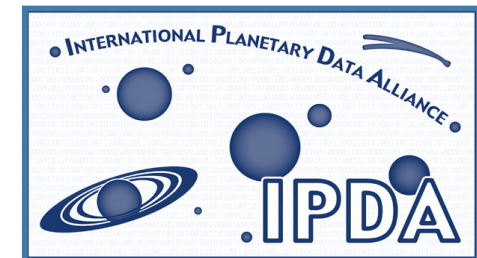


平成21年度宇宙科学情報解析シンポジウム
国際惑星データ連合IPDA

International Planetary Data Alliance: その現況

東北大・理・地球物理
IPDA 現副議長, 次期議長
笠羽康正



International Planetary Data Alliance : Who?

Steering Committee Members : 2007-2008

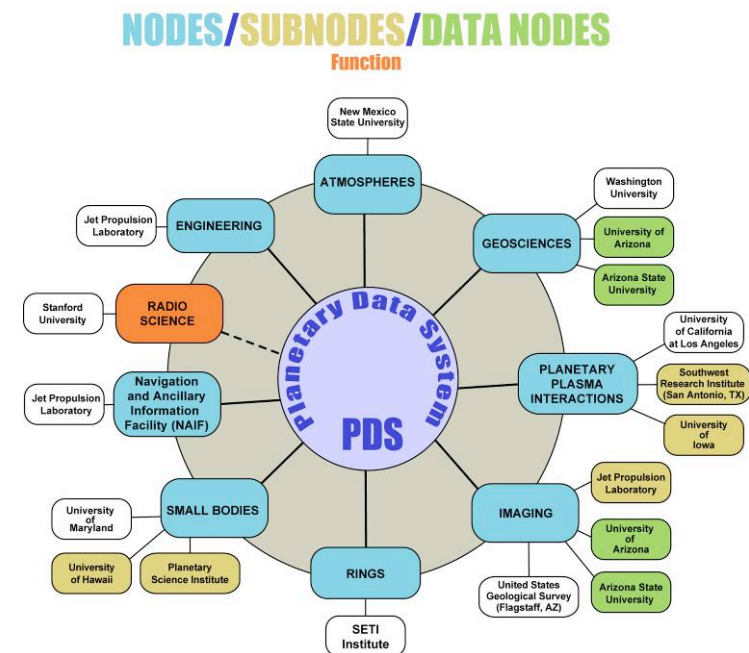
| | | |
|-------------------------|--|-----------------------|
| <u>Chair</u> | Maria Teresa Capria | (IASF/INAF, Italy) |
| <u>Vice-Chair</u> | Yasumasa Kasaba | (Tohoku Univ., Japan) |
| <u>Former Chair</u> | Joe Zender | (ESA) |
| <u>China (CNSA/CAS)</u> | Maohai Huang, Jianjun Liu | |
| <u>Canada (CSA)</u> | (TBA) | |
| <u>ESA (PSA)</u> | Dave Heather | |
| <u>France (CNES)</u> | Francis Rocard | |
| <u>Germany (DLR)</u> | Karin Eichentopf, Thomas Roatsch | |
| <u>India (ISRO)</u> | Gopala Krishna | |
| <u>Italy (ASI)</u> | Francesco Carraro | |
| <u>Japan (JAXA)</u> | Iku Shinohara, Yukio Yamamoto | |
| <u>Russia (RAS/RKA)</u> | Alexander Zakharov, Viktor Savorskiy | |
| <u>UK (BNSC/PPARC)</u> | Mark Leese (Open Univ.), Peter Allan (RAL) | |
| <u>USA (NASA/PDS)</u> | Reta Beebe, Dan Crichton | |



History : 1980s – 2004

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

- Official archive for Planetary Science Data
 - Missions are required to archive data with PDS
- Federation of nodes
 - Science discipline nodes : scientific and data management expertise
 - Central : PDS-wide software and standards
- Standard archiving processes and tools
 - Diversity of data types, but a homogeneous architecture



- **ESA Standard : Planetary Science Archive (PSA)** -
ESA adopted the PDS-Standard. NASA/PDS and ESA/PSA have worked together for several missions. (e.g., Huygens, Mars Express, Venus Express)

Huge effort to match the both definitions.

History : 2005

In 2005, the ESA/PSA and NASA/PDS initiated an effort to develop common interoperability standards.

- Database : Independently managed (but with common base structures)
- Access from outside : by Common protocol
 - A protocol for finding, accessing and retrieving science products for common search for discipline-specific queries from other agency systems !

Other space agencies also need to setup similar archival systems. Co-operations make it necessary to minimize the differences between systems and standards.

e.g. Rosetta (NASA,ESA), BepiColombo (ESA,JAXA), Chandrayaan (ISRO,ESA)

World-wide scientific communities want to have standardized archival systems.

- They do not take care about Space Agency's considerations,
Only request is the easy access to the data !

SOLUTION: Establish the International Standard !

The 1st Steering Committee Meeting Nov. 2006 at ESA/ESTEC



In 2006, the International Planetary Data Alliance was established which includes participation from major space agencies around the world.



The 2nd Steering Committee Meeting July 2007 at CalTech



Charter of the IPDA [July 19, 2007]

Contents

1. Mission Statement
2. Scope
3. Objectives
4. Membership
5. Dependencies and Success
6. Intellectual Property

1. Mission Statement

The International Planetary Data Alliance (IPDA) is a close association of partners with the aim of improving the quality of planetary science data and services to the end users from space based instrumentation.

The specific mission of the IPDA is to facilitate global access to, and exchange of, high quality scientific data products managed across international boundaries.

This will be achieved by adhering to a set of governing data standards.

International Planetary Data Alliance

2. Scope

....

The data standards within the IPDA, including the data models and derived dictionaries, are 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.

The work on the data standards will not be restricted to planetary data sets only. Their use for solar system data sets in general will be encouraged, whenever possible.

IPDA will also examine possibilities of integrating data and applications from other data sources, i.e., ground-based observations, in-situ probes, numerical models, forecasts, etc.

International Planetary Data Alliance

3. Objectives

The main objective of IPDA is the enhancement of the research activities in the worldwide planetary community.

The IPDA as a whole shall propose and adopt standards for planetary science data archiving, exchange and access, and will implement accompanying tools in the areas, such as, however not restricted to:

- long-term data preservation
- data modeling
- data dictionary management
- interoperability
- data generation, validation, access, exchange, visualization and mining
- services registry
- and others

**Development of the planetary version of 'Virtual Observatory'
... Unified meta-database & protocol to connect independent archives.**

International Planetary Data Alliance

4. Membership

The IPDA will be **represented by a Steering Committee**.

Membership in the Steering Committee shall be comprised of representatives

from any space agency, scientific research institute, university or other organization approved by the Steering Committee that indicate a willingness to participate fully in the IPDA activities and provide the commensurate level of support for defining and implementing the IPDA standards.

The Steering Committee is **led by a chairperson and a deputy chairperson** nominated by the Steering Committee for a maximum two years term.

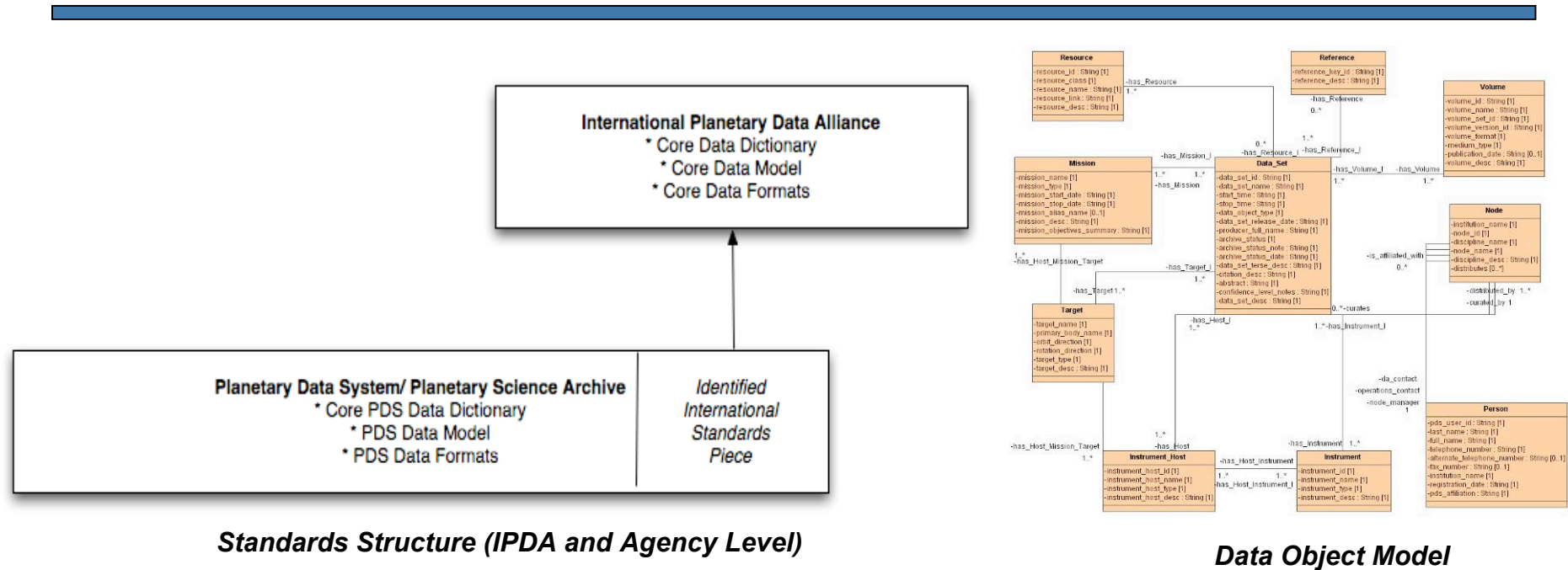
The IPDA activities will be **supported by Projects**.

The IPDA Projects are formed, and a Project Leader is nominated, by the Steering Committee.

Projects: 2007-2008

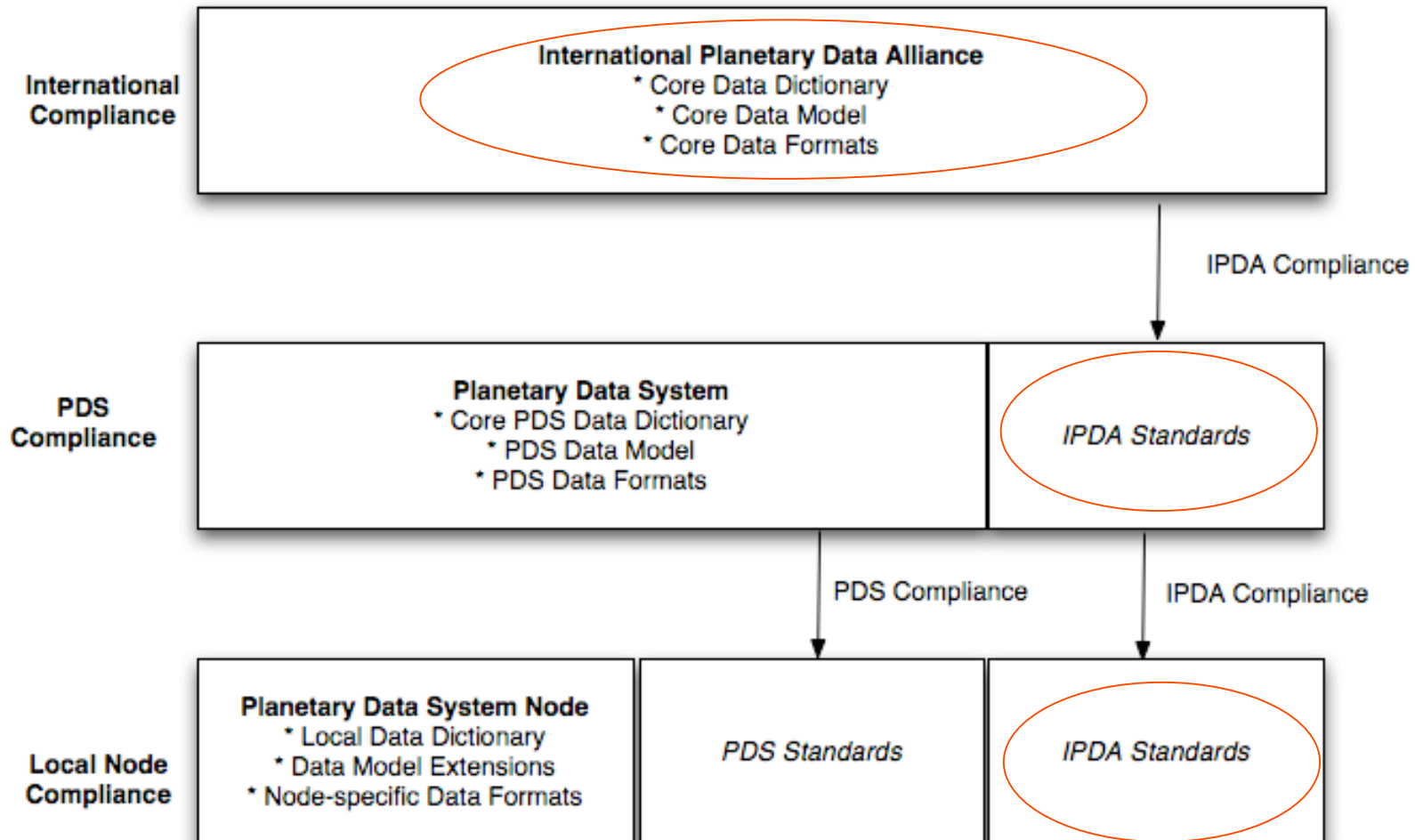
| <u>Project Name</u> | <u>Leader</u> |
|--|--------------------------|
| <Program> | |
| *COSPAR (continuation) | Reta Beebe |
| *Banner/LOGO | Thomas Roatsch |
| <Standard Definitions> | |
| *IPDA Requirements | Dan Crichton |
| *Standard Data Model, Assessment of Draft | Peter Allan |
| *Data Dictionary Modeling | Steve Hughes |
| <Interoperability> | |
| *Venus Express Interoperability | Nancy Channover |
| *Small-Body Interoperability Demonstrator | Iku Shinohara |
| *PDAP, Assessment of Draft Protocol | Someone from JAXA |
| *Interoperability: Query Model | Iku Shinohara |
| <Search Scheme> | |
| *Target Identification | Anne Raugh |

International Data Standards .IPDA

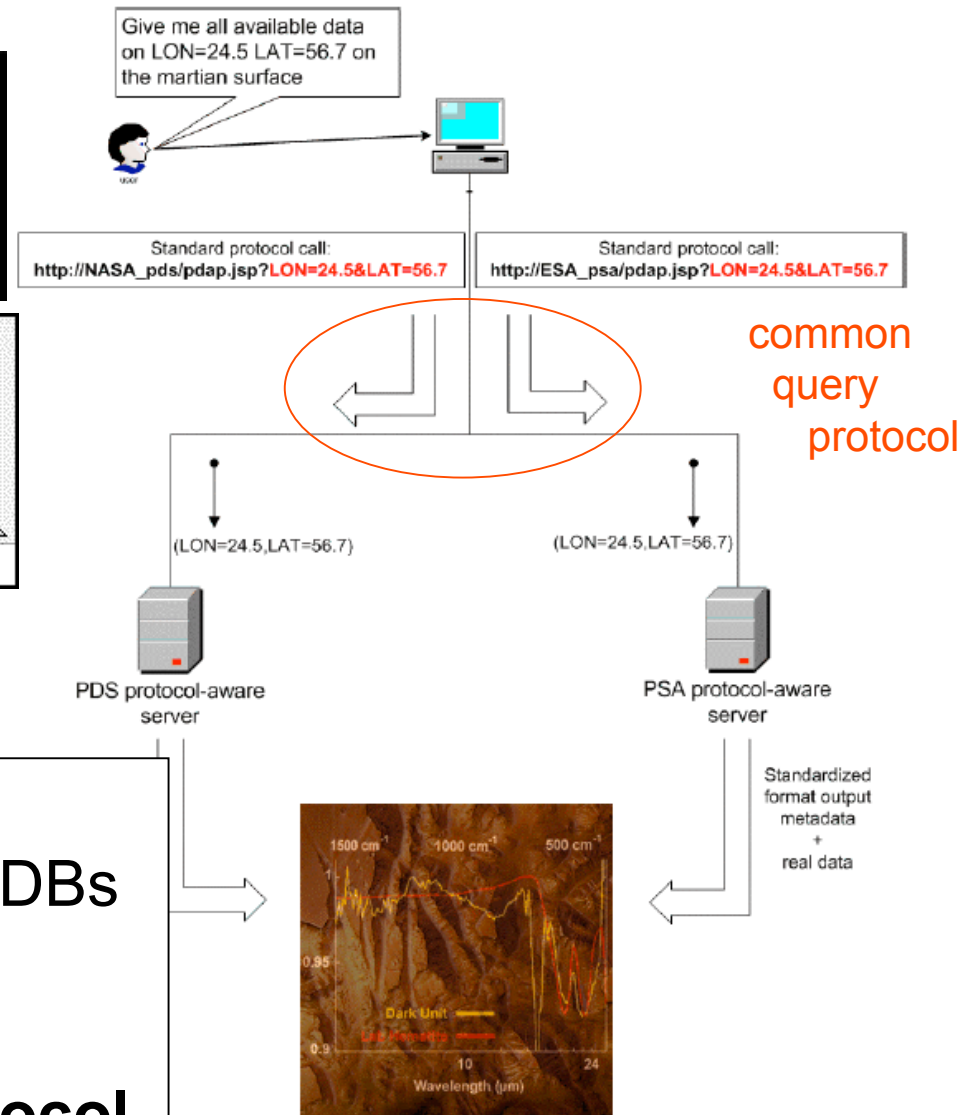
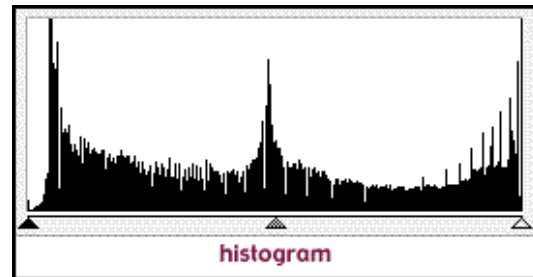
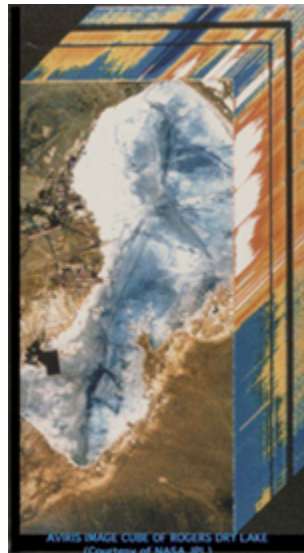


- Identify the existing subset of standards used by PDS/PSA which are appropriate for internationalization
- Develop a mechanism for management of the standards at an international level (e.g., coordinated through the IPDA Archive Data Standards Project)
- Align existing agency standards and processes with the internationalization

Agency Example:PDS Alignment to International Standards



Interoperability Project: Use Case

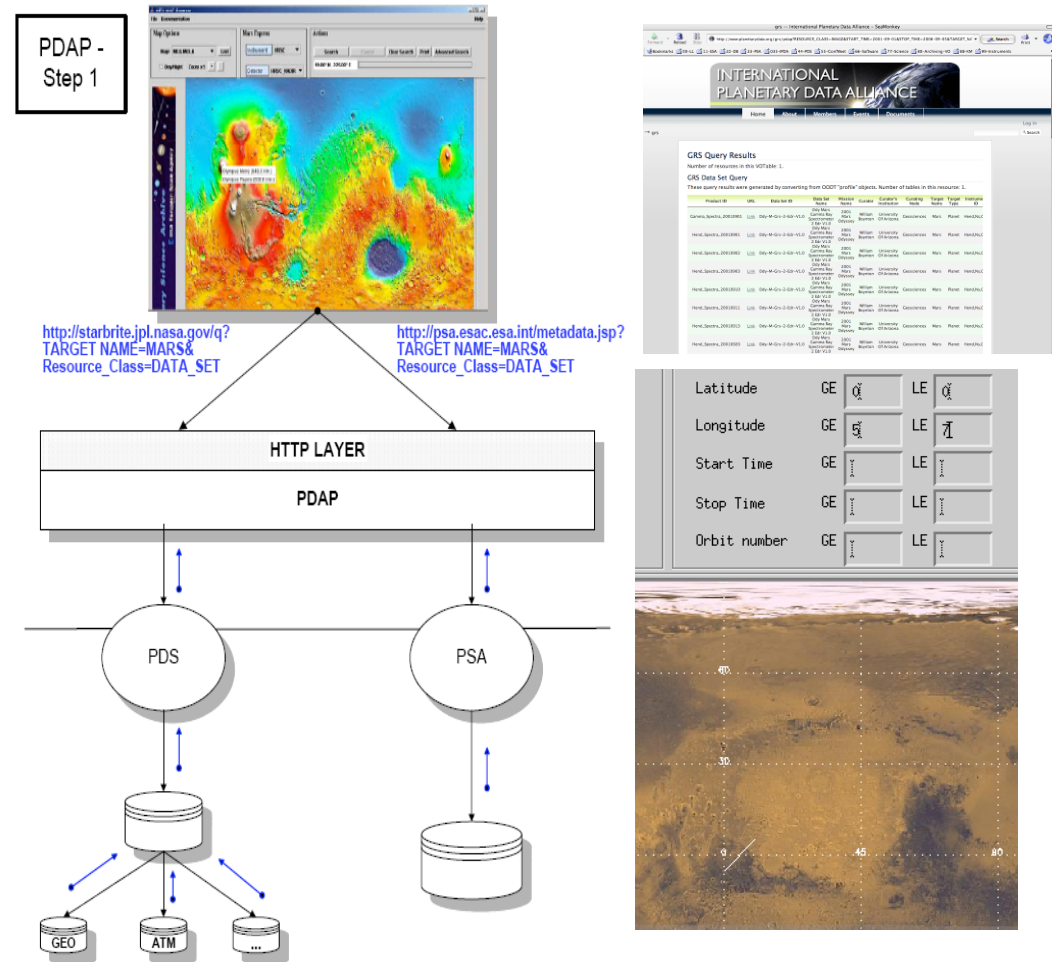


In the IPDA concept,
all related data in the multiple DBs
can be shown through
PDAP =
Planetary Data Access Protocol.

Interoperability among planetary science archives

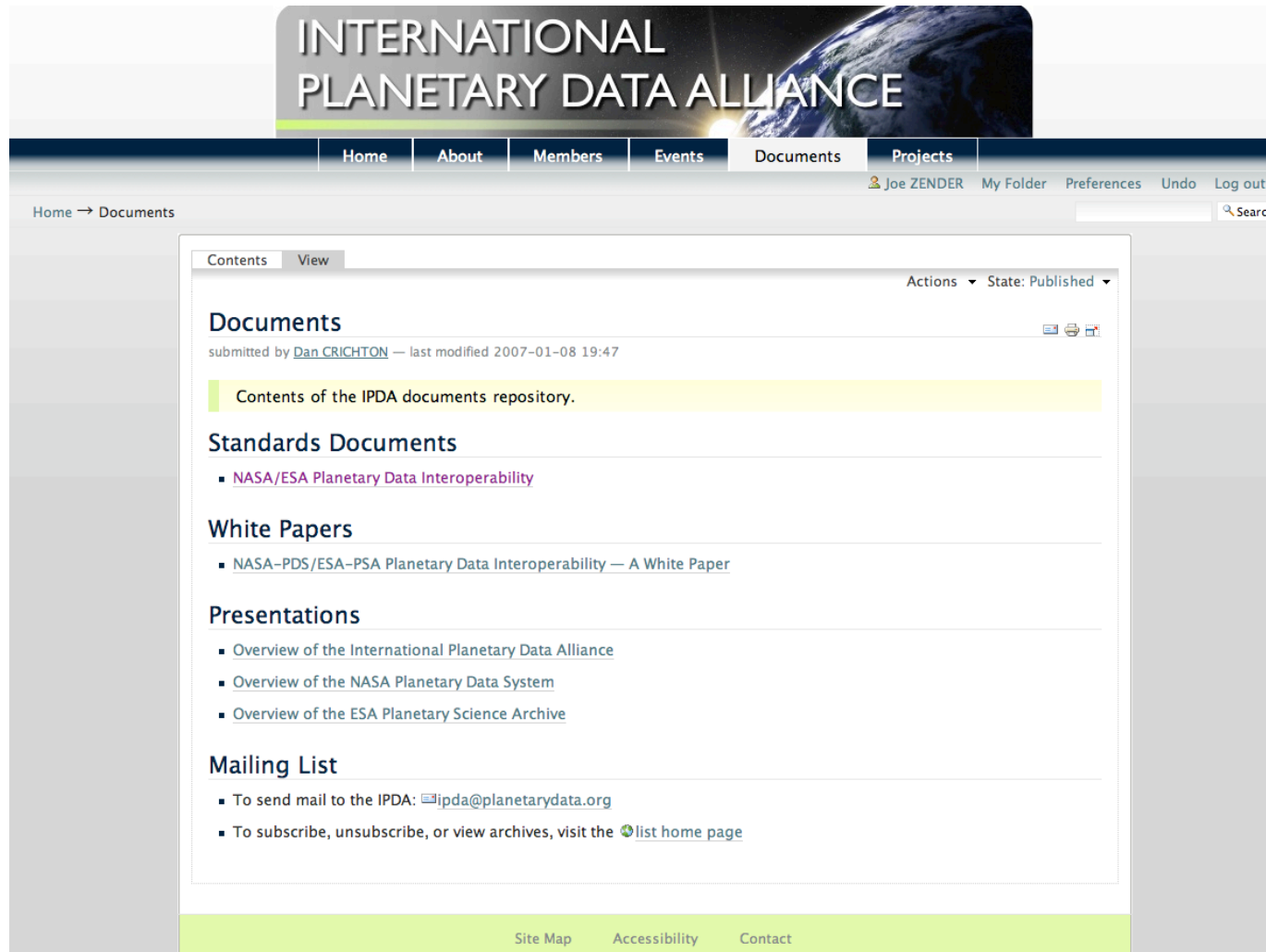
.IPDA

- Planetary Data Access Protocol (PDAP)
 - Standard protocol under assessment
- Interoperability Pilot Projects
 - PDS/ESA
 - Completed; shared Mars Express and Mars Odyssey data between PDS and PSA
 - Venus Express
 - Hayabusa



International Planetary Data Alliance: Web site

The following documentation can be consulted via <http://planetarydata.org>.

A screenshot of the IPDA website's 'Documents' page. The page has a dark blue header with the IPDA logo and a navigation menu with links for Home, About, Members, Events, Documents, and Projects. Below the navigation is a user profile for 'Joe ZENDER' and links for 'My Folder', 'Preferences', 'Undo', and 'Log out'. The main content area is titled 'Documents' and shows a list of document categories: 'Standards Documents', 'White Papers', 'Presentations', and 'Mailing List'. Each category has a list of links to specific documents or papers. The page also includes a search bar and a footer with links for 'Site Map', 'Accessibility', and 'Contact'.

Next Step

- **Next Steering Committee Meeting: July 2008**
One week before the COSPAR 2008 (Montreal)
- **Authorization in COSPAR 2008 (July 13-20, 2008)**
 - Pursuing a COSPAR resolution at the 2008 Meeting in Montreal
 - Biannual Meeting at COSPAR conference

**Let's support
this open international activities
for sharing scientific data
and related analysis !**