

NASA Planetary Data System API. J. Padams¹, T. Loubrieu¹, D. Crichton¹, E. Law¹, S. Hughes¹. ¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA.

Introduction: The NASA Planetary Data System (PDS) captures, archives, and distributes data from robotic exploration of the solar system. In supporting this mission, it has developed an innovative architectural approach called “PDS4” to support the highly diverse set of heterogeneous data from over 600 instruments. The PDS is implemented as a set of distributed archives with different “nodes” managing repositories for this federated system [1]. This PDS4 architectural approach has evolved in the PDS Data Services Initiative with a vision to Provide an integrated world-wide data services platform that enables the efficient discovery, dissemination, use and analysis of internationally sponsored planetary science archives [2]. One of the primary tasks needed to make that happen is providing consistent APIs for sharing archival data and services across PDS, among planetary archives, and within the planetary science community. These consistent APIs will enable a federated cross-node, cross-agency search that enables users to get as close to the archived data and services as possible.

PDS Application Programming Interface (API):

The PDS API is a capability being built by the PDS to enable users and systems to explore and use PDS data. In other words, the PDS API is the highway to drive users to the data by providing a consistent, well-documented, integrated layer on top of the archive.

In response to this need, the PDS has formed a PDS API Working Group that provides technical expertise and guidance to the PDS Management Council and international community on the design, development, and implementation of the PDS API Specification.

Implementation: The initial alpha version of the API has been developed and is not available through an ecosystem of elementary, reusable, and evolving components:

- PDS API Specification:
 - Released: <https://github.com/NASA-PDS/pds-api/blob/master/docs/spec/pds-api-specification.md>
 - In Development: https://docs.google.com/document/d/16d0MVh48bFLvWsa5-B_Hy-cby1rGWdnNojWOJpUcOvA/edit?usp=sharing
- Automated documentation: <https://nasa-pds.github.io/pds-api/>
- Test with Postman: <https://github.com/NASA-PDS/pds-api#to-generate-a-postman-test-collection>

- API search query lexer: <https://github.com/NASA-PDS/api-search-query-lexer>
- API data model implementation (java): <https://github.com/NASA-PDS/pds-api-javalib>
- Skeleton server (java): <https://github.com/NASA-PDS/pds-api-service>
- Base API Client (python): <https://github.com/NASA-PDS/pds-api-client>
- Demonstration notebooks: <https://github.com/NASA-PDS/pds-api-notebook>
- Demo server: <https://pds-gamma.jpl.nasa.gov/api/swagger-ui.html>

Presentation Scope: This presentation will provide a brief introduction to the beta release of the PDS API and an example use case utilizing Jupyter Notebooks to search for and access PDS metadata and data products. The intent of this presentation is to provide an initial look into PDS developments and solicit community feedback to inform future development efforts.

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References: [1] About the PDS. <https://pds.nasa.gov/home/about/>. [2] J. Padams, et. al. (2019) *Planetary Data Workshop 2019*, Abstract #7105.