 13, 2009

 Announcing the 4th
 SC Meeting
 Apr 08, 2009

IPDA Members: [Log in](#)

WELCOME TO THE IPDA



The IPDA's main emphasis is to ease discovery, access and use of planetary data by world-wide scientists regardless of which agency is collecting and distributing the data. Ensuring proper capture, accessibility and availability of the data is the task of the individual space agencies. The IPDA is focusing on developing an international standard which allows the following capabilities: query, access and usage of data across international planetary data archive systems. While, trends in other areas of space science are concentrating on the sharing of science data from diverse standards and collection methods, the IPDA shall concentrate on promoting standards which drive common methods for collecting and describing planetary science data across the international community. Such an approach will better support the long term goal of easing data sharing across system and agency boundaries. An initial starting point for developing such a standard will be internationalization of NASA's Planetary Data System standards.

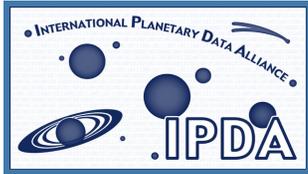
Upcoming Events





Archiving Tools

- Provide support for design, validation and submission of data. Examples include
 - Validation Tools
 - PVV – ESA/PSA tool for validation
 - VTool – NASA/PDS tool for validation
 - Design Tools
 - LTDTTool – NASA/PDS tool for design
 - Viewing Tools
 - NASAView – NASA/PDS tool for viewing PDS-complaint data products



What was achieved? – Projects in 2008-09

<International Standards>

IPDA Architecture and Standards Definition

(Project Leader)

D. Crichton (NASA/JPL)

Definition of a high level system architecture, to identify the critical elements that need to be defined within the IPDA.

IPDA Information Model and Data Dictionary

S. Hughes (NASA/PDS)

Selective adoption of the NASA PDS data standards.

Further progress should be linked to the development of NASA/PDS next generation standards, called PDS4.

Inter-operable Implementations

J. Salgado (PSA), N. Chanover (PDS)

The PDAP specification:

updated to Ver. 0.4

Implementation of PDAP to

Venus Express (ESA/PSA and NASA/PDS)

Hayabusa (JAXA: small body), Selene (JAXA: moon)

PDAP assessment

Y. Yamamoto (JAXA)

Review of PDAP Ver.0.3, which is & will be reflected in future updates.

Establishment of ‘Assessment How-To’



What will be achieved? – Projects in 2009 -10

<International Standards>

IPDA Assessment of PDS4 Data Standards - International Assess and recommendation for new 'PDS4' definitions

S. Hughes (NASA/PDS) steve.hughes@jpl.nasa.gov

IPDA Archive Guide - Documentation for archive preparation for PIs and Archivers.

M. T. Capria (INAF) mariateresa.capria@iasf-roma.inaf.it

D. Heather (ESA/PSA) dheather@rssd.esa.int

IPDA Standards Identification - Development of the IPDA standards

E. Rye (NASA/PDS) elizabeth.d.rye@jpl.nasa.gov

G. Krishna (ISRO) bgk@sac.isro.gov.in

Ancillary Data Standards - Implementation of Ancillary Data into the IPDA scheme

Chuck Acton (NASA/JPL) charles.h.acton@jpl.nasa.gov

IPDA Registries Definition - Develop IPDA registry architecture and plan

D. Crichton (NASA/PDS) dan.crichton@jpl.nasa.gov



What will be achieved? – Projects in 2009 -10

<Interoperability: Definitions>

PDAP Specification - **Develop and update the PDAP specification**

J. Salgado (ESA/PSA)

Jesus.Salgado@sciops.esa.int

Y. Yamamoto (JAXA)

yukio@planeta.sci.isas.jaxa.jp

<Interoperability: Applications>

Interoperability Assessment - **Assess the approach for accessing the Venus Express data**

R. Beebe (NMSU)

rbeebe@nmsu.edu

D. Heather (ESA/PSA)

dheather@rssd.esa.int

PDAP Geographic Information System (GIS) extension - **Extend PDAP to support GIS-oriented mapping data**

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T. Hare (USGS)

thare@usgs.gov



Next Steps

- **Next Steering Committee Meeting: July 2010**

One week before the 38th COSPAR (Bremen, Germany)

- **The 38th COSPAR at Bremen: July 18-25, 2010**

- The open session
Planetary Space Sciences and Data Management
(B09)
- Report the IPDA activities to
Science Commission B on Space studies of the
earth-moon
system, Planets, and Small Bodies of the Solar System



International Planetary Data Alliance : Who?

Steering Committee Members : 2009-2011

Chair Japan)

Deputy Chair

Former Chair (2006-2007)

Former Chair (2007-2009)

Yasumasa Kasaba

Dan Crichton

Joe Zender

Maria Teresa Capria

(Tohoku Univ.,

(NASA/JPL, PDS)

(ESA: PSA)

(IASF/INAF, Italy)

NASA-PDS

ESA-PSA

Canada (CSA)

France (CNES)

Germany (DLR)

India (ISRO)

Italy (ASI)

Japan (JAXA)

UK

Reta Beebe (NMSU), Dan Crichton (JPL)

Dave Heather, Jorge Vago

Mickael Germain

Richard Moreno, Thierry Levoir, Alain Sarkissian (IPSL)

Thomas Roatsch, Karin Eichertopf

Gopala Krishna, R. Srinivasan

Maria Teresa Capria, Paolo Giommi

Yukio Yamamoto, Iku Shinohara,

Peter Allan (RAL). Mark Leese (Open Univ.)

