

PDS4 Product Search and Query Models. J. S. Hughes¹, J. H. Padams¹, G. A. Hollins¹, and S. H. Hardman¹, ¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.

Introduction: The PDS4 Product Search sub-system of the PDS4 Information System is the first service most Consumers encounter when searching and retrieving data products from the Planetary Data System (PDS). The primary goals of PDS4 Product Search are to provide interoperable search across the PDS4 discipline nodes and member agencies of the International Planetary Data Alliance (IPDA) and to provide improved navigation and virtual views into the Planetary Science digital archive. In order to configure Product Search the designers of PDS4 data dictionaries create PDS4 Query Models that define customized views into the archive. The Product Search supports PDS and PDAP search protocols and REST-base access for portals and applications.

System Architecture: PDS4 Product Search, Figure 1, is a deployable component that accepts queries for data and returns a set of matching results. The component is based on generic common software and common protocols. A REST-based Application Programming Interface (API) provides the interface to a high performance facet- and text-based search provisioned by the Apache Solr engine. Initially software and services are configured to manage the data products defined in the PDS4 Information Model (IM) including Bundle, Collection, Investigation, Instrument, and the Observational products. The PDS4 Query Models, Figure 2, defined in a series of parameter/value statements called Property Maps, are used to configure the search software and services and support multiple query formats and customized search interfaces.

The PDS4 Product Search and Query Models were first presented at the Second Planetary Data Workshop in 2015. This presentation will focus on the current and future plans for the system in the context of Build 9b - Information Model Version 1.12.0.0. Even though the basic principles have remained intact several improvements will be highlighted.

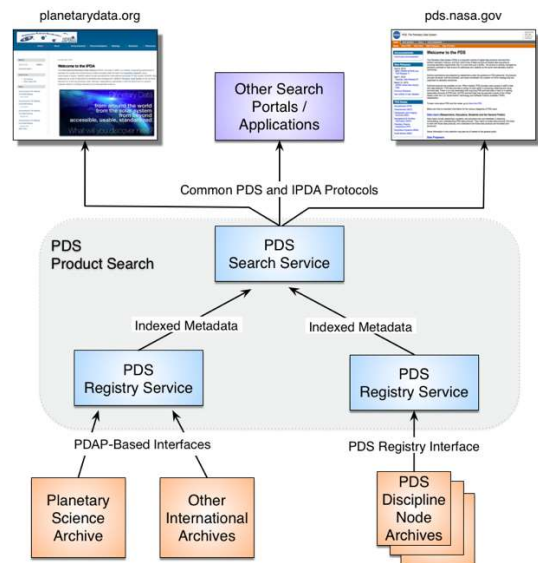


Figure 1 - Search Architecture

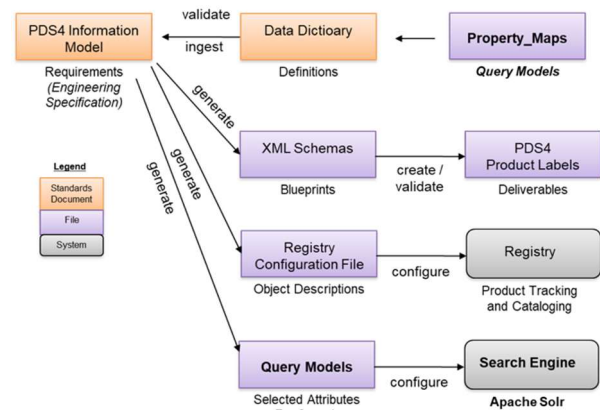


Figure 2 - Query Model (Property Maps) Data Flow

References: [1] Hughes , J.S., Crichton, D., Hardman, S., Law E., Joyner, R., Ramirez, P., PDS4: A Model-Driven Planetary Science Data Architecture for Long-Term Preservation, IEEE 30th International Conference on Data Engineering (ICDE), Chicago, IL USA, 2014.