PDS4
Product Development & Process Discussion

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PDS Technical Session

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Discussion Objectives

- Support the exchange of lessons learned in using PDS4

- Identify areas for improvement in terms of standards, processes, tool support, documents, etc

- Use the archive lifecycle as a baseline for discussion

PDS Archiving Process

- Seven "general" steps in the archiving process:
  - Orientation – finding out what PDS will expect
  - Archive Planning – deciding what to archive, when, and generally how
  - Bundle Design / Preparation – design / prepare the pieces in the Bundle
  - Bundle Generation & Assembly – putting the pieces together
  - Validation – the PDS quality check
  - Ingest – ingestion / registration of products
  - Product Distribution / Delivery – delivering to data users and the deep-archive

Orientation

- Finding out what PDS will expect
  - Establish contact with PDS
  - Provide general information to PDS
  - Obtain PDS Orientation materials
  - Establish technical contacts
  - Establish Memorandum of Understanding (MOU)

Resources:
  - Information for Proposers:
    - https://pds.nasa.gov/pds4/propose/proposing.shtml
  - Two flavors of Proposer's Archive Guide – iPAG & mPAG

Archive Planning

- ## Deciding what to archive, when, and how
  - Establish Data Management Plan (DMP) or Data Management & Archive Plan (DMAP)
    - Identify the data to be archived
    - Develop an archiving schedule
    - Define data flow
    - Define Team roles & responsibilities
  - Identify / request Unique Identifiers for the components of a Bundle from EN (e.g., context product LIDs)
  - Establish specific version of Common schemas to use in Bundle

Resources:
  - PDS4 Documentation and Examples:
    - https://pds.nasa.gov/pds4/doc/index.shtml
  - Two flavors of Proposer's Archive Guide – iPAG & mPAG

Archive Design / Preparation

- Design / prepare the pieces in the Bundle
  - Design Bundle, Collections, and Data Products
    - Assign <unique_identifiers> and LDDs
  - Design / organize the data & documents into Collections
  - Design Production process
    - Design XML labels for all products in the Bundle
    - Design Product validation process

Resources & Tool Support:

  - PDS4 Documentation and Examples:
    - https://pds.nasa.gov/pds4/doc/index.shtml
  - Label Template Design Tool (LTDTool); Oxygen / Eclipse

Bundle Generation & Assembly

- Putting the pieces together
  - Generate Documentation Products specific to the mission, instrument host, instrument, data products
  - Generate Local Data Dictionaries specific to the mission and/or discipline
  - Generate Collections in Bundle
  - Generate products for each product type in the Bundle
  - Create LDDs
  - Validate Bundle products

Resources & Tool Support:
  - Local Data Dictionary Generation (LDDTool)
  - Generate Tool; Oxygen / Eclipse

Product Validation

- the PDS quality check
  - Validate the metadata in the XML labels against the schemas
  - Validate the metadata I the XML labels accurately describes digital object(s)
  - Peer-review the generated product in the Bundle
    - Evaluate the scientific merit of the data
    - Ensure Bundle adheres to PDS4 Standards
  - Certify the data product pipeline
    - Certify the pipeline is well-defined set of processing steps with version control in data production
  - Delta Peer-Review
    - Ensure delivered products are compared to the peer-review-approved material

Resources & Tool Support:
  - Validate Tool; Visualization Tool
  - Oxygen / Eclipse

Ingestion / Registration

- Product Ingestion and Registration
  - Harvest and register metadata from attibutes in PDS4 XML labels
    - harvested with the Harvest Tool and registered with the Registry Service
  - Approve the registered package
    - Approved through the Registry User Interface
    - Approved via the command-line using curl or wget

- Ingestion / Registration of PDS Tools
  - Register PDS Tool information
    - submit tool information via the Tool Registry to register PDS3 and PDS4 tools
  - Approve PDS Tool submission
    - Operator reviews submission
    - Approves, modifies, or not-approves submission

Resources & Tool Support:
  - Harvest Tool; Registry Service

Search and Distribution

- Product Search
  - Data & Tool & Data Dictionary Search

- Product Distribution / Delivery -- to data users
  - Deliver products to Users in various formats
    - distributed and transformed using Transport Service and (optionally) Transform Tool

- Bundle Delivery -- to deep archive
  - Deliver Bundle products to NSSDCA
    - generate Product_SIP_Deep_Archive & Product_AIP products

Resources & Tool Support:
  - Beta-version of tool that generates Product_SIP_Deep_Archive & Product_AIP products
  - Draft version of process to transfer Bundle to NSSDCA

Future PDS4 Wants / Needs?

- PDS4 Requirements and Policies
  - Identify future requirements and affect on Policies
    - Provenance; chain of authenticity for an individual product
- Standards and PDS4 Documentation
  - Identify "gaps", ambiguities, and misconceptions

- Resources & Tools
  - Identify "gaps" in software support of PDS4 Requirements
  - Identify "gaps" in additional resources for User Community