Standards Change Request

Pointer/Object Ambiguity in the Standards Reference   SCR 3-1127.v5

Provenance:

Date: 2009-03-25
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Title: Pointer/Object Ambiguity in the Standards Reference (SCR3-1127.v1-v4)

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Problem:

As labels become more complicated, we frequently encounter the case of multiple objects of the same basic type (IMAGE or TABLE, e.g.) being described in the same label. By convention we at SBN have always used unique identifiers for objects of similar type, which we formulate by pre-pending a descriptive modifier to the base type (as is done in the occasional SR example). Recent interaction with the Rosetta mission, however, has pointed out two major logical holes in the PDS label (and possibly ODL) standards: 1. I can find no requirement in the SR that object identifiers be unique within an ODL file. 2. I can find no statement in the SR that object identifiers in PDS labels must end, or even contain, the base object type. Similarly, there is no statement in the SR that requires that pointers and objects with the same name should be mapped to each other based on their sequence in the file.

Current Urgency:

Medium.

Proposed Solution:

Modify the text of the Standards Reference to stipulate that object identifiers must be unique within the containing label.

Impact Assessment:

PDS Standards Reference – Changes as described in "Requested Changes"

Archive Preparation Guide – no impact

Proposer's Archive Guide – no impact

Planetary Science Data Dictionary – no impact

PDS tools - Must be modified to check for and report duplicates.

PDS Web Site – no impact

External Agencies – no impact?

External Interfaces – no impact?

Compliance/compatibility with ODL and ISO Standards – no impact

Additional Information:

Sections within PDS Standards Reference which refer to Object Pointers

      4.1 Data Product File Configurations
          Examples
      5.1.1 Labeling methods
      5.2.1 Attached and Detached Labels
      5.2.2 Combined Detached Labels
      5.2.3 Minimal Labels
      5.3 Detailed Label Contents Description
      5.3.3 Data Object Pointers
      5.3.3.1 Use of Pointers in Attached Labels
      12.1 About the ODL Specification
      12.4.3 Pointer Statement
      14.1.1 Data Location Pointers (Data Object Pointers)
      14.2 Rules for Resolving Pointers
      A.17.5 Example

Figures which use Pointers
      Figure 5.2 PDS Attached / Detached Label Structure
      Figure 5.6 Data Object Pointers – Detached & Combined Labels

Requested Changes:

Change section "5.3.3.1 Use of Pointers in Attached Labels" to insert the text:

> The <object_identifier> is the unique name assigned to the object description.

before

> See Chapter 12, Object Description

Change section " 5.3.3.2 Use of Pointers in Detached and Combined Detached Labels" by inserting:

> (e) The <object_identifier> is the unique name of an object description.

after:

> (d) Records and bytes are numbered from 1.

Add a section

> 12.4.4.2 PDS Usage of OBJECT
>
> If an object is referenced using a data object pointer, then the object identifier must be unique within a label context. The syntax for an object identifier is an instance name plus the generic object class name, separated by an underscore. For example, an IMAGE object with the instance name of "FULL" would have an identifier of "FULL_IMAGE". Object identifiers without an instance name are allowed as long as the identifier remains unique within the label context. If multiple IMAGE objects exist in a label then only one unnamed IMAGE object can exist . All other IMAGE objects must have a unique identifiers which end with "_IMAGE" (i.e. SECOND_IMAGE).

In the introductory text of "Chapter 14. Pointer Usage" change:

> Pointer statements begin with a caret ("^") and the name of a PDS object or element.

to:

> Pointer statements begin with a caret ("^") and the identifier assigned to an object or the name of an element.

Change the text of section "14.1.1 Data Location Pointers (Data Object Pointers)" from:

The most common use of pointers is for linking object descriptions to the actual data. The syntax of these pointers depends on whether the label is attached or detached from the data it describes.

to:

The most common use of pointers is for linking object descriptions to the actual data. This is called a "data object pointer." A Data Object pointer begins with a caret ("^") followed by the identifier assigned to the object description within the label. The syntax for the values assigned to these pointers depends on whether the label is attached or detached from the data it describes.

Correct the example in "A.26.5 Example"

Change:

    OBJECT = SPECTRUM
    …
    END_OBJECT = SPECTRUM

to:

    OBJECT = TOTAL_INTENSITY_SPECTRUM
    …
    END_OBJECT = TOTAL_INTENSITY_SPECTRUM