



# International Planetary Data Alliance

## IPDA Top-Level Requirements Project Report



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# IPDA Project

- Project Leader: Dan Crichton
- Project members: Maohai Huang, Alexander Zakharov, Yasumasa Kasaba, David Heather, Mark Leese, Gopala Krishna, Karin Eichentopf, Chuck Acton
- Description: The SC feels that high level requirements for the IPDA should be established and that all projects, etc should derive their requirements from the high level set. These should be derived from the IPDA charter and comprise a set of Level 1 and 2 requirements.

# Project Timeline

- Level 1 requirements (August - October)
  - Sent to project members August 29, 2007
  - Responses integrated
- Level 1/2 requirements (October - January)
  - Sent to project members November 5, 2007
  - Several individual correspondence occurred and responses integrated (November - January 2008)
- Draft Level 1/2 requirements Finalized (January 2008)
  - Sent to the Steering Committee January 23, 2008
  - Approved by Steering Committee February 11, 2008

# Level 1 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

# Level 2 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
  - 1.1 IPDA members will represent the interests of archiving activities at their respective international space agency or institution
  - 1.2 IPDA will provide guidelines for data archiving functions including planning, implementing and operating planetary archive systems.
  - 1.3 IPDA will provide guidelines and examples for designing, organizing and including data products and metadata in an archive
  - 1.4 IPDA will provide guidelines for preparing and including documentation and reduction algorithms or software in an archive

# Level 2 Requirements

2. IPDA will facilitate global access to international planetary science data archives
  - 2.1 IPDA will develop recommendations for interoperability within a federation of international planetary data archive systems
  - 2.2 IPDA will develop recommendations to support owners of international planetary science data archives in making their data available online
  - 2.3 IPDA will encourage international planetary data archives to share and exchange data using IPDA data standards
  - 2.4 IPDA will maintain a website to help planetary data providers and users to use IPDA standards

# Level 2 Requirements

3. IPDA will develop, maintain and publish standards for archiving and sharing planetary science data among international archive systems
  - 3.1 IPDA will provide standards for archiving of science data produced during planetary science research including related metadata, calibration data, ancillary data, documented reduction algorithms and processing software
  - 3.2 IPDA will develop, maintain, and publish processes for maintaining IPDA data standards
  - 3.3 IPDA will maintain a structured data dictionary containing definitions of data elements, their relations, and their scopes in aim to enable standardized descriptions of planetary science data
  - 3.4 IPDA will maintain an information model of object classes, their attributes, and relationships to support the archive, search, and management of planetary science data
  - 3.5 IPDA will define a standard grammar for describing planetary science data
  - 3.6 IPDA will establish minimum required content for a planetary science dataset including both primary and ancillary data
  - 3.7 IPDA will structure its data standards to allow planetary data systems to develop their own profiles, i.e. to adopt and extend the standards for local agency, mission and data provider uses
  - 3.8 IPDA will develop and publish protocols for sharing data between planetary data systems
  - 3.9 IPDA will publish standards for querying planetary data system catalogs including standard query models, protocols, and templates of user interfaces

# Level 2 Requirements

4. IPDA will promote use of shared tools and services across archive systems in order to support scientific collaboration
  - 4.1 IPDA will adopt existing international standards, where necessary, to ensure interoperability and reuse of existing scientific tools
  - 4.2 IPDA will encourage member agencies to share, exchange and reuse tools as allowed by their local institutional policies

# Recommended Next Steps

- Requirements form technical and programmatic basis for IPDA
- From technical side, need to begin to address the technical architecture/direction of IPDA
  - Need to look at the mapping of requirements to projects, standards and artifacts in IPDA
  - Develop IPDA architecture from requirements
- Options (one or both)
  - Form an architecture project
    - Deliverables should be to review the technical architecture of IPDA as defined back in 2006, augment, and present to IPDA for acceptance. This should include definition of common tools and services that will form a roadmap for future development activities.
  - Form or identify a technical group and/or committee for discussion on system-engineering related projects and topics
    - Guide system engineering aspects of IPDA for SC; link technical personnel across the agencies together