

Archiving InSight Data with PDS4

PDS Tech Session

2016-09-21

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InSight Status

- Launch slipped from 2016 to 2018
 - Archive planning activities on hold
- Geosciences Node is lead node and working with:
 - HP3/Radiometer – Heat flow and physical property measurements, surface brightness temperature
 - SEIS – Seismometer to study marsquakes, tides, and meteorite impact rate
 - RISE – Radio science studies
 - IDA – Robotic arm, which will deploy HP3 and SEIS and possibly conduct soil property experiments
- Also, cameras, meteorology package, magnetometer, SPICE to be archived by other nodes

Product Types

- HP3/Radiometer – about 10 raw and derived product types
 - All are ASCII tables and use Table_Character
- SEIS – Raw data in two forms
 - SEED using Product_Native
 - ASCII tables using Table_Character
- RISE – Raw products from DSN; higher level products are TBD
 - TRK 2-34 (TNF) will be reformatted into binary tables
 - Other types are ASCII tables and text
- IDA – Still lots of work to do in design
 - Products will likely use Table_Delimited

Label Design

- Label templates and examples being developed using Oxygen
 - Oxygen is not free
 - Oxygen not user-friendly relative to PDS4 schema and schematron
 - Makes it difficult to know order of attributes and what is required vs optional
 - Schematron rules not checked without the xml-model statement

Label Generation

- HP3/Radiometer – will generate labels with their own software (i.e., they have not asked for a tool yet)
- SEIS – has already asked for a tool to make labels
- RISE – probably will use their own software
- IDA – TBD

Validation

- Existing Validate tool should be adequate for checking that label conform to schema and schematron
- Tool needed to validate that label correctly describes the product structure (content validation)
- Referential integrity checking is probably needed, particularly for LIDs

Ingest

- We have little experience with ingesting products into a PDS4 registry
- Would assume that we would ingest InSight products into a local GeoNode registry
- Not sure that we would use the registry in our services (TBD)

Data Distribution

- We will create an InSight Analyst's Notebook (AN) for search, visualization (browsing), and data retrieval
- AN would provide access to all InSight data including data at other nodes (one stop shopping)

Bundle/Collection Organization

- HP3/Radiometer – 3 bundles
 - One for active phase, one for passive phase, and one for radiometer
 - Each bundle will have raw and derived data collections
- SEIS – 3 bundles
 - One for raw data, one for calibrated data, and one for derived data
 - Raw data will have 2 data collections – one for SEED format and one for ASCII format
- RISE – 2 bundles
 - One for raw data, one for derived data
 - Raw data bundle will have several collections based on data type
- IDA – TBD
- There will be a separate bundle for documents, with a collection for each instrument

Other Topics

- Geosciences Node is developing a mission local dictionary with inputs from other nodes, mostly Imaging
 - Using LDDTool to generate the schema, using Oxygen to generate the input file for LDDTool
- LIDs
 - Developed schema with each team for its bundle, collection, and basic product LIDs
 - Worked with Engineering Node for context LIDs (could be an easier process)

Lessons So Far

- LDD development for a mission dictionary can be challenging
 - Coordinating inputs from the nodes
 - Many iterations has the multiple nodes/teams do label design on different time schedules
- Important to set up bundle/collection scheme and context LIDs early
 - Drives LID development for basic products
 - Affects label template development
- Other lessons TBD once archiving planning starts up again

Concerns

- Design – a tool beyond Oxygen would be helpful
- Generate – Tool needed to generate PDS4 labels from a template and a variety of inputs for filling in a template
- Validation - Content validation is needed
- Ingest - Use of local registry is uncertain
- LID construction
 - Service needed for looking up existing context LIDs; settle on formation rules
 - Service needed for looking up existing bundle LIDs and registering new ones

Concerns/Questions

- Context products
 - Nodes/instrument teams create them – then what?
 - How are they submitted to the EN?
 - How to update if needed?
 - Maybe a service is needed for viewing, submitting, and downloading context products
- LDD for missions
 - What is the process for getting completed versions into repository at EN?