Tool Design

PDS 2010 System Review
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Topics

- Overview

- Tool Details

    - Design

    - Generation

    - Validation

    - Transformation

    - Visualization

Overview

- There are several functions within the PDS system that are well suited for tool-based interfaces:
    - Design, generation, validation, transformation and visualization of PDS products (metadata and data).

- By tool-based interfaces we mean standalone command-line and GUI applications executed on a user's desktop machine.

Approach

- Develop a common set of functions and make them available in a Java-based library.
- These functions are then available to the tools and services within the system.
- Portions of the library will be open for contributions from the PDS community.
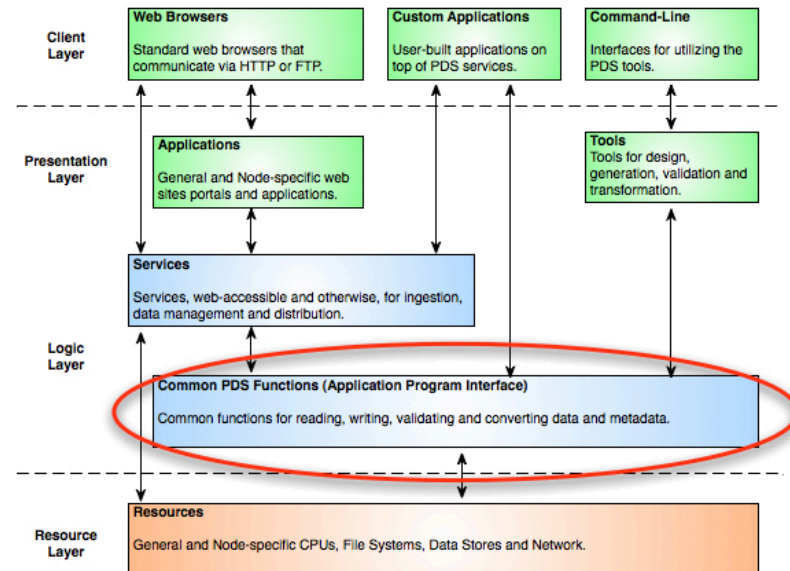
Architecture
(PDS Library Functions)
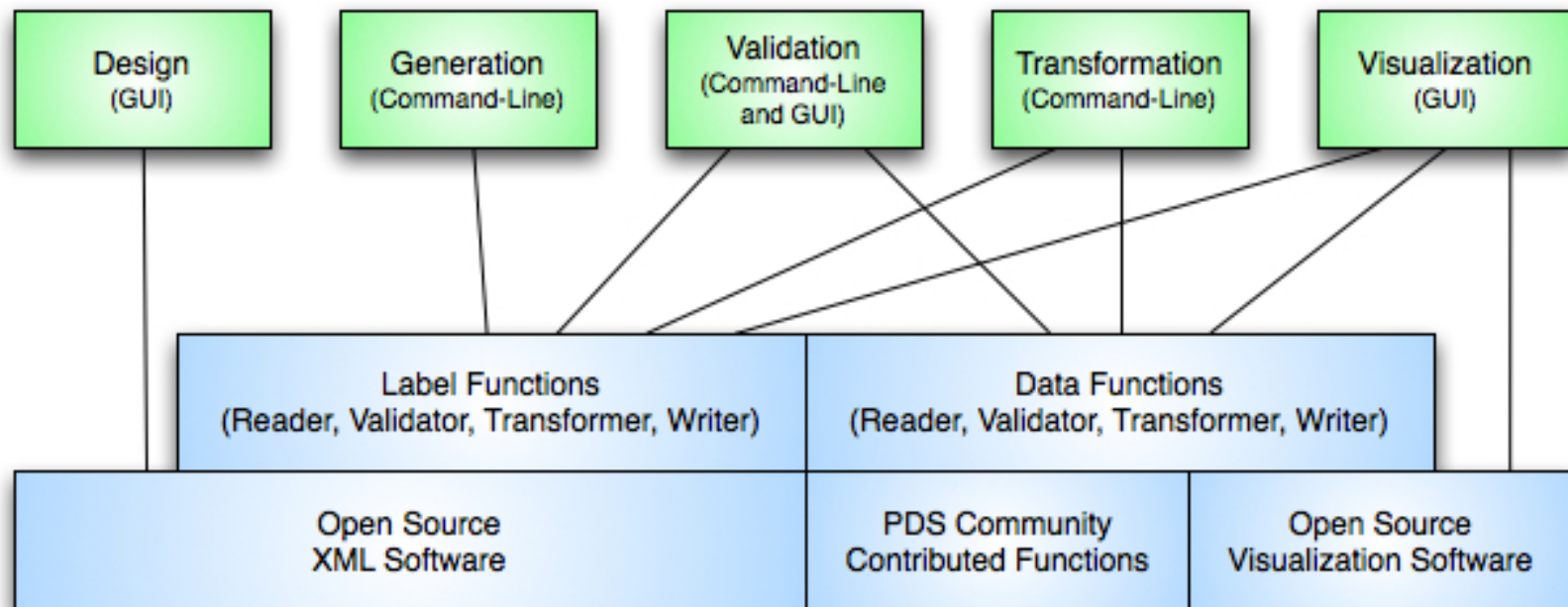
Design Tool

- This tool provides functionality for designing product label schemas using the XML Schema standard.

- The Data Design WG is currently using off-the-shelf tools (XML Editors) for designing the prototype schemas.

  - The suggested tools are Oxygen and Eclipse, commercial and open source tools, respectively.

- Exploring the possibility of designing and developing a PDS-specific tool.

Design Tool (cont)

- The tool facilitates manipulation of a generic schema into a specific schema.

- Generates example labels to aide users in schema comprehension.
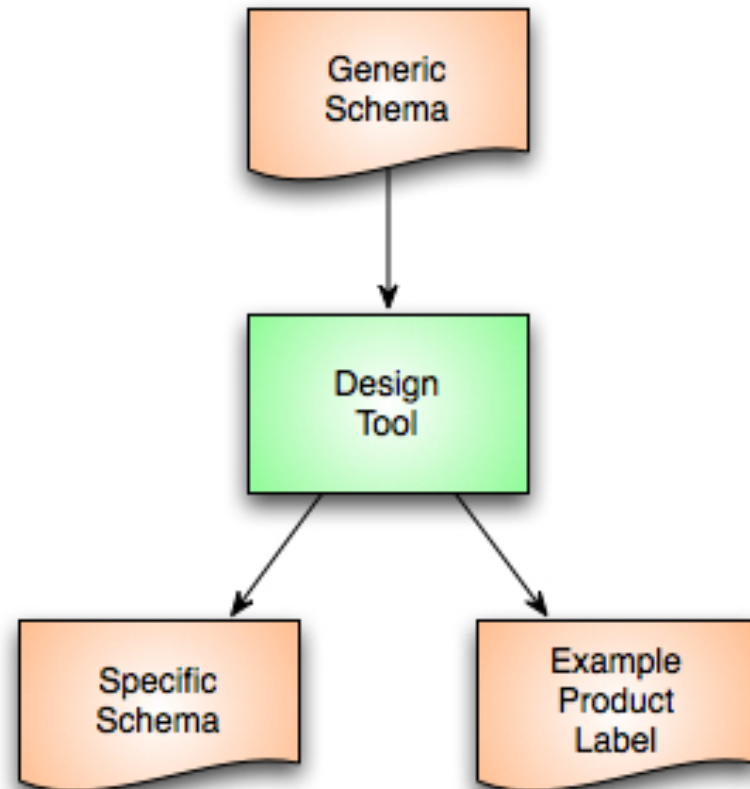
Generation Tool

- This tool provides functionality for generating product labels.

- Facilitated through the existence of a specific product schema.

- The tool offers a command-line interface but the intent is to provide software that can be incorporated into a mission pipeline for producing labels.

Generation Tool (cont)

- Accepts a specific schema and product-specific metadata as input.

- Generates a compliant product label as output.
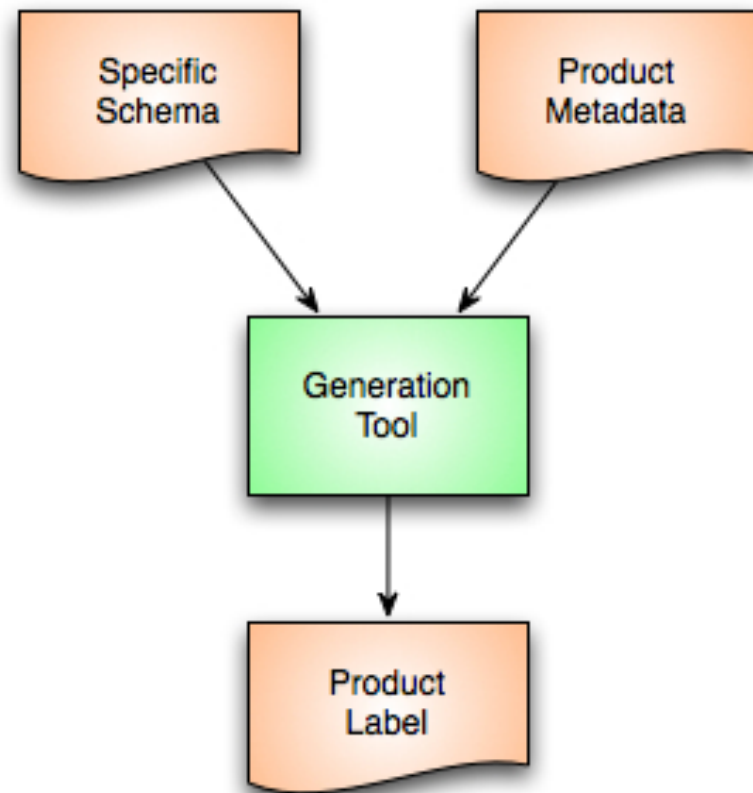
Validation Tool

- This tool provides functionality for validating product labels and product data.

- The associated specific schema for the product label specifies syntactic and semantic constraints.

- Additional constraints are levied by the PDS Standards Reference.

- Compared to PDS3, implementation is much simpler utilizing open source XML utilities.

Validation Tool (cont)

- A label is validated against the associated specific schema.

- The data are validated against the associated product label.

- Validation status and a report are produced.
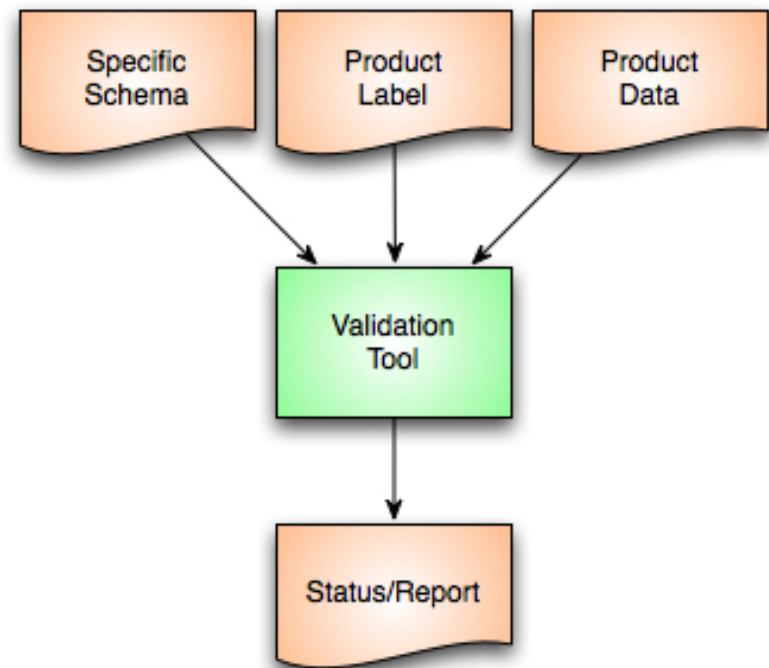
Transformation Tool

- This tool provides functionality for transforming product labels and data to/from PDS4 formats.

- Designed with a plug-in framework allowing third parties to develop plug-ins for various formats.

- The framework will be available to the PDS community for development of plug-ins outside of the Engineering Node.

Transformation Tool (cont)

- Product label transformation is stylesheet-based.

- Depending on the desired data transformation, a product label may be required.
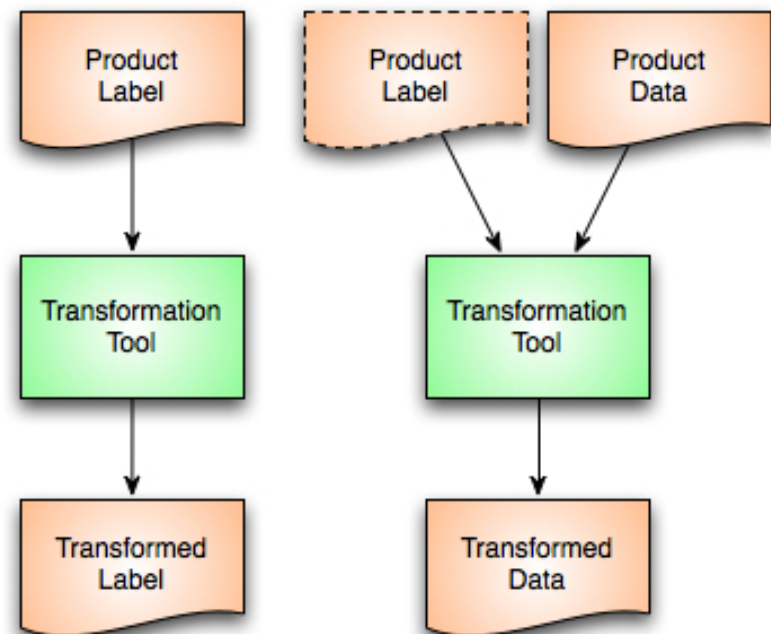
Transformation Tool (cont)

- The PDS Nodes were surveyed for a list of transformation formats and their priorities for implementation.
- Approximately 40 different data formats and 2 label formats were identified.
- Popular formats include:
  - JPEG, Raw Raster and PNG for Image Data
  - CSV and Flat (fixed) for ASCII Table Data
  - PVL for Product Labels
- The initial release of the tool will include the highest priority transformations.

Visualization Tool

- This tool provides functionality for inspecting and visualizing PDS products.
- Supports more than image products (e.g., tables, etc.).
- The PDS3 implementation is commonly used during peer reviews for product verification.
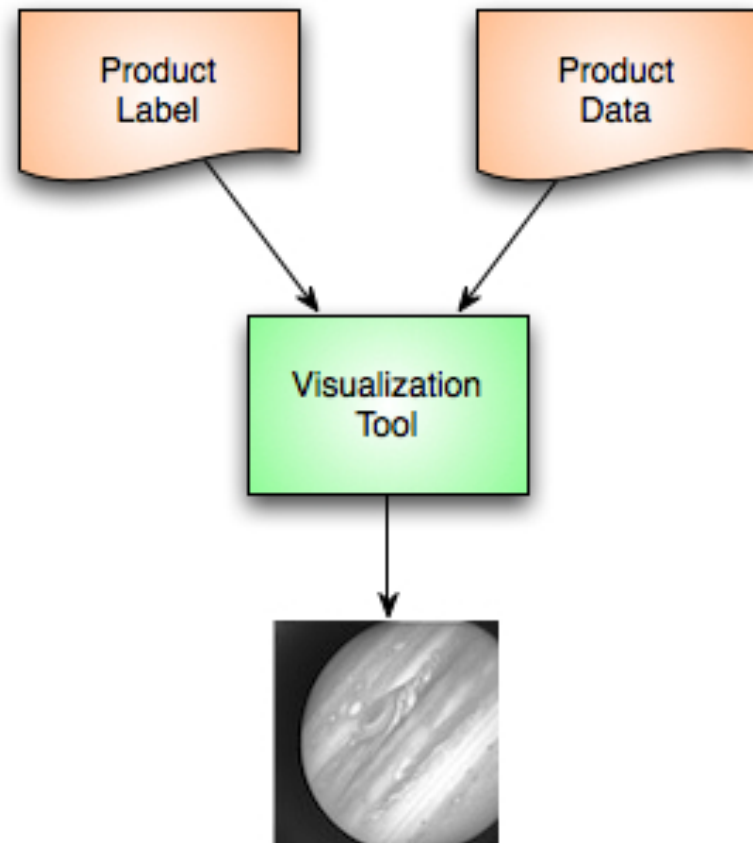
Wrap Up

- Heavy focus on providing reusable capabilities in a published software library.

- Encourages reuse by the PDS Node staff as well as the PDS community as a whole.

Schedule – Project 3

Activity Name	Duration (Work Days)	Start Date	Finish Date	2008		2009				2010				2011				2012		
				3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd
Concept/Study Phase...	240.00	8/20/07	7/18/08																	
Project Planning...	133.00	1/7/08	7/9/08																	
Architecture/System Engineering...	254.00	7/10/08	6/30/09																	
Projects	911.00	11/21/08	5/18/12																	
P1. Data Standards Project...	455.00	1/2/09	9/30/10																	
P2. Distributed Infrastructure Project...	911.00	11/21/08	5/18/12																	
P3. Tools Project	595.00	11/16/09	2/24/12																	
Requirements	100.00	11/16/09	4/2/10																	
Validation Tool	120.00	4/5/10	9/17/10																	
Design/Generation Tool	170.00	7/5/10	2/25/11																	
Transformation Tool	230.00	3/1/11	1/16/12																	
Visualization Tool	170.00	7/4/11	2/24/12																	
P4. Distributed Catalog System Project...	688.00	9/30/09	5/18/12																	
P5. Portals, Search and Distribution Project...	425.00	10/4/10	5/18/12																	
P6. Data Movement and Delivery Project...	171.00	10/1/10	5/27/11																	
Builds	690.00	11/9/09	6/29/12																	
B0. Infrastructure Build...	20.00	11/9/09	12/4/09																	
B1. Ingestion Build...	160.00	3/22/10	10/29/10																	
B2. Distribution Build...	157.00	2/24/11	9/30/11																	
B3. User Capabilities Build...	30.00	5/21/12	6/29/12																	
				3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd

Questions/Comments