Metadata Evolution in the Planetary Data System

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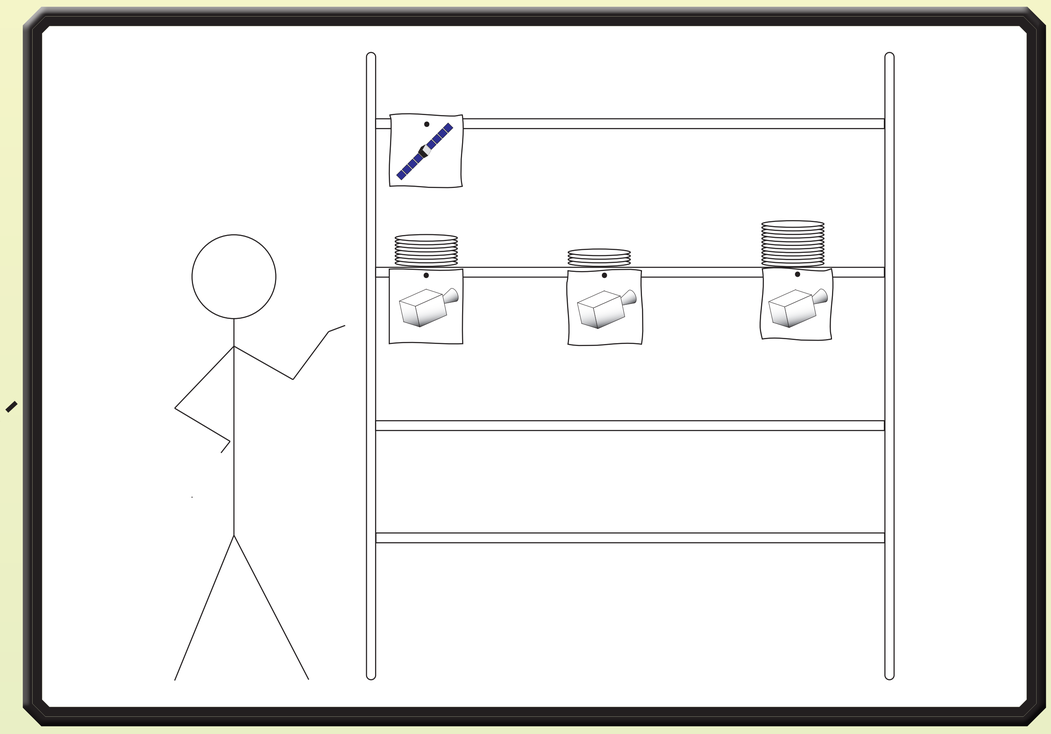
PDS was established in the late 1980s in response to a growing fear that existing planetary mission data were in danger of becoming lost. Consequently, the original metadata design was based on the assumption that the user knew that the data existed and where they came from, and needed support only to lay hands on the bytes. Additional metadata were concerned primarily with provenance and, of course, data structure description.

The original metadata design has evolved in response to changing user needs and desires.

PDS3 Era

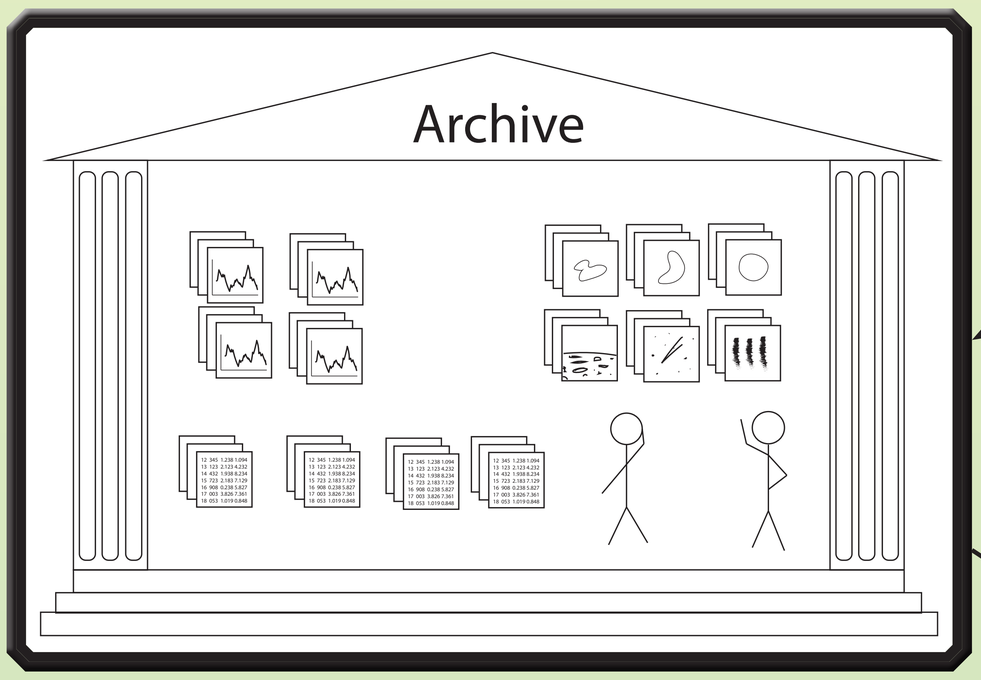


In the original PDS3 design, users knew what data existed and located them by specifying their origin — the mission and instrument that produced it. Data were delivered on hard media.

As PDS moved out of the era of hard copy distribution into electronic delivery, users could easily find known datasets from multiple sources by searching through catalogs of data sorted and tagged by source. The metadata evolved to include "analytical fields", i.e., information such as pointing geometry and instrument settings because users wanted this information to be handy in the labels to facilitate analysis as they worked with data from various sources.

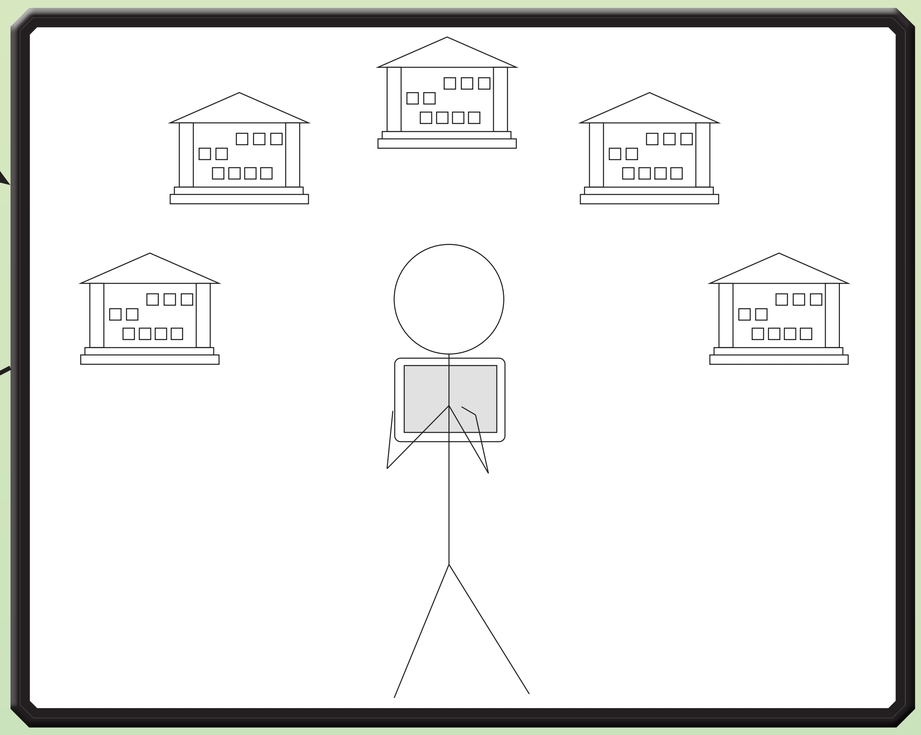
Now PDS is in an era where users need to be able to *discover* data, i.e., find data that meets their needs without knowing, *a priori*, that such data exist. The PDS4 metadata standards now include high-level descriptions of intrinsic properties of the data, like wavelength range (e.g., visible or IR), discipline regime (imaging, spectroscopy, or polarimetry), or product type (map, shape model, or spectral cube), to facilitate discovery.

PDS4 Era



The PDS4 standards allow users to search for data based on properties of the data themselves — by product type, wavelength range, or discipline regime.

Coming Soon...



Users in the very near future will likely expect to search for data across archive boundaries as a matter of routine, selecting individual products from various sources as a single query operation.

The next shift in user discoverability desires will most likely be towards support for queries across multiple archives. Metadata interchange standards like the Dublin Core will help to provide the translations needed for inter-archive communication. The PDS4 identification metadata are built on the Dublin Core and Open Archive Information System standards, putting it on firm footing for this next stage in metadata evolution.

The Planetary Data System
https://pds.nasa.gov

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