Planetary Data System

General System

Software Requirements Document (SRD)

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CHANGE LOG

Revision	Date	Description	Author
0.1	2010-09-27	Initial draft.	S. Hardman
1.0	2011-06-11	Added a logging requirement.	S. Hardman

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1.0 INTRODUCTION

The PDS 2010 effort will overhaul the PDS data architecture (e.g., data model, data structures, data dictionary, etc) and deploy a software system (online data services, distributed data catalog, etc) that fully embraces the PDS federation as an integrated system while leveraging modern information technology.

1.1 Document Scope and Purpose

This document addresses the general software requirements for services, applications and tools within the PDS 2010 system. This document is intended for the reviewer of these components as well as the developer and tester of the components.

1.2 Method

This Software Requirements Document (SRD) represents the software in the form of “shall” statements indicating the required functionality for the components of the system. Each component will also have a corresponding Software Requirements and Software Design Document (SRD/SDD) that details specific requirements and design for that component.

1.3 Notation

The numbering of the requirements in this document will be formatted as **LX.GEN.AA.X**, where:

- **LX** represents the requirements level where X is a number.
- **GEN** is an abbreviation representing the general component requirements section for the specified level.
- **AA** is a two-letter abbreviation representing the requirement sub-category (optional).
- **X** is a unique number within the section and optional sub-category for the requirement.

Following the text of a requirement may be a reference to the requirement or use case from which it was derived. The reference will be in parenthesis. A paragraph following a requirement, which is indented and has a reduced font size, represents a comment providing additional insight for the requirement that it follows. This comment should is not part of the requirement for development or testing purposes.

1.4 Controlling Documents

[1] Planetary Data System (PDS) Level 1, 2 and 3 Requirements, March 26, 2010.

[2] Planetary Data System (PDS) 2010 Project Plan, February 2010.

[3] Planetary Data System (PDS) 2010 System Architecture Specification, Version 1.2, May 25, 2011.

[4] Planetary Data System (PDS) 2010 Operations Concept, February 2010.

1.5 Applicable Documents

There are no applicable documents.

1.6 Document Maintenance

The system requirements will evolve over time and this document should reflect that evolution. This document is under configuration control.

2.0 REQUIREMENTS

This section details the general system requirements that are applicable to each component of the PDS 2010 system. A component in the system may be a service, application (including portals) or tool. These requirements are derived from level 3 requirements found in the PDS Level 1, 2, and 3 Requirements document [1]. The following level 3 requirements are relevant:

1.5.4 PDS will provide documentation for installing, using, and interfacing with each tool

2.2.2 PDS will track the status of data deliveries from data providers through the PDS to the deep archive

2.8.1 PDS will maintain a distributed archive where holdings are maintained by Discipline Nodes, specializing in subsets of planetary science

2.8.3 PDS will provide standard protocols for locating, moving, and utilizing data, metadata and computing resources across the distributed archive, among PDS nodes, to and from missions, and to and from the deep archive

2.8.7 The PDS architecture will enable non-PDS developed tools to access PDS holdings and services

2.9.2 PDS will ensure that online interfaces comply with required NASA guidelines

2.9.3 PDS will meet U.S. federal regulations for the preservation and management of data.

2.10.1 PDS will monitor the system and ensure continuous operation

2.10.3 PDS will ensure that appropriate mechanisms are in place to prevent unauthorized users from compromising the integrity of PDS systems and data

2.1 Level 4 Requirements

The level four requirements in PDS represent subsystem or component requirements at a high level.

L4.GEN.1 - The system shall operate in a distributed environment. (2.8.1)

L4.GEN.2 - The system shall provide application programming interfaces for interacting with the components. (2.8.3, 2.8.7)

L4.GEN.3 - The system shall generate metrics regarding performance and activity. (2.2.2)

L4.GEN.4 - The system shall enable monitoring of component health. (2.10.1)

L4.GEN.5 - The system shall adhere to NASA-specified guidelines. (2.9.2)

L4.GEN.6 - The system shall secure Personally Identifiable Information (PII). (2.9.3)

> For the purposes of metrics collection, an IP address and DNS host name are considered PII and may not be released to the public.

L4.GEN.7 - The system shall control access to component interfaces that allow for ingestion or modification of data contained within the system. (2.10.3)

L4.GEN.8 - The system shall provide documentation detailing capabilities, dependencies, interfaces, installation and operation. (1.5.4)

> Although the parent requirement is specific to tools, services and applications are subject to the same documentation requirements.

2.2 Level 5 Requirements

The level five requirements in PDS represent subsystem or component requirements at a detailed level.

L5.GEN.1 - Components shall be deployable in a distributed environment. (L4.GEN.1)

L5.GEN.2 - Components shall run on any PDS-supported platform. (L4.GEN.1)

> Although a list of PDS-supported platforms has not been officially defined, they typically include Linux (32-bit and 64-bit), Solaris (SPARC and x86), Mac OS X and Windows.

L5.GEN.3 - Services shall have an application programming interface. (L4.GEN.2)

L5.GEN.4 - Tools shall have an application programming interface. (L4.GEN.2)

L5.GEN.5 - Services shall generate metrics in a format suitable for ingestion by the Report Service. (L4.GEN.3)

L5.GEN.6 - Applications shall generate metrics in a format suitable for ingestion by the Report Service. (L4.GEN.3)

L5.GEN.7 - Tools shall generate a report detailing results from a single execution of the tool. (L4.GEN.3)

L5.GEN.8 - Services shall provide an interface to enable monitoring of the service's health. (L4.GEN.4)

L5.GEN.9 - Applications shall meet Section 508 compliance guidelines. (L4.GEN.5)

L5.GEN.10 - Components shall control access to interfaces that alter content. (L4.GEN.7)

L5.GEN.11 - Components shall provide documentation detailing their capabilities, dependencies, interfaces, installation and operation. (L4.GEN.8)

3.0 ACRONYMS

The following acronyms pertain to this document:

DNS	Domain Name Service
IP	Internet Protocol
JPL	Jet Propulsion Laboratory
NASA	National Aeronautics and Space Administration
PDS	Planetary Data System
PII	Personally Identifiable Information
SDD	Software Design Document
SRD	Software Requirements Document