



PDS Label Assistant for Interactive Design (PLAID): Simplifying PDS4 Label Template Building

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Why PLAID?

- Building PDS4 templates require knowledge of XML and the PDS4 data dictionaries, both of which are non-trivial to learn.
- The PDS4 rules and dictionaries are constantly changing. The PDS4 data provider handbook is 126 pages.
- Missions have limited time and budgets for designing their PDS4 labels.
- Previous tool was too complex and allowed users too many opportunities to make invalid labels. Needed something simpler and more user friendly.



PLAID Implementation

- Web based "wizard" step by step tool where users build PDS4 label template with a GUI.
- At each step users are only allowed to add or remove elements of the label based on PDS4 rules.
- As a result users cannot build invalid label structures.
- What is allowed and restricted at each step of the label is provided in-line.
- Descriptions of attributes and classes in the label are pulled directly from the PDS4 definitions.



PLAID Tool

The screenshot shows the PLAID tool interface in a web browser. The browser address bar shows the URL: `plaid.jpl.nasa.gov/plaid_beta/wizard.php?version=1800`. The page title is "PDS Label Assistant for Interactive Design (PLAID)".

Left Sidebar (Categories):

- Product Type
- Label Root
- Identification Area
- Observation Area
- Time Coordinates
- Investigation Area** (selected)
- Internal Reference
- Observing System
- Observing System Component
- Target Identification
- File Area Observational
- File
- Array 2D

Central Panel: What elements do you want to keep in 'Investigation Area'?

name	Enter value (optional)	-	1	+
type	Choose a value	-	1	+
Internal Reference		-	1	+

Right Panel: Information

Please choose the applicable elements for your product.

Feel free to add or remove elements as you like. The quantity of each element is bounded by the PDS4 Standard so you won't create an invalid label template.

Hover over any of the elements to view helpful descriptions to guide your decisions. These descriptions include whether the element is required or optional, how many times it can occur, and what it is.

If the element has sub-elements, these will also be listed in the description. These sub-elements may be required or optional depending on if you include the parent element.

Navigation: Previous (blue button), Next (green button)



PLAID Tool

The screenshot shows the web interface of the PDS Label Assistant for Interactive Design (PLAID). The browser address bar shows the URL `plaid.jpl.nasa.gov/plaid_beta/wizard.php?version=1800`. The page title is "PDS Label Assistant for Interactive Design (PLAID)".

On the left side, there is a vertical list of categories, each with a checkmark icon. The categories are: Investigation Area, Internal Reference, Observing System, Observing System Component, Target Identification, File Area Observational, File, Array 2D, Axis Array, Element Array, Discipline Dictionaries, Mission Specifics, and **18. Export** (highlighted in blue).

The central area displays a "Label Template Preview" with the following XML code:

```
1 <?xml version="1.0"?>
2 <Product_Observational xmlns="http://pds.nasa.gov"
3 <Identification_Area>
4 <logical_identifier></logical_identifier>
5 <version_id></version_id>
6 <title></title>
7 <information_model_version></information_model_version>
8 <product_class></product_class>
9 </Identification_Area>
10 <Observation_Area>
11 <Time_Coordinates>
12 <start_date_time></start_date_time>
13 <stop_date_time></stop_date_time>
14 </Time_Coordinates>
15 <Investigation_Area>
16 <name></name>
17 <type></type>
18 <Internal_Reference>
19 <reference_type></reference_type>
```

Below the code is a "Filename:" input field containing "label template.xml" and an "Export" button. At the bottom of the central panel are "Previous" and "Finish" buttons.

The right-hand panel features an information icon (i) and the text: "Your label template is complete!". Below this, it says: "Before exporting your label, please review the preview to ensure your label template is accurate." and "After that, please enter a valid* filename for your label template and then click 'Export'. The file will be available in your Downloads folder." A footnote at the bottom states: "*Filename may have characters, digits, underscores, and hyphens. It must start with a character and end with an .xml extension."

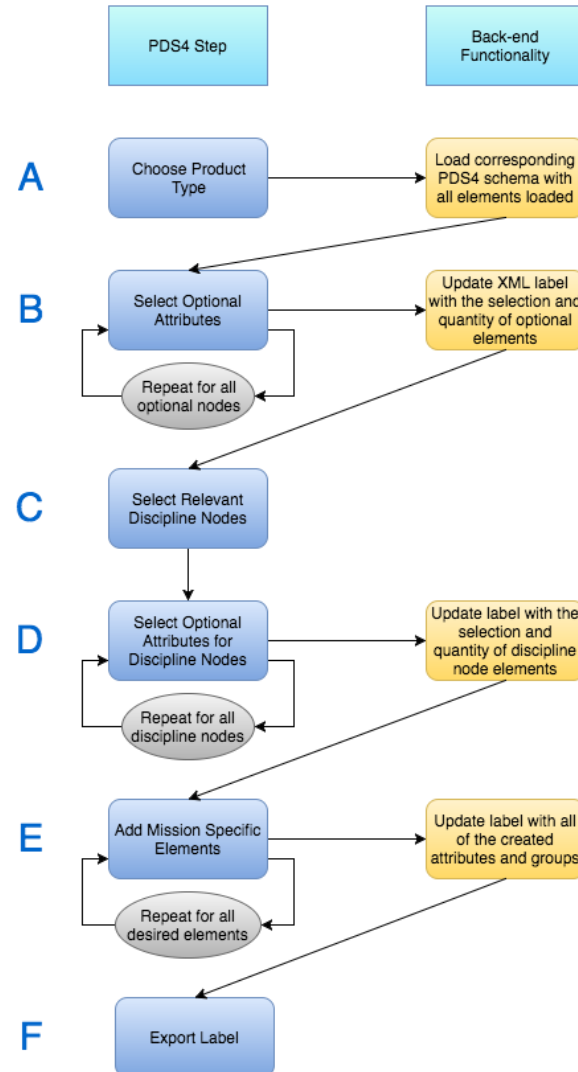


PLAID Design

- Tool is hosted at JPL and anyone can create an account and get started on a PDS4 label template
 - <https://plaid.jpl.nasa.gov/>
- Code is open sourced and anyone can contribute or deploy on their own machine. The more the better!
 - <https://github.com/nasa-pds/PLAID>



PLAID High Level Design





PLAID Software Used

- Front-end:
 - HTML/CSS
 - Javascript
 - jQuery
 - jQuery-Steps
 - Twitter Bootstrap
 - Font-Awesome
 - jqTree
- Backend:
 - PHP, LDDTool output
- Database:
 - MySQL
- Tools:
 - PHPStorm
 - Apache httpd
 - MySQL Workbench
 - Git



PLAID Development

- PLAID Features in development:
 - Starter label templates
 - Start a label from an excel document for batch editing
 - Automated filling in of values based on previous selections/questions
 - Best practices provided in-line
 - Enhanced mission attribute and classes support
 - Sharing of labels between users and label collaboration.
- We are interested in your feedback and what you'd like to see added to the tool.



PLAID Demo and Workshop

- Demo today at 2:45pm in Agassiz Room
- Workshop Wednesday(Fremont room) and Thursday (Agassiz room). Please come by to learn more about PDS4 and PLAID
 - We will be building PDS4 labels on Wednesday.
 - We will be giving examples of converting PDS3 labels to PDS4 Thursday morning for tasks such as PDARTS (Planetary Data Archiving, Restoration, and Tools – requires products to be delivered in PDS4 even if they're from PDS3 sources).



Contacts

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Questions?