

A horizontal banner image featuring a sequence of celestial bodies: a blue planet (Earth), a brown planet (Mars), and a large gas giant (Jupiter) with a white ring. The text "Planetary Data System" is overlaid in white on the right side of the image.

Planetary Data System

PDS 2010
System Design Report

MC Face-to-Face
St. Louis, MO

August 16-17, 2010

Topics

- Overall Progress
- Test Collection Ingestion
- Build 1 System Deliverables
- Component Progress
 - Registry, Harvest, Security and Report
- Demonstration

Overall Progress

- The System Design Working Group (SDWG) continues to discuss design related issues as they arise and review design documents.
 - Available from Engineer Node web site:
<http://pds-engineering.jpl.nasa.gov/index.cfm?pid=145&cid=134>
- The EN development team is actively working on development and integration of the core services.
 - Registry, Harvest, Security and Report
- SDWG members Hardman and Ramirez are working closely with the DDWG to ensure that implementation conforms with the data model.
- As test collections are delivered by the DDWG members, they are ingested into the prototype system.

Test Collection Ingestion

- The development team has received multiple test collections to date:
 - Context collections migrated from the PDS catalog.
 - Phoenix data collection from Atmospheres.
 - BUG Laboratory data collection from Geosciences.
 - Voyager 2 data collection from PPI.
 - Hubble data collection from Rings.
- Findings from the test ingestions have been communicated back to the DDWG and SDWG.
- This effort has greatly facilitated coordination between the data model and implementation.
- The test collections are available at:
<http://pds.nasa.gov/repository/pds4/>

Build 1 System Deliverables

- The main focus for the development team has been on deliverables for Build 1. They include:
- **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 a Validation Tool and User Guides for using the selected off-the-shelf tools for schema design.

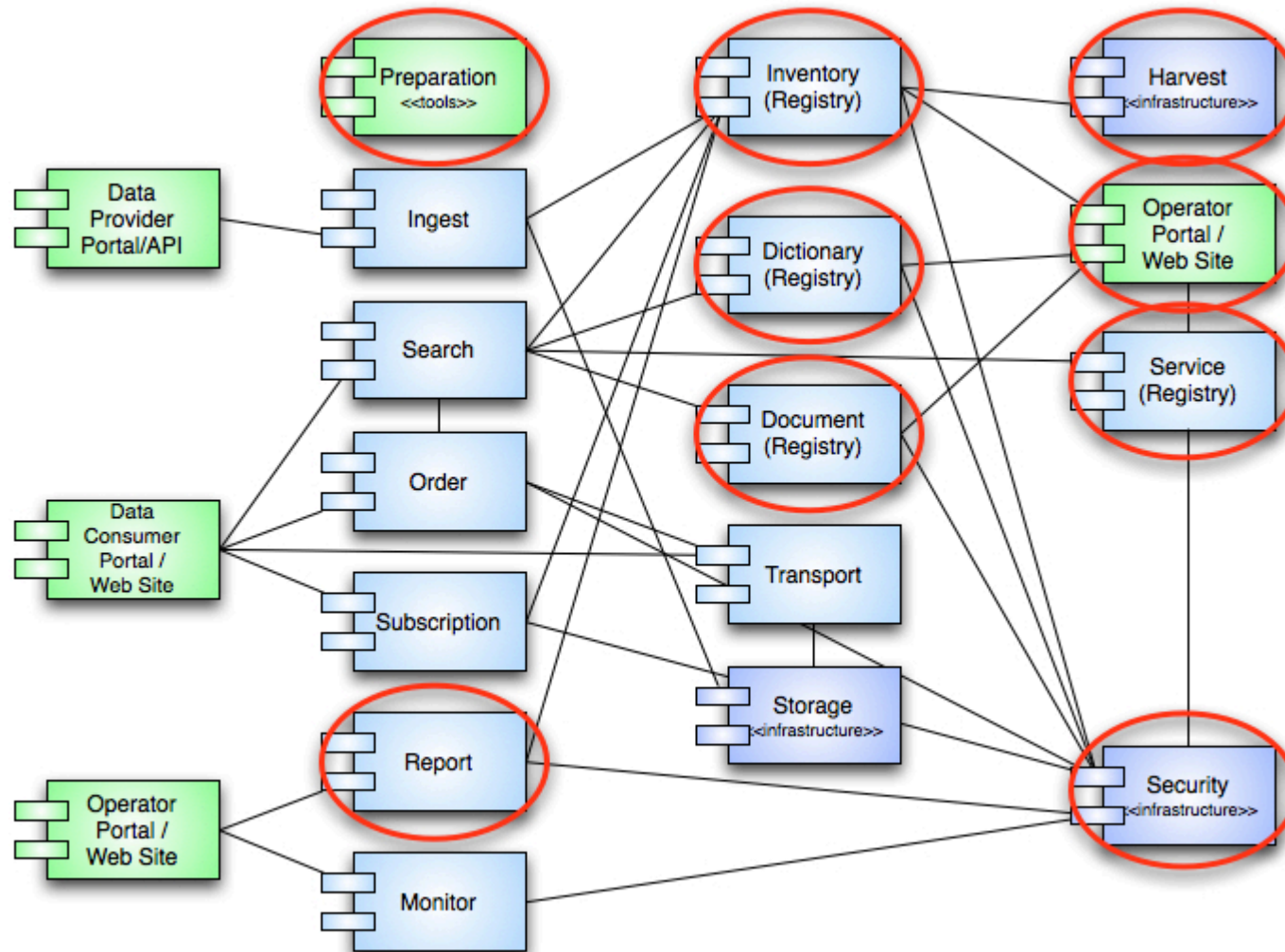
Deliverable Progress

- The Registry, Harvest and Security components are integrated and supporting PDS4 data product registration.
- Currently evaluating candidate products for the Report service.
- The design document for Preparation Tools is under development.
 - The initial Validation Tool will rely on a data product's specific schema for validation.
- The User Guides for off-the-shelf schema design tools are in presentation form. Need to be finalized.

Component Progress

(Registry, Harvest, Security and Report)

Component Context



Registry Service

- This service is intended to capture and manage information about every artifact in the PDS.
 - Artifacts include: Data Products, Documents, Schemas, Services, Element Definitions, etc.
- This effort utilizes the CCSDS Registry and Repository Reference Model as a guideline.
- Development is focused on registration of data products and their associations.
 - This corresponds with a portion of the label (e.g., Identification) that is relatively stable in the data model.

Registry Service Capabilities

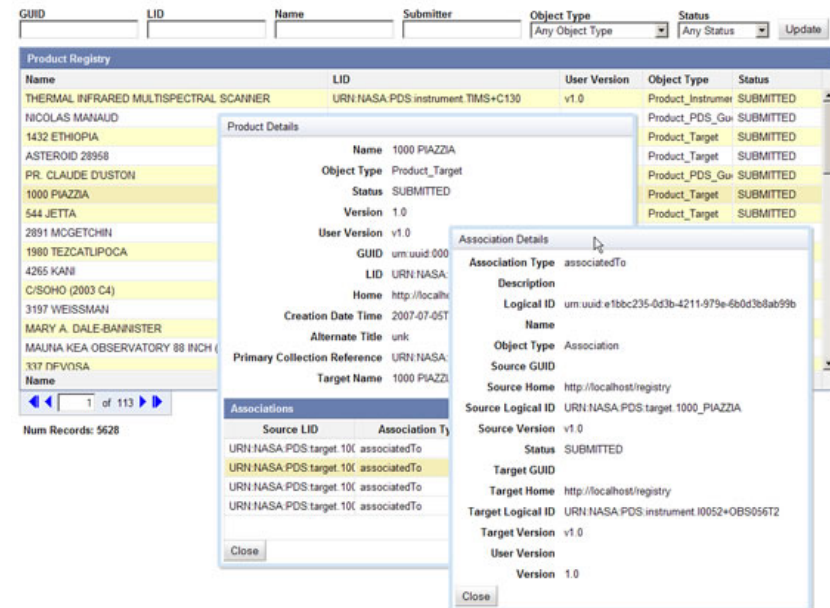
- The service supports registration and retrieval of products and associations.
 - Supports versioning, approval and deprecation of products.
- Provides an API interface for access.
 - Developed using Jersey (open source toolkit for building RESTful web services).
- Supports persistence of registrations with a backend database.
 - Using Apache's Derby for in-memory database solution.
 - Support for MySQL planned in the near future.

Registry Service User Interface

- Initial user (operator) interface developed by Ames.
 - Developed using Google Web Toolkit (GWT) a framework for building complex web applications.
- The interface utilizes the Registry Service API.
- Supports product listing, paging, sorting, filtering, and details including associations.
- Leverages GWT for an advanced/stable interactive UI without HTML/Stylesheet/Javascript expertise.
 - Downside is a steep learning curve.

Registry Service User Interface cont.

- Asynchronous data updates
- Modal/moveable detail dialogs
- Cached data for improved responsiveness
- Re-sizable columns
- Fixed table headers



Harvest Tool

- This tool is intended to register products from repositories residing at the Nodes with a Registry Service.
- Like the Registry, development is focused on registration of data products and their associations.
- The tool supports crawling a collection for data product discovery and also utilization of the collection inventory product, if present.
- Support for extended metadata extraction not yet implemented.

Security Service

- This service is intended to authorize access to selected interfaces.
- An open source solution, OpenAM, has been selected to satisfy the Security requirements.
 - This product is the continuation Sun's OpenSSO software.
- Integrated with the current test deployment of the Registry Service.
 - Provides access management for interfaces that modify content.
- The directory service, OpenDS, is populated with user name and password information from the PDS catalog.
- Support for authorization groups has yet to be implemented.

Report Service

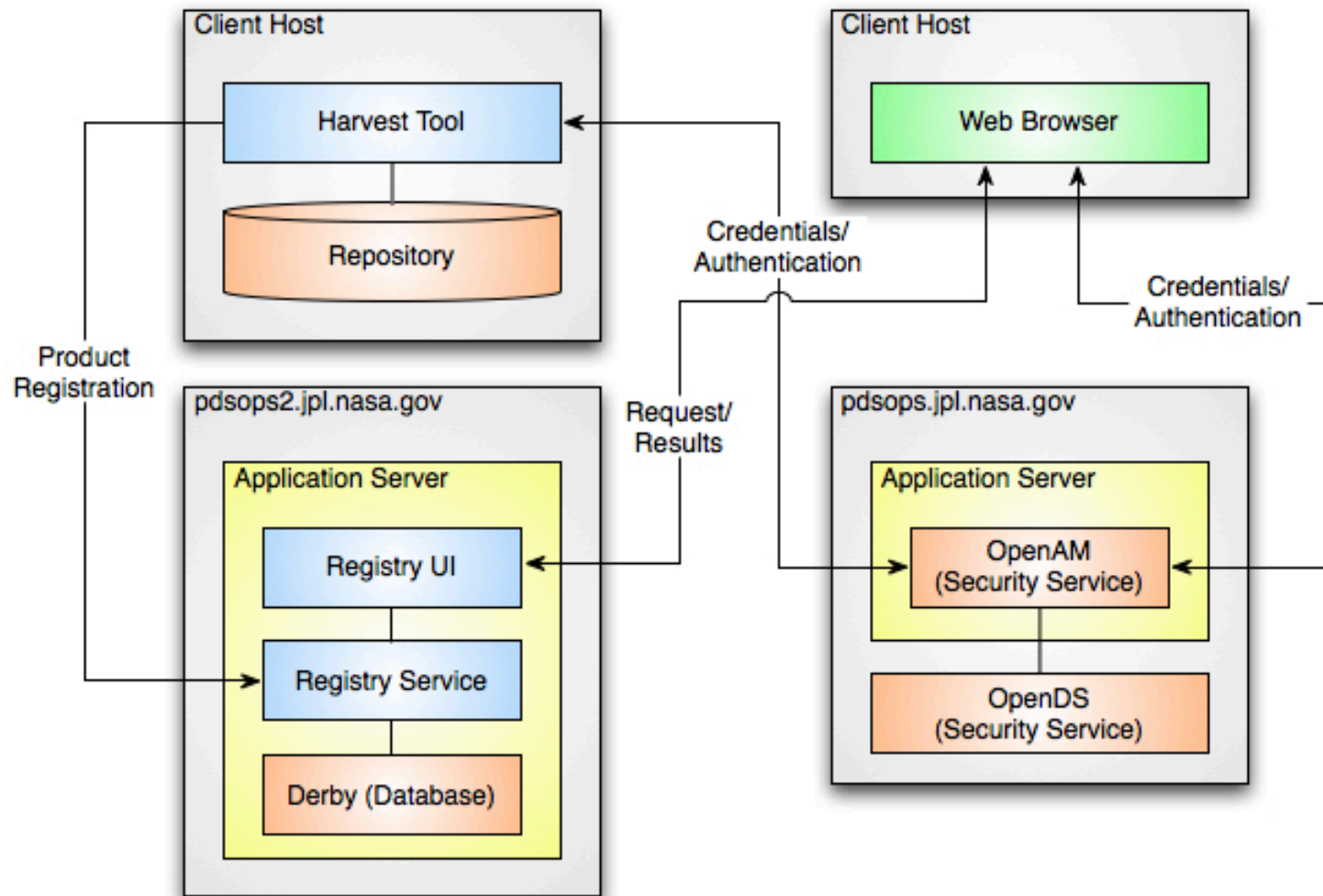
- This service is intended to consolidate the reporting of metrics across PDS.
- Currently investigating four areas:
 - Using a log analyzer product against a central repository of web and FTP logs from the Nodes.
 - Using a web analytics product with page tagging to produce enhanced metrics like session duration and referring site.
 - Integration with the Registry Service to report on product accesses.
 - Reporting from the Registry Service to produce archive-based metrics.
- The SDWG has identified candidate products and an evaluation has commenced.

Demonstration

Overview

- The demo exhibits the progress made in core component development and integration.
- The Harvest and Registry UI components utilize the API interface of the Registry Service.
- The open source security solution is integrated via the application server that hosts the Registry Service.
- The usernames and passwords for the prototype correspond with the accounts in the PDS catalog.

Deployment (EN Operational Environment)



Demo Steps

1. Access the Registry UI site, user is redirected to the default OpenAM Login page.
2. After successful login, the UI is displayed with existing registry content (test collections).
3. View product details by selecting a product.
4. View association details by selecting an association.
5. Register a small collection of products (e.g., GEO's test collection) via Harvest.
6. Return to the UI and display the newly registered content.

Login

(User redirected to login page)



Product Listing

(Default display, no particular order)

The screenshot shows a web browser window titled "Registry Browser" with the URL "http://pdsops2.jpl.nasa.gov/registry-ui/". The page displays a "Product Registry" table with the following columns: Name, LID, User Ver, Object Type, and Status. The table contains 16 rows of product data. Below the table, there is a pagination control showing "1 of 163" records and a "Num Records: 8103" label.

GUID	LID	Name	Submitter	Object Type	Status
				Any Object Type	Any Status
Product Registry					
Name	LID	User Ver	Object Type	Status	
TONJA THOMS	URN:NASA:PDS:personnel.TTHOMS	v1.0	Product_PDS_Gue	S	
4006 SANDLER	URN:NASA:PDS:target.4006_SANDLER	v1.0	Product_Target	S	
C/SOHO (2004 B10)	URN:NASA:PDS:target.C-SOHO_2004_B10	v1.0	Product_Target	S	
HAJE KORTH	URN:NASA:PDS:personnel.HKORTH	v1.0	Product_PDS_Gue	S	
179 KLYTAEMNESTRA	URN:NASA:PDS:target.179_KLYTAEMNESTRA	v1.0	Product_Target	S	
MAYRA RAMIREZ	URN:NASA:PDS:personnel.MRAMIREZ	v1.0	Product_PDS_Gue	S	
C/SOHO (2005 E9)	URN:NASA:PDS:target.C-SOHO_2005_E9	v1.0	Product_Target	S	
COLLESCIPOLI	URN:NASA:PDS:target.COLLESCIPOLI	v1.0	Product_Target	S	
2317 GALYA	URN:NASA:PDS:target.2317_GALYA	v1.0	Product_Target	S	
PHOENIX Mars MET Experiment	URN:NASA:PDS:PHX-MET:DATA-REDUCED:MS033RMC_00899145305_13C9M1	V1.0	TABLE	S	
PHOENIX MARS LIDAR EXPERIMENT	URN:NASA:PDS:PHX-LIDAR:DATA-RAW:LS145ELS_00909075533_201BM1	V1.0	TABLE	S	
325 HEIDELBERGA	URN:NASA:PDS:target.325_HEIDELBERGA	v1.0	Product_Target	S	
1277 DOLORES	URN:NASA:PDS:target.1277_DOLORES	v1.0	Product_Target	S	

1 of 163

Num Records: 8103

Product Detail Popup

(Query for *HARDMAN* then selected product)

The screenshot shows a web browser window titled "Registry Browser" with the URL "http://pdsops2.jpl.nasa.gov/registry-ui/". The main interface has search fields for GUID, LID, and Name, with the Name field containing "*HARDMAN*". Below the search fields is a "Product Registry" table with columns "Name" and "LID". The table contains one entry: "SEAN HARDMAN" with LID "URN:NASA:PDS:personnel.SHARDMAN". A "Product Details" popup window is open, displaying the following information:

Product Details

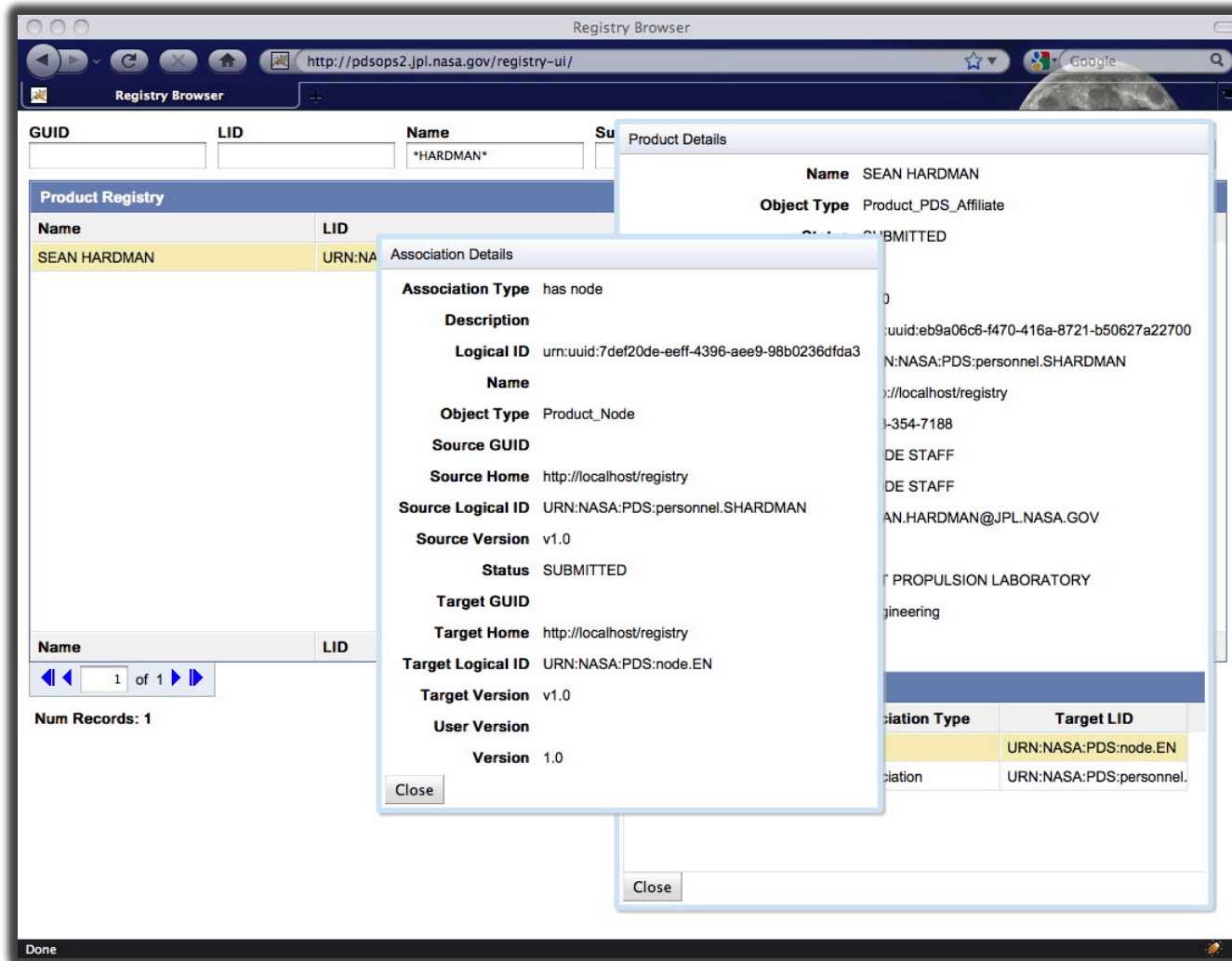
- Name: SEAN HARDMAN
- Object Type: Product_PDS_Affiliate
- Status: SUBMITTED
- Version: 1.0
- User Version: v1.0
- GUID: urn:uuid:eb9a06c6-f470-416a-8721-b50627a22700
- LID: URN:NASA:PDS:personnel.SHARDMAN
- Home: http://localhost/registry
- Telephone Number: 818-354-7188
- Affiliation Type: NODE STAFF
- Role: NODE STAFF
- Electronic Mail Address: SEAN.HARDMAN@JPL.NASA.GOV
- Alternate Telephone Number:
- Institution Name: JET PROPULSION LABORATORY
- Node Name: Engineering
- Fax Number:

Below the details is an "Associations" table:

Source LID	Association Type	Target LID
URN:NASA:PDS:personnel.	has node	URN:NASA:PDS:node.EN
URN:NASA:PDS:context_co	has_association	URN:NASA:PDS:personnel.

The popup has a "Close" button at the bottom left. The main interface also shows "Num Records: 1" and a pagination control "1 of 1".

Association Detail Popup (Select the Node association)



Collection Registration

(Execute Harvest from local machine)

- Execute the Harvest launch script with the policy file for the target collection.

```
[avatar:~/harvest-0.1.0/bin] shardman% ./Harvest harvest-  
policy-geo.xml -u shardman -p ***** -l log.txt
```

- Review the resulting log file for successful registration.

```
[avatar:~/harvest-0.1.0/bin] shardman% cat log.txt  
INFO:    [/Users/shardman/test/pds/2010/geo/mars_analog_data/  
aref_235_450.xml] Successfully registered product:  
http://pdsops2.jpl.nasa.gov/registry-service/registry/  
products/URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-  
DATA:AREF\_235\_450/1.0
```

...

- The URL above retrieves the product description directly from the Registry Service.

Ingested Product Listing

(Select Object Type of character_table)

The screenshot shows a web browser window titled "Registry Browser" with the URL "http://pdsops2.jpl.nasa.gov/registry-ui/". The page features a search and filter interface at the top with fields for GUID, LID, Name, Submitter, Object Type (set to "character_table"), and Status (set to "Any Status"), along with an "Update" button. Below this is a table titled "Product Registry" with columns for Name, LID, User Version, Object Type, and Status. The table contains 11 rows of data, all with "SUBMITTED" status and "character_table" object type. At the bottom, there is a pagination control showing "1 of 1" records and a "Num Records: 11" label.

Name	LID	User Version	Object Type	Status
aref_235_990	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_990	1.0	character_table	SUBMITTED
aref_235_600	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_600	1.0	character_table	SUBMITTED
aref_235_750	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_750	1.0	character_table	SUBMITTED
aref_235_450	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_450	1.0	character_table	SUBMITTED
aref_235_480	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_480	1.0	character_table	SUBMITTED
aref_235_930	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_930	1.0	character_table	SUBMITTED
aref_235_860	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_860	1.0	character_table	SUBMITTED
aref_235_900	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_900	1.0	character_table	SUBMITTED
aref_235_800	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_800	1.0	character_table	SUBMITTED
aref_235_670	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_670	1.0	character_table	SUBMITTED
aref_235_530	URN:NASA:PDS:BUGLAB-GB:BUGLAB-GB:MARS-ANALOG-SAMPLE-DATA:AREF_235_530	1.0	character_table	SUBMITTED

Questions / Comments