

A horizontal banner image featuring a sequence of celestial bodies from left to right: a blue planet with white clouds, a brown planet, a reddish-brown planet, a white planet, and a large yellow planet. The text "Planetary Data System" is overlaid in white on the right side of the banner.

Planetary Data System

System Overview

Technical Session
Pasadena, CA
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Sean Hardman

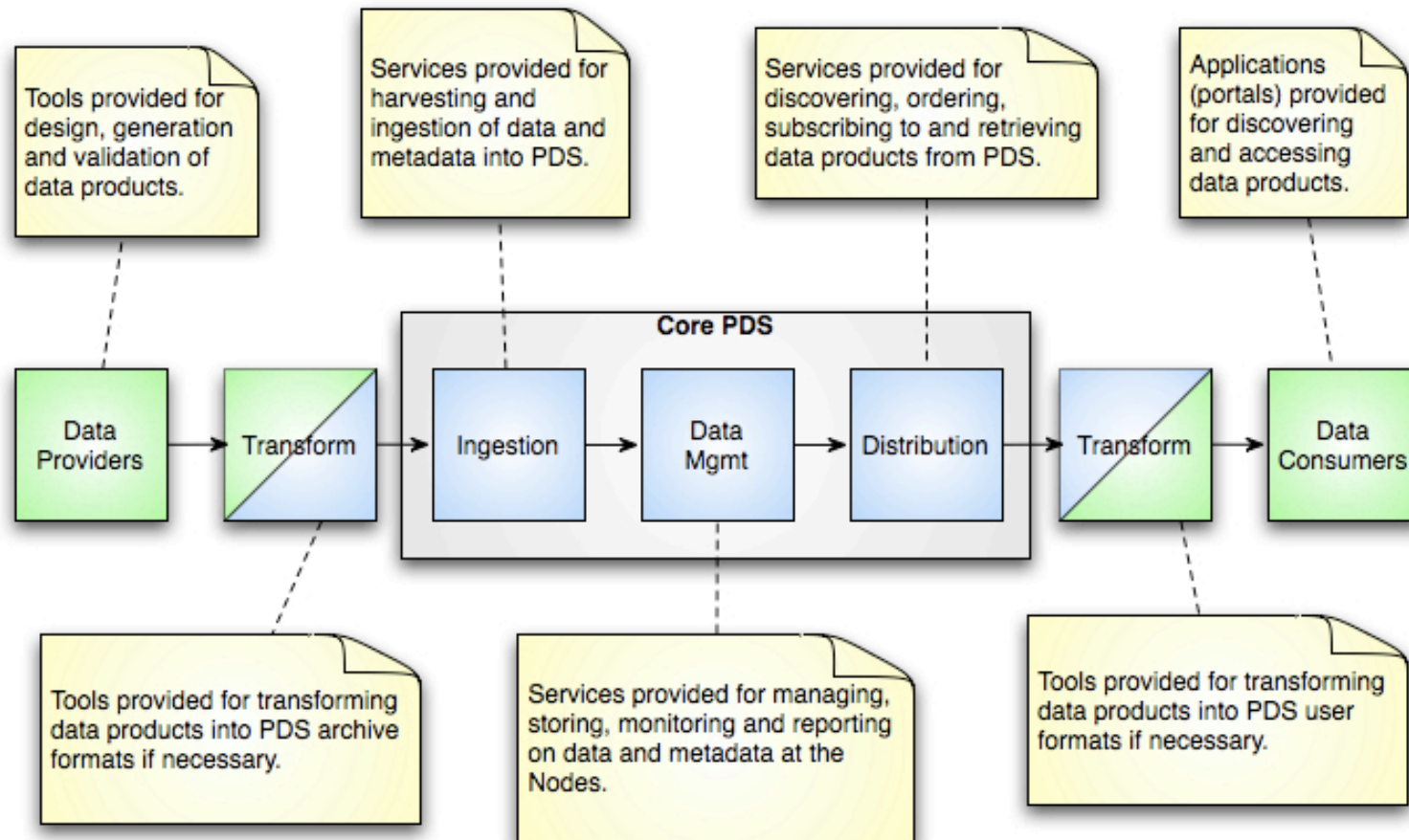
Topics

- Overview
- Approach
- Design Progress
- Development Progress

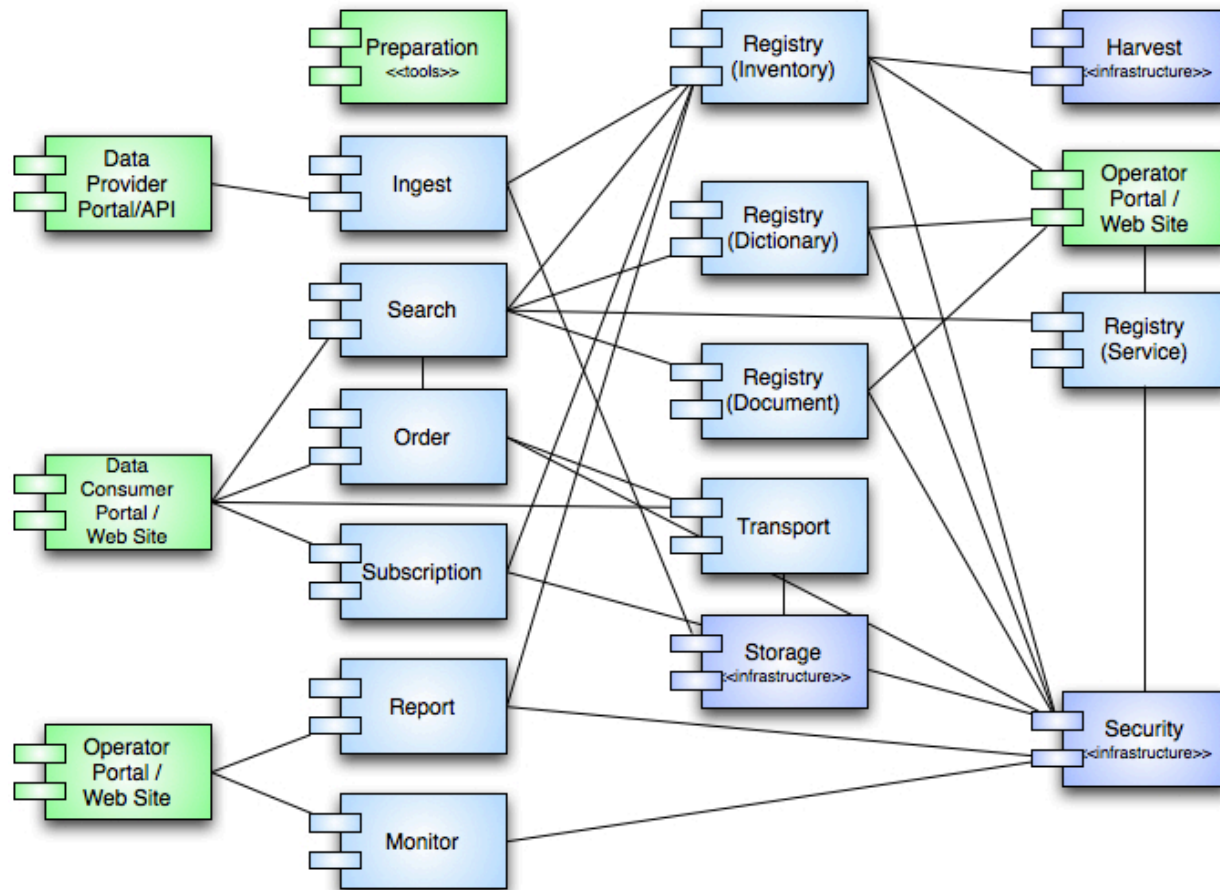
Overview

- Along with the effort to overhaul the PDS data architecture we are designing and developing a new software system.
- The system includes components that replace existing functionality at the Engineering Node.
 - Catalog database, data search, subscription and phonebook.
- The system also includes components that provide new functionality at the Nodes.
 - Product registration, search and preparation tools.

Information Flow



Component Identification



Approach

- Based the architecture development on the findings of the three study phase working groups.
 - Architecture, Data Model and User Support
- Derive the design from the architecture, existing PDS requirements and data system surveys.
- Formed the System Architecture Working Group in July 2008.
 - Identify drivers, principles, views and overall architecture.
- Formed the System Design Working Group in January 2009.
 - Investigate standards, core technologies and open source solutions.
 - Prepare designs for each component in the system.
 - Implement and deploy according to project build schedule.

Phased Design/Development

- Phase I – Ingestion
 - Core services that will provide the infrastructure for the system and support ingestion of data.
 - Tools for design, generation and validation of products.
- Phase II – Distribution
 - Services for discovery and retrieval of registered products.
- Phase III – User Services
 - Enhanced capabilities for discovering and accessing PDS data along with support for DN-specific applications.
 - Tools for transformation and visualization of products.

System Design Working Group

- The working group consists of the following personnel:
 - Sean Hardman (Engineering)
 - Todd King (PPI)
 - Mike Martin (Management)
 - Paul Ramirez (Engineering)
 - Alice Stanboli / Jordan Padams (Imaging)
 - Tom Stein (Geosciences)
- Periodic teleconferences held to review and discuss component designs.
- Utilize a Wiki for capturing minutes and design artifacts.
<http://oodt.jpl.nasa.gov/wiki/display/pdscollaboration/System+Design+Working+Group>
- Official artifacts are posted to the PDS Engineering Node web site.
<http://pds-engineering.jpl.nasa.gov/index.cfm?pid=145&cid=134>

Design Progress

- Each component has a corresponding requirements and design specification.
 - Level 4 and 5 requirements traced back to PDS Level 1, 2 and 3 requirements.
 - Each specification has multiple drafts with comments incorporated.
- Specifications completed and reviewed:
 - Registry, Harvest, Security and Report
- Specifications in process:
 - Preparation (tools) and Search
- Specifications upcoming:
 - Operator Portal, Monitor

Development Team

- The EN team consists of the following personnel:
 - Sean Hardman
 - Michael Cayanan
 - Sean Kelly
 - Hyun Lee
 - Jordan Padams
 - Paul Ramirez
- Focused mainly on PDS 2010 development.
 - As the requirements and design firm up for the components, implementation and integration efforts are initiated.
 - Evaluating and incorporating off-the-shelf solutions (Open Source and COTS) where appropriate.

Development Progress

Delivered in Build 1

- Prototype Ingestion Subsystem
 - This includes the Registry, Harvest and Security components.
 - Although not related to ingestion, the Report component was also included.
- Initial Data Provider Tool Suite
 - This includes the Validate Tool and User Guides for using the selected off-the-shelf products for the Design Tool.

Development Progress

Planned for Build 2

- Prototype Distribution Subsystem
 - This includes the Search component and an updated Data Search interface at the EN.
- Ingestion Subsystem
 - Further development of the Registry, Harvest and Security components.
- Operations
 - Configuration of the Report component, selection of an off-the-shelf product for Monitor, and development of Tracking, Subscription and Phonebook interfaces.

Plans for Build 3

- Tools for transformation and visualization.
 - A framework for data product transformation allowing contribution of transformations from others.
 - Replacement functionality for NASAView available as a desktop tool and a library to be integrated with other components.
- Focus on integration of new components with existing Node software and infrastructure.
- Incorporate findings of ongoing research into data movement and storage solutions.

Wrap Up

- The system architecture and design efforts have involved the Node technical staff from the beginning with periodic updates given to Node management.
- Taking a phased development approach to accommodate funding and resource availability.
- Development is progressing for the core components.

Questions / Comments