International Planetary Data Alliance

IPDA Update

Dan Crichton
Steve Hughes
Tom Stein
Ray Walker

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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

From Sep 2013 to July 2015

.IPDA

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 of common definitions and requirements for international archiving agreements
- Development and Coordination with PDS on the next generation PDS (PDS4) to enable construction of compatible planetary archives
- Development of access protocols for accessing planetary archives
- Development of international registries to enable registration and search of data, tools and services
- Standards related to geometry and navigation

Japan Meeting

- Held at JAXA, July 22-24, 2016
  - 3 Day Meeting
- Representation from ESA, JAXA, ISRO, CNES, NASA
- Significant discussions around use of PDS4 for upcoming international missions

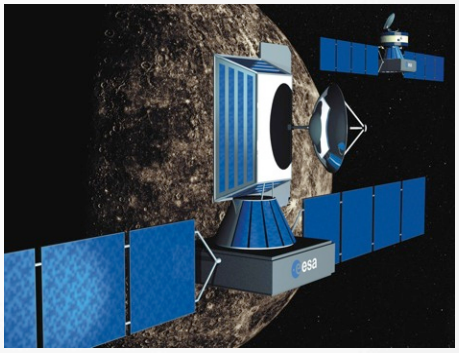
Attendees

- Cyril Chauvin (Obs. Paris)
- Baptiste Cecconi (Obs. Paris)
- Stéphane Erard (Obs. Paris)
- Christophe Arviset (ESA)
- Gopala Krishna (ISRO)
- Naru Hirata (Aizu Univ.)
- Pierre Le Sidaner (Obs. Paris)
- Tom Stein (NASA/PDS)
- Daniel Crichton (NASA/JPL)
- Alain Sarkissian (LATMOS/ UVSQ/CNRS)
- Santa Martinez (ESA)
- Steve Hughes (NASA/JPL)
- Ray Walker (NASA/NSF/PDS/ HPDE)
- Toshiaki Takeshima (JAXA, C-SODA director)
- Yoshiaki Ishihara (JAXA)
- Shin Ogawa (JAXA)

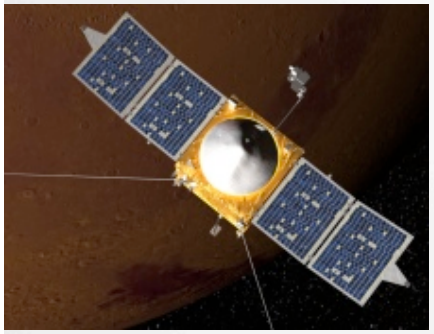
PDS4 Planned Mission Support

LADEE (NASA)

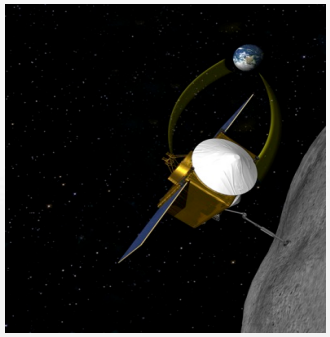
InSight (NASA)



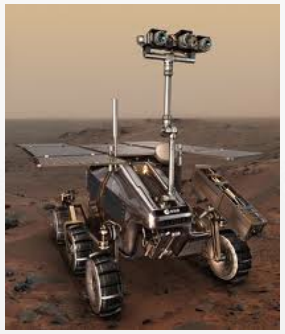
BepiColumbo (ESA/JAXA)



MAVEN (NASA)



Osiris-REx (NASA)



ExoMars
(ESA/Russia)

JUICE
(ESA)

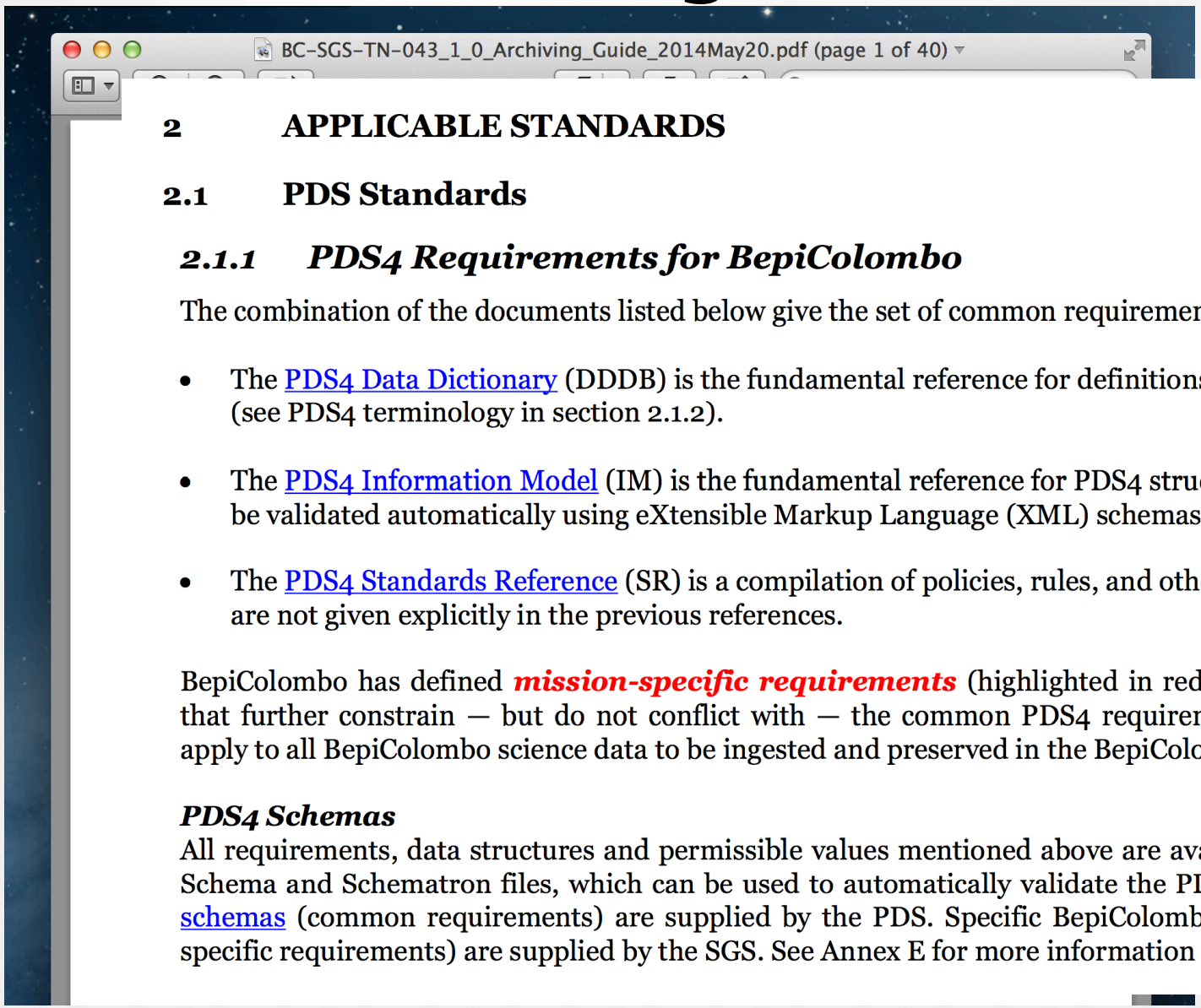
…also Hyabussa-2, Chandryaan-2

Endorsed by the **International Planetary Data Alliance** in July 2012 –
https://planetarydata.org/documents/steering-committee/ipda-endorsements-recommendations-and-actions

ESA

- Major focus will be an upgrade of the the PSA the next few years.
  - Will be based on PDS4
  - Should help to improve services for interoperability
- PDS4 Missions
  - ExoMars: Joint mission between ESA/IKI
  - BepiColombo: Joint mission between ESA/JAXA
  - JUICE: nothing started yet
- Key concerns/needs
  - Tension with the level of specificity in PDS4
  - Agreement to use validate tool and other core PDS4 tools
  - Coordination at common and discipline levels of information model
  - Training
- Santa Martinez will be joining the CCB

Archiving Guide



JAXA

- Mission Status
  - Hisaki (Sprint A)
    - Space telescope
    - FITS
    - Will be SPICE
  - Akatsuki
    - Targeting to be injected into Venus orbiter December 2015
    - Data pipeline is PDS3 (including FITS)
    - Compatible with Venus Express
    - Some interest with
    - Action: potential increase of VEX project to be NASA, ESA, JAXA
  - Hayabusa 2
    - Mission to return samples from asteroid
    - December 2015 Earth swing-by
    - PDS4 and SPICE
    - Collaboration with OSIRIS-Rex to be archived in PDS4 and SPICE
    - Preparation Deadline (March 2018); First release (Dec 2020)
  - Bepi Colombo MMO – ESA lead
- Key concerns/needs
  - Training but learning from O-Rex

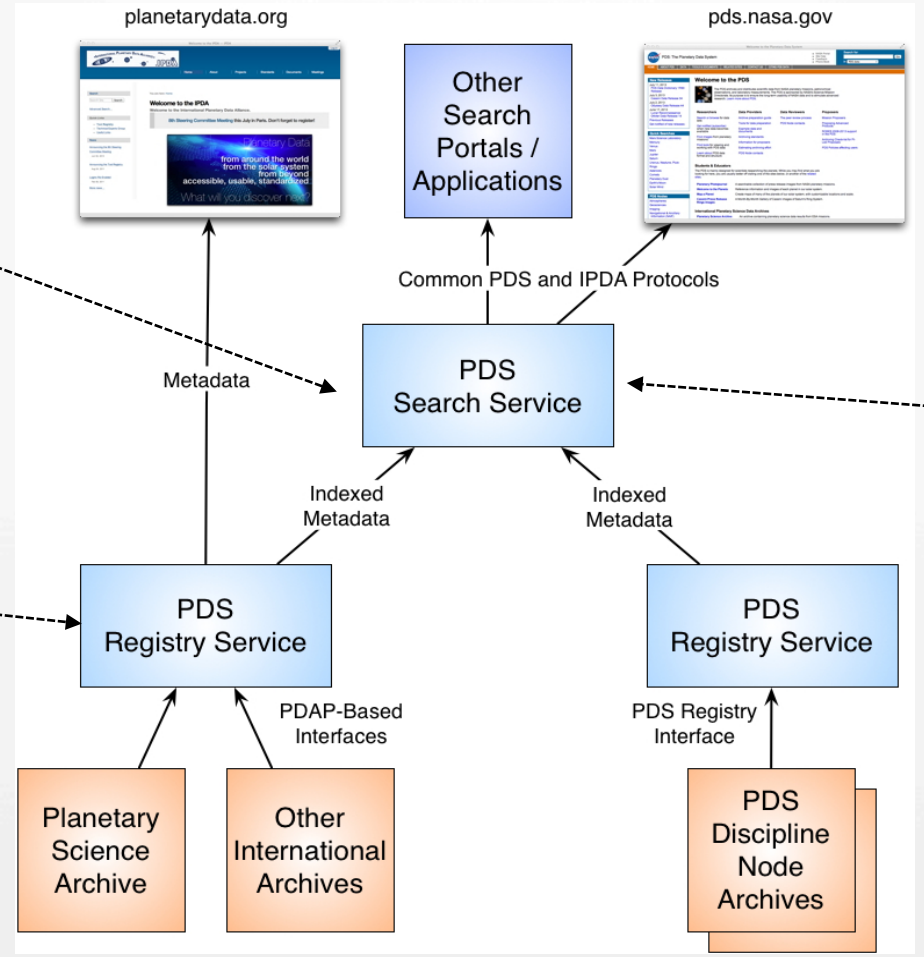
ISRO

- Mission Status
  - Chandrayaan
    - PDS3
    - PDAP interface under development
    - Hosting data in compressed format for performance
  - Mars Orbiter Mission (MOM)
    - PDS3
    - Data processing
    - Will use for PDS4 experiments
    - About another year of operation until out of fuel
  - Chandrayaan-2
    - PDS4 archive
    - Plan to develop pipeline for 5 payloads
- Key concerns/needs
  - PDS4 startup (training, consultancy, tools, etc)

International Search/Access

- Discussed and demonstrated search and access to international archives.
- Discussion on search engine technology and PDS4 search service.
  - Interest by ESA as they work towards the PSA upgrade.
- Documentation for interfacing with the PDS4 Registry and Search Services posted to the IPDA Standards website.
  - Discussion on access vs search protocols
- Discussed status of Chandrayaan-1 data being into the PDS4 system at pds.nasa.gov

Architecture



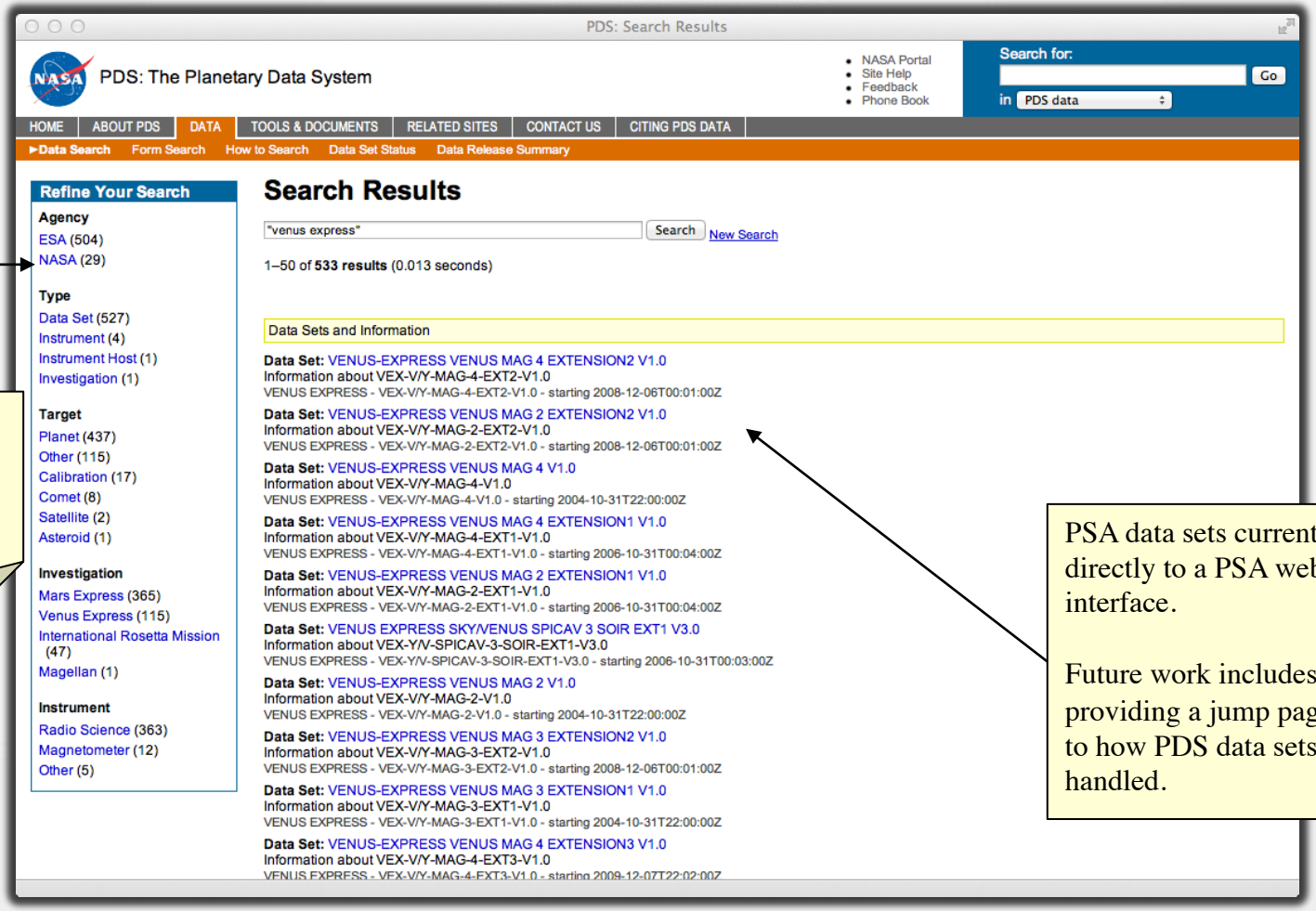
Search Service supports the PDS and PDAP protocols enabling development of other portals and applications on this infrastructure.

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

Registry Service directly supports the IPDA Tool Registry interface.

Search for Venus Express

Via Web-Based Interface



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.

IPDA Agreements

- Gopala Krishna, IPDA Chair
- Tom Stein, IPDA Deputy Chair
- Separation of the IPDA public website from IPDA internal documents and needs
- Several projects renewed and defined for FY16
- Next telecon scheduled for October 2015
- 2016 Meeting at ESAC
  - Some discussion about flipping between Europe and U.S. going forward

2015-2016 Projects

- Data Access Protocols (Isa, Baptiste, Sean)
- Website Project (Dan)
- Registry and Search (Sean, Dan)
- PDS4 Implementation (Santa, Steve)
- MOU Project (Yukio, Reta)
- IVOA/IPDA Coordination (Baptiste)
- Citing IPDA (Alain)

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
- Planetary GIS Workshop 2015
- 2015 Planetary Data Workshop
- PV 2015
- AGU 2015
- COSPAR 2016

Major Takeaways

- All agencies engaged in PDS4 now
  - ESA/PSA is interfacing with IKI and JAXA
- Santa M to provide an assessment report on PDS4
  - Suggested improvements to standards and tools
- Significant support for CCB and structured delivery process
  - Agreement to leverage core tools and model
  - If new capabilities are needed, they are built on top of the core
- Continued interest in PDS4 training

Thank you for your attention