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1 Introduction

This document presents the PDS4 Information Model Specification for all components of the Planetary Data System (PDS).

2 Audience

This specification is intended for use by programmers and data engineers who require formal definitions of various parts of the Planetary Data System in order to support development of data sets, archiving utilities, and interfaces involving PDS holdings or operations.

3 Acknowledgements

The PDS4 Data Dictionary and the PDS4 Information Model is a joint effort involving representatives from each of the PDS nodes functioning as the PDS4 Data Design Working Group.

4 Scope

This document defines all classes in use in the PDS, including those classes used to define archival elements as well as classes used for high-level descriptions and operational support. It also documents the associations among classes. Figure 1 illustrates a few of the main classes using a Concept Map diagram.

5 Applicable Documents

The starting point for this document was the PDS3 Information Model Specification (version 0.070916t, 8 September 2008). Deficiencies in PDS3 were a major motivation in developing PDS4, however; so the relationship between the two specifications is largely of historical interest. Relevant to both documents is: Reference Model for an Open Archival Information System (OAIS), CCSDS 650.0-B-1, Blue Book, January 2002.

6 Terminology

This document uses very specific engineering terminology to describe the various structures involved. It is particularly important that readers who have absorbed the PDS Standards Reference bear in mind that terms which are familiar in that context can have very different meanings in the present document. Please consult the Glossary for definitions whenever there is
any possibility of confusion.

Following are some definitions of essential terms used throughout this document.

An "attribute" is a property or characteristic that allows both identification and distinction.

A "class" is the set of attributes which identifies a family. A class is generic – a template from which individual members of each family may be constructed.

An "object" is a specific instance of a class.

For example, an electromagnetic wave may be represented mathematically as

\[ i_x A \cos(\omega t - kr - \varphi) \]

where there are five explicit attributes: polarization \( i_x \), amplitude \( A \), frequency \( \omega \), wave vector \( k \) (which defines the propagation direction), and phase \( \varphi \). Although shown here as constants, these attributes may be complex functions of other variables; for example, there is an implicit
sixth attribute "time" which defines both the beginning and end of the electromagnetic wave. Together these six attributes identify the class (i.e., the family) of all electromagnetic waves. If we then define a coordinate system, specify values for the attributes above, and impose time constraints, we would have an electromagnetic wave object. We would need a different list of attributes to identify a river, a musical score, or a television set, thus these would be different classes.

For this document we identify two special types of objects — the "data object" and the "description object." The data object contains "data," and (by itself) is not otherwise constrained. The description object contains information about another object, such as a data object. By linking a data object with a description object we create a pair which includes both the data and enough information that we can start to read and interpret the bits.

A description object can (and often does) exist without being physically accompanied by another object. The object it describes may not be physical (e.g., a space mission which, although it has physical components, is itself a concept) or it may not be practical to include the physical object (e.g., the planet Saturn).

An "association" is a defined relationship between classes. It has one direction. The association in the opposite direction is called an inverse relation.

"Cardinality" is the number of values allowed to an attribute or association in a single class. Cardinality in general is stated as a range with a minimum and maximum. For example, an attribute that may be multi-valued will have a cardinality of "1..*". A cardinality where the minimum and maximum are the same is often shown as the single value. For example, an attribute required to have exactly one value will have a cardinality of "1". When a value is required the minimum cardinality is at least 1. At least one value is always required.

"Entity" is a generic term used to refer to specific attributes or associations listed in a class definition.

Within this document, the term "model" is used to refer to a collection of classes and associations that describe a functional subsection of the Planetary Data System.
7 Document Contents

Sections 8 through 16 contain the specification for PDS4. The lowest level building blocks (classes) are defined first, then these are used to construct classes at higher levels; for active users of PDS4, the material in Section 9 should seem familiar, but the terminology may be new. The classes in section 12 provide context (instrument, mission, node, etc.).

Section 8: the basic component classes
Section 9: the data description classes
Section 10: the "tagged" classes, the data objects with their descriptions
Section 11: product classes, which are formed from combinations of the above
Section 12: context classes (commonly associated with the PDS Catalog)
Section 13: packaging classes
Section 14: classes needed for operating and maintaining the PDS
Section 15: data type classes
Section 16: the information object class

Each section begins with a brief outline, including a hierarchy of the definitions which follow. In some cases a class is defined to group several subclasses when the class itself never appears in PDS (a "phantom" class). To facilitate cross-referencing, the classes are listed alphabetically within each section. Subsections begin with a note on the position within the hierarchy and a brief description of the class. The heart of each subsection is the class definition table. Sections are often accompanied by a UML diagram which shows the relationships among classes graphically.

Class definition tables comprise five columns. The left column is used to separate the table into functional blocks of contiguous rows. The "hierarchy" block restates the position of the class within the definitional hierarchy, and the "subclass" block identifies any subclasses which may exist (be derived from the current class). Attribute and Association blocks list the properties, characteristics, and relationships of the class, some of
which may be inherited from parent classes. The "referenced from" block lists classes which may "call" the class being defined.

Within Attribute blocks, the "entity" column lists the properties and characteristics which identify the class and distinguish it from others. The "Indicator" column (far right) tells whether the attribute is optional (O), restricted (R), or both; a restricted attribute has been inherited from a parent class but its use is more narrow than the parent would allow. The "Cardinality" column (middle) shows the number of values allowed. A required attribute for which only one value is allowed will have cardinality "1". A required attribute for which one or more values is allowed will have cardinality "1..*". If a parent’s attribute has cardinality "1..*" but the child’s cardinality is "1", the Indicator column should show "R". The "Value" column (fourth) includes the indicator Data Dictionary (DD) when a set of valid values for the attribute are provided in the dictionary. A few attributes that represent types have their valid values included in this column.

The Association blocks are handled similarly. The "Entity" column lists relationships among classes using fabricated, but intuitive, names which are unique and consistent across the Specification. The "Value" column (fourth), which is rarely used in the Attribute blocks, lists the class to which the relationship is made.

During construction of the Specification some classes have been subsumed. In particular, any subclass which does nothing more than provide multiple values for a single attribute (e.g., data_set_target) or any subclass which merely grouped non-repeating attributes (e.g., data_set_information) was subsumed. Only subclasses that grouped several attributes and that repeated were defined explicitly as separate classes (e.g., software_online).

Sections 17-19 contain supplementary information which may be useful in interpreting the remainder of the Specification.

### 8 Observational Data Products

This section provides the observational product classes.

The class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ Product
  + + Product_File_Text
```
The class hierarchy above includes 4 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

8.1 Product

**Root Class:** Product

**Role:** Concrete

**Class Description:** A Product is a uniquely identified object that is managed by a registry/repository. It consists of one or more tagged data objects.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tr>
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<td>Product._Browse</td>
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</tr>
</tbody>
</table>

### 8.2 Product._File_Text

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product File Text consists of a single text file with ASCII character encoding.
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<thead>
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<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td>Subclass</td>
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</tr>
<tr>
<td>Attribute</td>
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<tr>
<td>Referenced from</td>
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</tr>
</tbody>
</table>

8.3 Product_Observational

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** A Product_Observational is a set of one or more information objects produced by an observing system.

<table>
<thead>
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<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
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<td></td>
</tr>
<tr>
<td>Association</td>
<td>file_area.Product_Observati...</td>
<td>1..*</td>
</tr>
<tr>
<td></td>
<td>file_area_supplemental.Prod...</td>
<td>0..*</td>
</tr>
<tr>
<td></td>
<td>observation_area.Product_Ob...</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Obse...</td>
<td>0..1</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Pro...</td>
<td>1</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

8.4 Product_Update

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product_Update class defines a product consisting of update information and optional references to other products.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
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<td></td>
<td></td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Product_Update</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subclass</strong></td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Attribute</strong></td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inherited Attribute</strong></td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Association</strong></td>
<td>product_data_object.Product...</td>
<td>1</td>
<td>Update</td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Update</td>
<td>0..1</td>
<td>Reference_List</td>
</tr>
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<td>has_identification_area.Pro...</td>
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<td>Identification_Area</td>
</tr>
<tr>
<td><strong>Referenced from</strong></td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9 Observational Digital Objects

This section provides the observational product classes and their fundamental data structure classes.

The class hierarchy for Tagged Digital Objects is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format and provides a visual representation of the classes in relation to their parent classes.

```
+ + Axis_Array
+ + Element_Array
+ + Field
+ + + Field_Binary
+ + + Field_Bit
+ + + Field_Character
+ + + Field_Delimited
+ + Group
+ + + Group_Field_Binary
+ + + Group_Field_Character
+ + + Group_Field_Delimited
+ + Packed_Data_Fields
+ + Record
+ + + Record_Binary
+ + + Record_Character
+ + + Record_Delimited
+ + Byte_Stream
+ + + Array
+ + + + Array_2D
+ + + + + Array_2D_Image
+ + + + + Array_2D_Map
+ + + + + Array_2D_Spectrum
+ + + + Array_3D
+ + + + + Array_3D_Image
+ + + + + Array_3D_Movie
+ + + + + Array_3D_Spectrum
+ + + Encoded(Byte_Stream
+ + + + Encoded_Header
+ + + + Parsable(Byte_Stream
+ + + + Header
+ + + + Stream_Text
+ + + + Table_Delimited
+ + + + Table_Base
+ + + + Table_Binary
```
The class hierarchy above includes 37 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

### 9.1 Array

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Array class defines a homogeneous N-dimensional array of scalars. The Array class is the parent class for all n-dimensional arrays of scalars.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_Digital_Object . Byte_Stream . Array</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subclass</th>
<th>Array_2D</th>
<th>Array_3D</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Attribute</th>
<th>axes.Array</th>
<th>1</th>
<th>Last Index Fastest</th>
</tr>
</thead>
<tbody>
<tr>
<td>axis_index_order.Array</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>description.Array</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>offset.Array</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Inherited Attribute | local_identifier.Byte_Stream | 0..1 |  |
|                     | name.Byte_Stream | 0..1 |  |

<table>
<thead>
<tr>
<th>Association</th>
<th>associated_Special_Constant...</th>
<th>0..1</th>
<th>Special_Constants</th>
</tr>
</thead>
<tbody>
<tr>
<td>associated_Special_Constant...</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>data_object.Array</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>has_Axis_Array.Array</td>
<td>0..*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>has_Element_Array.Array</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<th>none</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referenced from</td>
<td>none</td>
</tr>
</tbody>
</table>

### 9.2 Array_2D

**Root Class:** Tagged_Digital_Object

**Role:** Concrete

**Class Description:** The Array 2D class is the parent class for all two dimensional array based classes.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
</thead>
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<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>Array_2D Image Array_2D_Map Array_2D_Spectrum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>axes.Array_2D</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>axis_index_order.Array 1 0..1 offset.Array 1 local_identifier.Byte_Stream 0..1 name.Byte_Stream 0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>has_Axis_Array.Array_2D 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>associated_Special_Constant... Array 0..1 associated_Statistics.Array 0..1 data_object.Array 1 has_Element_Array.Array 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>File_Area_Browse File_Area_Observational File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 9.3 Array_2D_Image

*Root Class:* Tagged_Digital_Object  
*Role:* Concrete  
*Class Description:* The Array 2D Image class is an extension of the Array 2D class and defines a two dimensional image.
<table>
<thead>
<tr>
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<th>Value/Class</th>
<th>Inherited Attribute</th>
<th>Association</th>
<th>Inherited Association</th>
<th>Referenced from</th>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Array</td>
<td></td>
<td></td>
<td>. . Array</td>
<td></td>
<td></td>
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</tr>
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<td></td>
<td>. . . Array_2D</td>
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<td></td>
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<td></td>
<td>. . . . Array_2D</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
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<td>none</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
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<td>1</td>
<td>0..1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>description.Array</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>offset.Array</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>axes.Array_2D</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>name.Byte_Stream</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Association</td>
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<td></td>
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<td>has_Display_2d_Image.Array</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>associated_Statistics.Array</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>data_object.Array</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has_Element_Array.Array</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has_Axis.Array.Array_2D</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.4 Array_2D_Map

**Root Class:** Tagged_Digital_Object

**Role:** Concrete

**Class Description:** The Array 2D Map class is an extension of the Array 2D class and defines a two dimensional map.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
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<tbody>
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</tr>
<tr>
<td></td>
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<td>. Array</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>. . Array_2D</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>. . . Array_2D_Map</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
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<td></td>
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</tr>
<tr>
<td>Attribute</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
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<td>1</td>
<td>Last Index Fastest</td>
</tr>
<tr>
<td></td>
<td>description.Array</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>offset.Array</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>axes.Array_2D</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
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<td>0..1</td>
<td>Display_2D_Image</td>
</tr>
<tr>
<td>Inherited Association</td>
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<td>0..1</td>
<td>Special_Constants</td>
</tr>
<tr>
<td></td>
<td>associated_Statistics.Array</td>
<td>0..1</td>
<td>Object_Statistics</td>
</tr>
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<td></td>
<td>data_object.Array</td>
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<td>Digital_Object</td>
</tr>
<tr>
<td></td>
<td>has_Element_Array.Array</td>
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<td>Element_Array</td>
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<td></td>
<td>has_Axis_Array.Array_2D</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>File_Area_Observational</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.5 Array_2D_Spectrum

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Array 2D Spectrum class is an extension of the Array 2D class and defines a two dimensional spectrum.
<table>
<thead>
<tr>
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<th>Card</th>
<th>Value/Class</th>
<th>Inherited Attribute</th>
</tr>
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<tbody>
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<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute axis_index_order.Array 1 0..1 description.Array 1 0..1 offset.Array 1 axes.Array_2D 1 local_identifier.Byte_Stream 0..1 name.Byte_Stream 0..1</td>
<td></td>
<td>Last Index Fastest</td>
<td></td>
</tr>
<tr>
<td>Association has_Display_2d_Image.Array... 0..1 Display_2D_Image</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association associated_Special_Constant... 0..1 Special_Constants associated_Statistics.Array 0..1 Object_Statistics data_object.Array 1 Digital_Object has_Element_Array.Array 1 Element_Array has_Axis_Array.Array_2D 2 Axis_Array</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from File_Area_Browse File_Area_Observational File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.6 Array_3D

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Array 3D class is the parent class for all three dimensional array based classes.
<table>
<thead>
<tr>
<th></th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
</thead>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Byte_Stream</td>
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</tr>
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<td></td>
<td>. Array</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Array_3D</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subclass</strong></td>
<td>Array_3D_Image</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Array_3D_Movie</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Array_3D_Spectrum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Attribute</strong></td>
<td>axes.Array_3D</td>
<td>1</td>
<td>3</td>
<td>R</td>
</tr>
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<td><strong>Inherited Attribute</strong></td>
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<td>1</td>
<td>0..1</td>
<td>Last Index Fastest</td>
</tr>
<tr>
<td></td>
<td>description.Array</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>offset.Array</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>local_identifier.Byte_Stream</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Byte_Stream</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Axis_Array</td>
<td>R</td>
</tr>
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<td>0..1</td>
<td></td>
<td>Special_Constants</td>
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<tr>
<td></td>
<td>associated_Statistics.Array</td>
<td>0..1</td>
<td></td>
<td>Object_Statistics</td>
</tr>
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<td></td>
<td>Digital_Object</td>
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<td></td>
<td>Element_Array</td>
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<td>File_Area_Observational</td>
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</tr>
<tr>
<td></td>
<td>File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 9.7 Array_3D_Image

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Array 3D Image class is an extension of the Array 3D class and defines a three dimensional image.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited Attribute</th>
<th>Attribute</th>
<th>Subclass</th>
<th>Inherited Association</th>
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<td>Last Index Fastest</td>
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<td></td>
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</tr>
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9.8 Array_3D_Movie

**Root Class:** Tagged_Digital_Object

**Role:** Concrete

**Class Description:** The Array 3D Movie class is an extension of the Array 3D class and defines a movie as a set of two dimensional images in a time series.
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9.9 Array_3D_Spectrum

*Root Class:* Tagged_Digital_Object

*Role:* Concrete

*Class Description:* The Array 3D Spectrum class is an extension of the Array 3D class and defines a three dimensional spectrum.
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9.10 Axis_Array

Root Class: Tagged_Digital_Child

Role: Concrete

Class Description: The Axis Array class is used as a component of the array class and defines an axis of the array.
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### 9.11 Band_Bin

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Band_Bin class specifies the characteristics of an individual spectral band in a spectral qube.
### 9.12 Band_Bin_Set

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Band_Bin_Set class contains the spectral characteristics for all the spectral bands in a qube.

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### 9.13 Byte_Stream

**Root Class:** Tagged_Digital_Object  
**Role:** Abstract  
**Class Description:** The Byte Stream class defines a stream of bytes.

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9.14 Element_Array

*Root Class:* Tagged_Digital_Child  
*Role:* Concrete  
*Class Description:* The Element Array class is used as a component of the array class and defines an element of the array.
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| Subclass | none |

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| scaling_factor.Element_Array | 0..1 |
| unit.Element_Array           | 0..1 |
| value_offset.Element_Array   | 0..1 |

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| Association         | none |
| Inherited Association | none |
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|                     | Array_2D_Image |
|                     | Array_2D_Map |
|                     | Array_2D_Spectrum |
|                     | Array_3D |
|                     | Array_3D_Image |
|                     | Array_3D_Movie |
|                     | Array_3D_Spectrum |

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9.15  Encoded_Body_Stream

*Root Class:* Tagged_Digital_Object  
*Role:* Concrete  
*Class Description:* The Encoded Byte Stream class defines byte streams that must be decoded by software before use. These byte streams must only use standard encodings. The Encoded Byte Stream class is the parent class for all encoded byte streams.

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<td>name.Byte_Stream</td>
<td>0..1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Association</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>data_object.Encoded_Body_Stream</td>
<td>1</td>
<td>Digital_Object</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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<tr>
<th>Referenced from</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.16  Encoded_Header

*Root Class:* Tagged_Digital_Object  
*Role:* Concrete  
*Class Description:* The Encoded Header class describes a header that has been encoded using an encoding scheme that is compliant to an external standard.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td>Tagged_Digital_Object</td>
<td>. Byte_Stream</td>
<td>. Encoded_Byte_Stream</td>
</tr>
<tr>
<td></td>
<td>. . Encoded_Header</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>encoding_standard_id_Encode...</td>
<td>1</td>
<td>TIFF</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Encoded_Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>object_length.Encoded_Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>offset.Encoded_Byte_Stream</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>data_object.Encoded_Byte_Stream</td>
<td>1</td>
<td>Digital_Object</td>
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<tr>
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<td></td>
<td>File_Area_Observational</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 9.17 Field

**Root Class:** Tagged_Digital_Child  
**Role:** Abstract  
**Class Description:** The Field class defines a field of a record and is the parent class of all specific field classes. The Field class defines a field of a record or a field of a group and is the parent class of all specific field classes.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tagged_Digital_Child</td>
<td>Field</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>Field_Binary</td>
<td>Field_Bit</td>
<td>Field_Character</td>
</tr>
<tr>
<td>Attribute</td>
<td>field_number.Field</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Field</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 9.18 Field_Binary

**Root Class:** Tagged_Digital_Child  
**Role:** Concrete
**Class Description:** The Field_Binary class defines a field of a binary record or a field of a binary group.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Tagged_Digital_Child . Field . Field_Binary</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>data_type.Field_Binary</td>
<td>1</td>
</tr>
</tbody>
</table>

- ASCII<AnyURI
- ASCII<Boolean
- ASCII<DOI
- ASCII<Date
- ASCII<Date_DMY
- ASCII<Date_Time
- ASCII<Date_Time_DMY
- ASCII<Date_Time.UTC
- ASCII<Date_Time_YMD
- ASCII<Date_YMD
- ASCII<Directory_Path_Name
- ASCII<File_Name
- ASCII<File_Specification_Name
- ASCII<Integer
- ASCII<LID
- ASCII<LIDVID
- ASCII<LIDVID_LID
- ASCII<MD5_Checksum
- ASCII<NonNegative_Integer
- ASCII<Numeric_Base16
- ASCII<Numeric_Base2
- ASCII<Numeric_Base8
- ASCII<Real
- ASCII<String
- ASCII<Time
- ASCII<VID
- Complex<LSB16
- Complex<LSB8
- Complex<MSB16
- Complex<MSB8
- IEEE754<LSBDouble
- IEEE754<LSBSingle
- IEEE754<MSBDouble
- IEEE754<MSBSingle
- Signed.BitString
- Signed<Byte
- Signed<LSB2
- Signed<LSB4
- Signed<LSB8
- Signed<MSB2
- Signed<MSB4
- Signed<MSB8
- UTF8<String
- Unsigned.BitString
- Unsigned<Byte
- Unsigned<LSB2
- Unsigned<LSB4
- Unsigned<LSB8
- Unsigned<MSB2
- Unsigned<MSB4
- Unsigned<MSB8
9.19 Field_Bit

**Root Class:** Tagged_Digital_Child

**Role:** Concrete

**Class Description:** The Field_Bit class provides parameters for extracting one field out of a string of bytes which contains packed data (that is, data values either smaller than a single byte, or crossing byte boundaries, or both.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Tagged_Digital_Child</td>
<td>Field</td>
<td>Field_Bit</td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>data_type.Field_Bit</td>
<td>1</td>
<td>SignedBitString</td>
</tr>
<tr>
<td></td>
<td>description.Field_Bit</td>
<td>0..1</td>
<td>UnsignedBitString</td>
</tr>
<tr>
<td></td>
<td>field_format.Field_Bit</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Field_Bit</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>scaling_factor.Field_Bit</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>start_bit.Field_Bit</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>stop_bit.Field_Bit</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unit.Field_Bit</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>value_offset.Field_Bit</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>field_number.Field</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>associated.Special_Constant...</td>
<td>0..1</td>
<td>Special_Constants</td>
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<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Packed_Data_Fields</td>
<td></td>
<td></td>
</tr>
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</table>

9.20 Field_Character

**Root Class:** Tagged_Digital_Child

**Role:** Concrete

**Class Description:** The Field_Character class defines a field of a character record or a field of a character group.
<table>
<thead>
<tr>
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<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>. Field</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. . Field_Character</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass | none |

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>description.Field_Character</td>
<td>0..1</td>
</tr>
<tr>
<td>field_format.Field_Character</td>
<td>0..1</td>
</tr>
<tr>
<td>field_length.Field_Character</td>
<td>1</td>
</tr>
<tr>
<td>field_location.Field_Character</td>
<td>1</td>
</tr>
<tr>
<td>name.Field_Character</td>
<td>1</td>
</tr>
<tr>
<td>scaling_factor.Field_Character</td>
<td>0..1</td>
</tr>
<tr>
<td>unit.Field_Character</td>
<td>0..1</td>
</tr>
<tr>
<td>value_offset.Field_Character</td>
<td>0..1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inherited Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>field_number.Field</td>
<td>0..1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Association</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>associated_Special_Constant...</td>
<td>0..1</td>
</tr>
<tr>
<td>associated_Statistics.Field...</td>
<td>0..1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inherited Association</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<table>
<thead>
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<th>Description</th>
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<td>Group_Field_Character</td>
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</tr>
<tr>
<td>Record.Character</td>
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</tr>
</tbody>
</table>
9.21 Field_Delimited

Root Class: Tagged_Digital_Child
Role: Concrete
Class Description: The Field_Delimited class defines a field of a delimited record or a field of a delimited group.
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<td>. . Field_Delimited</td>
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<td></td>
</tr>
<tr>
<td>data_type.Field_Delimited</td>
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<td>ASCII_AnyURI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASCII_Boolean</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASCII_DOI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASCII_Date</td>
</tr>
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<td></td>
<td>ASCII_Date_DOY</td>
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<td></td>
<td></td>
<td>ASCII_Date_Time</td>
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<tr>
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<td></td>
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<td></td>
<td>ASCII_Date_Time.UTC</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>ASCII_Directory_Path_Name</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td>ASCII_FileSpecification_Name</td>
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</tr>
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<td>ASCII_LIDVID_LID</td>
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</tr>
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<td>ASCII_NonNegative_Integer</td>
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<td></td>
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<td>ASCII_VID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UTF8_String</td>
</tr>
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<td></td>
<td></td>
<td>description.Field_Delimited</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0..1</td>
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<td></td>
<td></td>
<td>field_format.Field_Delimited</td>
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<tr>
<td></td>
<td></td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>maximum_field_length.Field_Delimited</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>name.Field_Delimited</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>scaling_factor.Field_Delimited</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>unit.Field_Delimited</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>value_offset.Field_Delimited</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0..1</td>
</tr>
<tr>
<td>Inherited Attribute</td>
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<td></td>
</tr>
<tr>
<td>field_number.Field</td>
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<td>0..1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>associated_Special_Constant...</td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td>associated_Statistics.Field...</td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Referenced from</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Record_Delimited</td>
</tr>
</tbody>
</table>

42
9.22 Group

*Root Class:* Tagged_Digital_Child

*Role:* Abstract

*Class Description:* The Group class defines a group of (repeating) fields and, possibly, (sub) groups; it is the parent class of all specific group classes.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Group</td>
<td></td>
<td></td>
<td></td>
</tr>
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<thead>
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</thead>
<tbody>
<tr>
<td></td>
<td>Group_Field_Character</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group_Field_Delimited</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>fields.Group</th>
<th>1</th>
<th>0..1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>group_number.Group</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>groups.Group</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>repetitions.Group</td>
<td>1</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
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</tr>
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<td></td>
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<tr>
<td>Inherited Association</td>
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<td></td>
<td></td>
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<tr>
<td>Referenced from</td>
<td>none</td>
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<td></td>
</tr>
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</table>

9.23 Group_Field_Binary

*Root Class:* Tagged_Digital_Child

*Role:* Concrete

*Class Description:* The Group_Field_Binary class allows a group of table fields.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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</thead>
<tbody>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>group_length.Group_Field_Bi... group_location.Group_Field_...</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>fields.Group group_number.Group groups.Group repetitions.Group</td>
<td>1</td>
<td>0..1</td>
</tr>
<tr>
<td>Association</td>
<td>has_Group_Field_Binary.Grou...</td>
<td>1.*</td>
<td>Field_Binary Group_Field_Binary</td>
</tr>
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<td>Inherited Association</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Group_Field_Binary Record_Binary</td>
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<td></td>
</tr>
</tbody>
</table>

### 9.24 Group_Field_Character

**Root Class:** Tagged_Digital_Child  
**Role:** Concrete  
**Class Description:** The Group_Field_Character class allows a group of table fields.
### 9.25 Group_Field_Delimited

**Root Class:** Tagged_Digital_Child  
**Role:** Concrete  
**Class Description:** The Field.Group_Delimited class allows a group of delimited fields.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>fields.Group</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>group_number.Group</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>groups.Group</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>repetitions.Group</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>has_Delimited_Field_Grouped...</td>
<td>1..*</td>
<td>Field_Delimited</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Group_Field_Delimited</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Group_Field_Delimited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Record_Delimited</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 9.26 Header

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Header class describes a data object header.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited Attribute</th>
<th>Association</th>
<th>Inherited Association</th>
<th>Referenced from</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
<td>Subclass</td>
<td>Attribute</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>Tagged_Digital_Object</td>
<td></td>
<td></td>
<td>none</td>
<td>object_length.Header</td>
<td>1</td>
<td>7-Bit ASCII Text</td>
</tr>
<tr>
<td>. Byte_Stream</td>
<td></td>
<td></td>
<td></td>
<td>parsing_standard_id.Header</td>
<td>1</td>
<td>FITS 3.0</td>
</tr>
<tr>
<td>. . Parsable_BeStream</td>
<td></td>
<td></td>
<td></td>
<td>description.Parsable_BeStream</td>
<td>0..1</td>
<td>ISIS2</td>
</tr>
<tr>
<td>. . . Header</td>
<td></td>
<td></td>
<td></td>
<td>offset.Parsable_BeStream</td>
<td>1</td>
<td>ISIS3</td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
<td>PDS DSV 1</td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
<td></td>
<td>name.Byte_Stream</td>
<td>0..1</td>
<td>PDS ODL 2</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td></td>
<td></td>
<td></td>
<td>description.Byte_Stream</td>
<td>0..1</td>
<td>PDS3</td>
</tr>
<tr>
<td>Inherited Association</td>
<td></td>
<td></td>
<td></td>
<td>offset.Byte_Stream</td>
<td>1</td>
<td>Pre-PDS3</td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
<td>data_object.Byte_Stream</td>
<td>1</td>
<td>UTF-8 Text</td>
</tr>
<tr>
<td>Referenced from</td>
<td></td>
<td></td>
<td></td>
<td>File_Area_Browse</td>
<td></td>
<td>VICAR1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>File_Area_Observational</td>
<td></td>
<td>VICAR2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>File_Area_Observational_Supplemental</td>
<td></td>
<td>File_Area_Browse</td>
</tr>
</tbody>
</table>

9.27 Packed_Data_Fields

Root Class: Tagged_Digital_Child
Role: Concrete
Class Description: The Packed_Data_Fields class contains field definitions for extracting packed data from the associated byte string field.
9.28 Parsable.Byte_Stream

*Root Class:* Tagged.Digital.Object  
*Role:* Concrete  
*Class Description:* The Parsable Byte Stream class defines byte streams that have standard parsing rules. The Parsable Byte Stream class is the parent class for all parsable byte streams.

9.29 Record

*Root Class:* Tagged.Digital.Child  
*Role:* Abstract  
*Class Description:* The Record class defines a record of a file and is the
parent class of all specific record classes.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_Digital_Child . Record</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>Record_Binary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Record_Character</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Record_Delimited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>fields.Record</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>groups.Record</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.30  Record_Binary

*Root Class:* Tagged_Digital_Child
*Role:* Concrete
*Class Description:* The Record_Binary class is a component of the table class and defines a record of the table.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_Digital_Child . Record</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Record</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Record_Binary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>record_length.Record_Binary</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>fields.Record</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>groups.Record</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>has_Table_Field.Record_Binary</td>
<td></td>
<td>1..*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field_Binary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group_Field_Binary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Table_Binary</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.31  Record_Character

*Root Class:* Tagged_Digital_Child
*Role:* Concrete
*Class Description:* The Record_Character class is a component of the table class and defines a record of the table.
### 9.32 Record_Delimited

**Root Class:** Tagged_Digital_Child  
**Role:** Concrete  
**Class Description:** The Record_Delimited class is a component of the delimited table (spreadsheet) class and defines a record of the delimited table.

| Hierarchy       | Tagged_Digital_Child  
| . Record        |  
| . . Record_Character  |  
| Subclass        | none  
| Attribute       | record_length.Record_Character  
| Inherited Attribute | fields.Record  
|                  | groups.Record  
| Association      | has_Character_Field.Record_...  
|                  | 1..*  
| Referenced from  | Table_Character  
|                  | Transfer_Manifest  

### 9.33 Stream_Text

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Stream text class defines a text object.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Tagged_Digital_Object</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Byte_Stream</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Parsable(Byte_Stream</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Stream_Text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>Checksum_Manifest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>record_delimiter.Stream_Text</td>
<td>1</td>
<td>carriage-return line-feed</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Parsable(Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>object_length.Parsable(Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>offset.Parsable(Byte_Stream</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>parsing_standard_id.Parsable(Byte_Stream</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>data_object.Parsable(Byte_Stream</td>
<td>1</td>
<td>Digital_Object</td>
</tr>
<tr>
<td>Referenced from</td>
<td>File_Area_Browse</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>File_Area_Observational</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>File_Area_Text</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 9.34 Table_Base

**Root Class:** Tagged_Digital_Object  
**Role:** Abstract  
**Class Description:** The Table Base class defines a heterogeneous repeating record of scalars. The Table Base class is the parent class for all heterogeneous repeating record of scalars.
9.35 Table_Binary

*Root Class:* Tagged_Digital_Object
*Role:* Concrete

*Class Description:* The Table Binary class is an extension of table base and defines a simple binary table.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_Digital_Object</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Byte_Stream</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Table_Base</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . . Table_Binary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>record_delimiter.Table_Binary</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Byte_Stream</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Table_Base</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>offset.Table_Base</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>records.Table_Base</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>has_Record.Table_Binary</td>
<td>1</td>
<td>Record_Binary</td>
</tr>
<tr>
<td></td>
<td>uniformly_sampled.Table_Binary</td>
<td>0..1</td>
<td>Uniformly_Sampled</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>data_object.Table_Base</td>
<td>1</td>
<td>Digital_Object</td>
</tr>
</tbody>
</table>

9.36 Table_Character

*Root Class:* Tagged_Digital_Object
*Role:* Concrete

*Class Description:* The Table Character class is an extension of table base and defines a simple character table.

<table>
<thead>
<tr>
<th>Referenced from</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>File_Area_Browse</td>
<td>Digital_Object</td>
</tr>
<tr>
<td>File_Area_Observational</td>
<td></td>
</tr>
<tr>
<td>File_Area_Observational_Supplemental</td>
<td></td>
</tr>
<tr>
<td>Entity</td>
<td>Card</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Hierarchy</td>
<td></td>
</tr>
<tr>
<td>Tagged_Digital_Object</td>
<td></td>
</tr>
<tr>
<td>. Byte_Stream</td>
<td></td>
</tr>
<tr>
<td>. Table_Base</td>
<td></td>
</tr>
<tr>
<td>. . Table_Character</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td></td>
</tr>
<tr>
<td>Transfer_Manifest</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
</tr>
<tr>
<td>record_delimiter.Table_Character</td>
<td>1</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td></td>
</tr>
<tr>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
</tr>
<tr>
<td>name.Byte_Stream</td>
<td>0..1</td>
</tr>
<tr>
<td>description.Table_Base</td>
<td>0..1</td>
</tr>
<tr>
<td>offset.Table_Base</td>
<td>1</td>
</tr>
<tr>
<td>records.Table_Base</td>
<td>1</td>
</tr>
<tr>
<td>Association</td>
<td></td>
</tr>
<tr>
<td>has_Record.Table_Character</td>
<td>1</td>
</tr>
<tr>
<td>uniformly_sampled.Table_Character</td>
<td>0..1</td>
</tr>
<tr>
<td>Inherited Association</td>
<td></td>
</tr>
<tr>
<td>data_object.Table_Base</td>
<td>1</td>
</tr>
<tr>
<td>Referenced from</td>
<td></td>
</tr>
<tr>
<td>File_Area_Browse</td>
<td></td>
</tr>
<tr>
<td>File_Area_Observational</td>
<td></td>
</tr>
<tr>
<td>File_Area_Observational_Supplemental</td>
<td></td>
</tr>
</tbody>
</table>

**9.37 Table_Delimited**

*Root Class:* Tagged_Digital_Object  
*Role:* Concrete  
*Class Description:* The Table_Delimited class defines a simple table (spreadsheet) with delimited fields and records.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
</table>
| Hierarchy | Tagged_Digital_Object  
  . Byte_Stream  
  . . Parsable(Byte_Stream)  
  . . . Table_Delimited | | |
| Subclass | Inventory | |
| Attribute | field_delimiter(Table_Delimited) | 1 | comma  
  horizontal tab  
  semicolon  
  vertical bar  
  PDS DSV 1  
  carriage-return line-feed |
| Inherited Attribute | local_identifier(Byte_Stream)  
  name(Byte_Stream)  
  description(Parsable(Byte_Stream))  
  object_length(Parsable(Byte_Stream))  
  offset(Parsable(Byte_Stream)) | 0..1  
  0..1  
  0..1  
  1 |
| Association | has_delimited_record(Table_Delimited)  
  uniformly_sampled(Table_Delimited) | 1 | Record_Delimited  
  Uniformly_Sampled |
| Inherited Association | data_object(Parsable(Byte_Stream)) | 1 | Digital_Object |
| Referenced from | File_Area_Browse  
  File_Area_Observational  
  File_Area_Observational_Supplemental | | |
10 Observational Data Component

This section provides the observational product classes and their component classes.

The digital product class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

+ Product_Components
  + Alias
  + Alias_List
  + Citation_Information
  + Context_Area
  + + Observation_Area
  + + Discipline_Area
  + + ExternalReference
  + + File_Area
    + + File_Area_Observational
    + + File_Area_Observational_Supplemental
    + + File_Area_SPICE_Kernel
    + + File_Area_Text
    + + Identification_Area
    + + Internal_Reference
    + + Investigation_Area
    + + Mission_Area
    + + Modification_Detail
    + + Modification_History
    + + Primary_Result_Summary
    + + Reference_List
    + + Target_Identification
    + + Time_Coordinates
    + + Update_Entry
    + + Special_Constants
    + + Uniformly_Sampled
    + + File
    + + Observing_System_Component
    + + Vector_Component
    + + + Observing_System
    + + + Display_2D_Image
    + + + Field_Statistics
    + + + Object_Statistics
    + + + Update
+ + + Vector
+ + + Vector_Cartesian_3
+ + + + Vector_Cartesian_3_Acceleration
+ + + + Vector_Cartesian_3_Pointing
+ + + + Vector_Cartesian_3_Position
+ + + + Vector_Cartesian_3_Velocity

The class hierarchy above includes 40 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure.. The following sections present the data product classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

### 10.1 Alias

**Root Class:** Product_Components

**Role:** Concrete

**Class Description:** The Alias class provides a single alternate name and identification for this product in this or some other archive or data system.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>alternate_id.Alias</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alternate_title.Alias</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>comment.Alias</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Alias_List</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

### 10.2 Alias_List

**Root Class:** Product_Components

**Role:** Concrete

**Class Description:** The Alias_List class provides a list of paired alternate names and identifications for this product in this or some other archive or data system.
Figure 4: Product UML Class Diagram
10.3 Citation Information

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Citation Information class provides specific fields often used in citing the product in journal articles, abstract services, and other reference contexts.

10.4 Context Area

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Context Area provides context information for a product.
<table>
<thead>
<tr>
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<th>Value/Class</th>
<th>Ind</th>
</tr>
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### 10.5 Discipline_Area

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Discipline area allows the insertion of discipline specific metadata.

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### 10.6 Display_2D_Image

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Display_2D_Image class provides attributes to enable the display of a 2 dimensional image.
### 10.7 External_Reference

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The External_Reference class is used to reference a source outside the PDS registry system.

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<th>Ind</th>
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</table>

### 10.8 Field_Statistics

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Field Statistics class provides a set of metrics for a column formed by a field in a repeating record.
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<td>maximum.Field_Statistics 0..1</td>
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<td>mean.Field_Statistics 0..1</td>
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<td>median.Field_Statistics 0..1</td>
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<td>minimum.Field_Statistics 0..1</td>
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10.9 File

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The File class consists of attributes that describe a file in a data store.
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<tr>
<td>local_identifier/File</td>
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<td>md5_checksum/File</td>
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10.10 File_Area

*Root Class:* Product_Components  
*Role:* Concrete  
*Class Description:* The File_Area class defines a File and its component data objects.
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</table>

10.11 File_Area_Observational

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The File Area Observational class describes, for an observational product, a file and one or more tagged data objects contained within the file.
### File_Area_Observational_Supplemental

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The File Area Observational Supplemental class describes, for an observational product, additional files and one or more tagged_data_objects contained within the file.
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</tbody>
</table>

10.13 File.Area_SPICE_Kernel

*Root Class:* Product.Components  
*Role:* Concrete  
*Class Description:* The File Area SPICE Kernel class describes a file that contains a SPICE Kernel object.
10.14 File_Area_Text

*Root Class:* Product_Components

*Role:* Concrete

*Class Description:* The File Area Text class describes a file that contains a text stream object.

10.15 Identification_Area

*Root Class:* Product_Components

*Role:* Concrete

*Class Description:* The identification area consists of attributes that identify and name an object.
<table>
<thead>
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10.16 Internal_Reference

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Internal_Reference class is used to cross-reference other products in the PDS registry system.

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<td>. Internal_Reference</td>
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</table>

| Subclass      | none                             |      |             |     |

| Attribute     | comment.Internal_Reference       | 0..1 |             |     |
|               | lid_reference.Internal_Reference | 0..1 |             |     |
|               | lidvid_reference.Internal_Reference | 0..1 |             |     |
|               | reference_type.Internal_Reference | 1    |             |     |

| Inherited Attribute | none                           |      |             |     |

| Association   | none                             |      |             |     |

| Inherited Association | none                           |      |             |     |

| Referenced from | DD_Attribute                     |      |             |     |
|                | DD_Class                         |      |             |     |
|                | Information_PACKAGE_Component    |      |             |     |
|                | Investigation_Area               |      |             |     |
|                | Observing_System_Component       |      |             |     |
|                | Product_Zipped                   |      |             |     |
|                | Reference_List                   |      |             |     |
|                | Target_Identification            |      |             |     |
|                | Update_Entry                     |      |             |     |

10.17 Investigation_Area

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Investigation_Area class provides information about an investigation (mission, observing campaign or other coordinated, large-scale data collection effort).
### 10.18 Mission_Area

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The mission area allows the insertion of mission specific metadata.

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<th>Value/Class</th>
<th>Ind</th>
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<td>none</td>
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</table>
|          |     | type.Investigation_Area | 1 | Individual Investigation  
|          |     | Mission              |     |
|          |     | Observing Campaign   |     |
|          |     | Other Investigation  |     |
| Inherited Attribute | none |                      |     |
| Association | internal_reference.Investig... | 1..* | Internal_Reference |
| Inherited Association | none |                      |     |
| Referenced from | Context_Area  
|          |     | Observation_Area     |     |

### 10.19 Modification_Detail

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Modification_Detail class provides the details of one round of modification for the product. The first, required, instance of this class documents the date the product was first registered.

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<td>Inherited Association</td>
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</table>
| Referenced from | Context_Area  
|          |     | Observation_Area     |     |
### 10.20 Modification_History

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Modification_History class tracks the history of changes made to the product once it enters the registry system.

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### 10.21 Object_Statistics

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Object_Statistics class provides a set of values that provide metrics about the object.
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<td>Array_3D_Spectrum</td>
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</table>

10.22 **Observation_Area**

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The observation area consists of attributes that provide information about the circumstances under which the data were collected.
10.23 Observing_System

**Root Class:** Tagged_NonDigital_Object

**Role:** Concrete

**Class Description:** The Observing System class describes the entire suite used to collect the data.

10.24 Observing_System_Component

**Root Class:** Tagged_NonDigital_Child

**Role:** Concrete

**Class Description:** The Observing System Component class references one or more subsystems used to collect data. A subsystem can be an
instrument_host, instrument, or any other similar product. Each subsystem is categorized as either a sensor or a source. If the observing system includes both a sensor and a source, Observing System Component occurs twice (once for each type) otherwise it only occurs once.

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10.25 Primary_Result_Summary

**Root Class:** Product_Components

**Role:** Concrete

**Class Description:** The Primary_Result_Summary class provides a high-level description of the types of products included in the collection or bundle.
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<td>1..* Dust Electric Field Electrons Far Infrared Gamma Ray Infrared Ions Magnetic Field Microwave Millimeter Near Infrared Particles Pressure Radio Sub-Millimeter Temperature Ultraviolet Visible X-Ray</td>
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<td>description.Primary_Result...</td>
<td>0..1 Calibrated Derived Partially Processed Raw Telemetry</td>
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<td>processing_level_id.Primary...</td>
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<td>0..1 Altimetry Astrometry Count E/B-Field Vectors Gravity Model Image Lightcurves Magnetometry Map Meteorology Null Result Occultation Photometry Physical Parameters Polarimetry Radiometry Reference Shape Model Spectrum</td>
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</table>

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10.26 Product_Components

*Root Class:* Product_Components  
*Role:* Abstract  
*Class Description:* The Product Component class is an abstract class for the components of the Product class.

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| Inherited Attribute | none                  |     |             |     |
| Association     | none                      |     |             |     |
| Inherited Association | none                |     |             |     |
| Referenced from | none                      |     |             |     |

10.27 Reference_List

*Root Class:* Product_Components  
*Role:* Concrete  
*Class Description:* The Reference_List class provides lists general references and cross-references for the product. References cited elsewhere in the label need not be repeated here.
### 10.28 Special_Constants

**Root Class:** Tagged_Digital_Child  
**Role:** Concrete  
**Class Description:** The Special Constants class provides a set of values
used to indicate special cases that occur in the data.
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10.29 Target_Identification

Root Class: Product_Components  
Role: Concrete  
Class Description: The Target_Identification class provides detailed target identification information.

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10.30 Time_Coordinates

Root Class: Product_Components  
Role: Concrete  
Class Description: The Time_Coordinates class provides a list of time coordinates.

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10.31 Uniformly_Sampled

**Root Class:** Tagged_Digital_Child

**Role:** Concrete

**Class Description:** The Uniformly_Sampled class provides parameters for a uniformly sampled table.

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**Inherited Attribute:** none

**Association:** none

**Inherited Association:** none

**Referenced from:** Inventory, Table_Binary, Table_Character, Table_Delimited, Transfer_Manifest

10.32 Update

**Root Class:** Tagged_NonDigital_Object

**Role:** Concrete

**Class Description:** The Update class consists of update information.
### 10.33 Update_Entry

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Update_Entry class provides the date and description of an update.

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### 10.34 Vector

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Vector class provides the components of either a velocity or position vector.

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### 10.35 Vector\_Cartesian\_3

**Root Class:** Tagged\_NonDigital\_Object  
**Role:** Concrete  
**Class Description:** The Vector\_Cartesian\_3 Base class is the parent class of 3 element Cartesian vectors.
### 10.36 Vector_CARTESIAN_3_Acceleration

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Vector_CARTESIAN_3_Acceleration class is a 3 element Cartesian vector for acceleration coordinates.

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. . Vector_CARTESIAN_3 | | |
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Vector_CARTESIAN_3_Pointing  
Vector_CARTESIAN_3_Position  
Vector_CARTESIAN_3_Velocity | | |
| Attribute     | reference_frame_id.Vector_C...  
x.Vector_CARTESIAN_3  
y.Vector_CARTESIAN_3  
z.Vector_CARTESIAN_3 | 1 | ICRF  
MOON_ME_DE421 |
| Inherited Attribute | none | | |
| Association   | none | | |
| Inherited Association | none | | |
| Referenced from | none | | |
10.37 Vector_Cartesian_3_Pointing

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Vector_Cartesian_3_Pointing class is a 3 element normalized Cartesian vector for pointing.

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10.38 Vector_Cartesian_3_Position

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Vector_Cartesian_3_Position class is a 3 element Cartesian vector for position coordinates.
Table: Vector.Cartesian.3.Velocity

<table>
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10.39 Vector.Cartesian.3.Velocity

**Root Class:** Tagged_NonDigital_Object

**Role:** Concrete

**Class Description:** The Vector.Cartesian.3.Velocity class is a 3 element Cartesian vector for velocity coordinates.

10.40 Vector.Component

**Root Class:** Tagged_NonDigital_Child

**Role:** Concrete

**Class Description:** The Vector.Component class provides a component
of a vector.

<table>
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<th>Value/Class</th>
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<td>name.Vector_Component 0..1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sequence_number.Vector_Component 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>unit.Vector_Component 0..1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>value.Vector_Component 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Vector</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11 Document and Support Products

This section provides the document and support product classes.

The context class hierarchy is illustrated in the following diagram. This diagram presents the subclassOf relation for each class in a hierarchical (tree) format and provides a visual representation of the classes in relation to their parent classes.

```
+ + Product_Browse
+ + Product_Document
+ + Product_SPICE_Kernel
+ + Product_Thumbnail
+ + Product_XML_Schema
+ + Product_Zipped
```

The class hierarchy above includes 6 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the context classes in a table format. The table
includes the class hierarchy, class attributes, and class associations. The
class attributes and associations listed include both those used to define the
class and those inherited from parent classes. Cardinalities are provided
where appropriate.

11.1 Product_Browse

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product Browse class defines a product consisting of one encoded byte stream digital object.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Product_Browse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>file_area.Product_Browse</td>
<td>1..*</td>
<td>File_Area_Browse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Browse</td>
<td>0..1</td>
<td>Reference_List</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Pro...</td>
<td>1</td>
<td>Identification_Area</td>
<td></td>
</tr>
<tr>
<td>Referred from</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11.2 Product_Document

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** A Product Document is a product consisting of a single logical document that may be comprised of one or more document formats.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Product_Document</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>context_area.Product_Document</td>
<td>0..1</td>
<td>Context_Area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>document_format_set.Product_Doc...</td>
<td>1..*</td>
<td>Document_Format_Set</td>
<td></td>
</tr>
<tr>
<td></td>
<td>product_description.Product_Doc...</td>
<td>1</td>
<td>Document</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Doc...</td>
<td>0..1</td>
<td>Reference_List</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Pro...</td>
<td>1</td>
<td>Identification_Area</td>
<td></td>
</tr>
<tr>
<td>Referred from</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 11.3 Product_SPICE_Kernel

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product SPICE Kernel class defines a SPICE kernel product.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td></td>
<td>. Product_SPICE_Kernel</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>context_area.Product_SPICE_Kernel</td>
<td>1</td>
<td>Context_Area</td>
</tr>
<tr>
<td></td>
<td>file_area.Product_SPICE_Kernel</td>
<td>1</td>
<td>File_Area_SPICE_Kernel</td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_SPICE_Kernel</td>
<td>0..1</td>
<td>Reference_List</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product_SPICE_Kernel</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 11.4 Product_Thumbnail

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product Thumbnail class defines a product consisting of one encoded byte stream digital object.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td></td>
<td>. Product_Thumbnail</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>file_area.Product_Thumbnail</td>
<td>1</td>
<td>File_Area_Encoded_Image</td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Thumbnail</td>
<td>0..1</td>
<td>Reference_List</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product_Thumbnail</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 11.5 Product/XML_Schema

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product/XML_Schema describes a resource used for the PDS4 implementation into XML.
### 11.6 Product_Zipped

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product_Zipped is a product with references to other products. The referenced products and all associated products and files are packaged into a single ZIP file.
12 Document and Support Components

This section provides the document and support product classes and their component classes.

The class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ + Document_Format_Set
  + + + File_Area_Browse
  + + + File_Area_Encoded_Image
  + + Document_Format
  + + + Encoded_Binary
  + + + Encoded_Image
  + + + SPICE_Kernel
  + + + XML_Schema
  + + + Document_File
  + + + Document
  + + Zip
```

The class hierarchy above includes 11 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the data product classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

12.1 Document

*Root Class:* Tagged_NonDigital_Object
*Role:* Concrete
*Class Description:* The Document class describes a document.
Figure 6: Product UML Class Diagram
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_NonDigital_Object</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. TNDO_Supplemental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Document</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>acknowledgement_text.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>author_list.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>copyright.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>document_name.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>doi.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>editor_list.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>publication_date.Document</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>revision_id.Document</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Document</td>
<td>1</td>
<td>Digital_Object</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referred from</td>
<td>Product_Document</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 12.2 Document_File

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Document File class describes a file which is a part of a document.
### 12.3 Document_Format

**Root Class:** Tagged_Digital_Child  
**Role:** Concrete  
**Class Description:** The Document Format provides a description of a variant of a logical document that is stored in a specific format. For example the PDS Standards Reference has HTML and PDF formatted versions.
# Document_Format_Set

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The Document Format Set class is a set consisting of a document format and associated files.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>description.Document_Format</td>
<td>0..1</td>
<td>multiple file</td>
<td></td>
</tr>
<tr>
<td></td>
<td>format_type.Document_Format</td>
<td>1</td>
<td>single file</td>
<td></td>
</tr>
<tr>
<td></td>
<td>starting_point_identifier.D...</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Document_Format_Set</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Encoded_Binary

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Encoded Binary class describes a binary encoded byte stream. This class is used to describe files in the repository that are being registered using Product_File_Repository.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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<tbody>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
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<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>document_file.Document_Format...</td>
<td>1..*</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>document_format.Document_Format...</td>
<td>1</td>
<td>Document_Format</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Document</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entity</td>
<td>Card</td>
<td>Value/Class</td>
<td></td>
<td></td>
</tr>
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<td>------</td>
<td>-------------</td>
<td></td>
<td></td>
</tr>
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<td>Hierarchy</td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>. Byte_Stream</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>. . Encoded_Byte_Stream</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>. . . Encoded_Binary</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Subclass</td>
<td>none</td>
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<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>encoding_standard_id_Encoded_Byte_Stream</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>local_identifier.Byte_Stream</td>
<td>0..1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>name.Byte_Stream</td>
<td>0..1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>description.Encoded_Byte_Stream</td>
<td>0..1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>object_length.Encoded_Byte_Stream</td>
<td>0..1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>offset.Encoded_Byte_Stream</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>data_object.Encoded_Byte_Stream</td>
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<td>Digital_Object</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>File_Area_Binary</td>
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<td></td>
</tr>
<tr>
<td>File_Area_Observational_Supplemental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 12.6 Encoded_Image

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Encoded Image class is used for ancillary images in standard formats, such as JPEG.
### File_Area_Browse

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The File Area Browse class describes a file and one or more tagged_data_objects contained within the file.
### File_Area_Encoded_Image

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The File Area Encoded Image class describes a file that contains an Encoded Image object.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product_Components . File_Area . File_Area_Browse</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subclass</th>
<th>Attribute</th>
<th>Inherited Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Association</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>has_File.File_Area_Browse has_tagged_data_object.File...</td>
<td>1..*</td>
<td>File Array_2D Array_2D_Image Array_2D_Map Array_2D_Spectrum Array_3D Array_3D_Image Array_3D_Movie Array_3D_Spectrum Encoded_Header Encoded_Image Header Stream_Text Table_Binary Table_Character Table_Delimited</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inherited Association</th>
<th>Referenced from</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>Product_Browse</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product_Components . File_Area . File_Area_Encoded_Image</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subclass</th>
<th>Attribute</th>
<th>Inherited Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Association</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>has_File.File_Area_Encoded... has_tagged_data_object.File...</td>
<td>1</td>
<td>File Encoded_Image</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inherited Association</th>
<th>Referenced from</th>
</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td>Product_Thumbnail</td>
</tr>
</tbody>
</table>
12.9  SPICE_Kernel

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The SPICE Kernel class describes a SPICE object.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Tagged_Digital_Object</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>. Byte_Stream</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Parsable_Byte_Stream</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . . SPICE_Kernel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass       | none                   |      |             |     |

| Attribute       | encoding_type.SPICE_Kernel | 1   | Binary      | Character |
|                 | kernel_type.SPICE_Kernel   | 1   | CK          |
|                 |                          |     | DBK         |
|                 |                          |     | DSK         |
|                 |                          |     | EK          |
|                 |                          |     | FK          |
|                 |                          |     | IK          |
|                 |                          |     | LSK         |
|                 |                          |     | MK          |
|                 |                          |     | PCK         |
|                 |                          |     | SCLK        |
|                 |                          |     | SPK         |
|                 |                          |     | SPICE       |

| Inherited Attribute | local_identifier.Byte_Stream | 0..1 |
|                     | name.Byte_Stream            | 0..1 |
|                     | description.Parsable_Byte_Stream | 0..1 |
|                     | object_length.Parsable_Byte_Stream | 0..1 |
|                     | offset.Parsable_Byte_Stream  | 1    |

| Inherited Association | data_object.Parsable_Byte_Stream | 1 |
| Referenced from       | File_Area_SPICE_Kernel           |   |

12.10  XML_Schema

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The XML Schema class defines a resource used for the PDS4 implementation into XML.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Tagged_Digital_Object . Byte_Stream . . Parsable_Byte_Stream . . . XML_Schema</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>local_identifier.Byte_Stream 0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Byte_Stream 0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Parsable_Byte_Stream 0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>object_length.Parsable_Byte_Stream 0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>offset.Parsable_Byte_Stream 1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>data_object.Parsable_Byte_Stream 1</td>
<td>Digital_Object</td>
</tr>
<tr>
<td>Referred from</td>
<td>File_Area.XML_Schema</td>
<td></td>
</tr>
</tbody>
</table>

12.11 Zip

**Root Class:** Tagged.NonDigital_Object

**Role:** Concrete

**Class Description:** The Zip class describes a zip file.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Tagged.NonDigital_Object . TNDO_Supplemental . . Zip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>container_type.Zip 1</td>
<td>GZIP LZIP TAR ZIP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Zip 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referred from</td>
<td>Product_Zipped</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13 Context Products

This section provides the context product classes.

The class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ + Product_Context
 + + + Geometry
```

The class hierarchy above includes 2 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the data product classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

13.1 Geometry

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Geometry class groups geometry information.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td>Tagged NonDigital_Object . TNDOSupplemental . . Geometry</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>local_identifier.Geometry</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Geometry</td>
<td>1</td>
<td>Conceptual_Object Vector</td>
</tr>
<tr>
<td></td>
<td>vector.Geometry</td>
<td>0..*</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 13.2 Product_Context

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product Context class describes something that provides context and provenance for an observational product.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
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<tr>
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<td></td>
<td>Product . Product_Context</td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>has_discipline_area.Product...</td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td>product_data_object.Product...</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Context</td>
<td>0..1</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Pro...</td>
<td>1</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>
14 Context Components

This section provides the context product classes and their component classes.

The class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ + + Facility
+ + + Instrument
+ + + Instrument_Host
+ + + Investigation
+ + + Other
+ + + Resource
+ + + Target
+ + + Telescope
```

The class hierarchy above includes 8 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the data product classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.
14.1 Facility

**Root Class**: Tagged\_NonDigital\_Object  
**Role**: Concrete  
**Class Description**: The Facility class provides a name and address for a terrestrial observatory or laboratory.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tagged_NonDigital_Object</td>
<td>. TNDO_Context</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>. . Facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass                                                                 | none                                       |      |             |     |

| Attribute                                                                | address.Facility                          | 0..1 |             |     |
|                                                                          | country.Facility                          | 0..1 |             |     |
|                                                                          | description.Facility                      | 0..1 |             |     |
|                                                                          | name.Facility                             | 0..1 |             |     |
|                                                                          | type.Facility                             | 0..1 | Laboratory Observatory |     |

| Inherited Attribute                                                      | none                                       |      |             |     |

| Association                                                              | data\_object.Facility                     | 1    | Physical\_Object |     |

| Inherited Association                                                    | none                                       |      |             |     |

| Referenced from                                                          | Product\_Context                          |      |             |     |

14.2 Instrument

**Root Class**: Tagged\_NonDigital\_Object  
**Role**: Concrete  
**Class Description**: The Instrument class provides a description of a physical object that collects data.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tagged_NonDigital_Object . TNDO_Context . . Instrument</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subclass</th>
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</tr>
</thead>
<tbody>
<tr>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>description.Instrument</td>
<td>1</td>
</tr>
<tr>
<td>model_id.Instrument</td>
<td>0..1</td>
</tr>
<tr>
<td>naif_instrument_id.Instrument</td>
<td>0..1</td>
</tr>
<tr>
<td>name.Instrument</td>
<td>0..1</td>
</tr>
<tr>
<td>serial_number.Instrument</td>
<td>0..1</td>
</tr>
<tr>
<td>type.Instrument</td>
<td>1..*</td>
</tr>
</tbody>
</table>

- Accelerometer
- Alpha Particle Detector
- Alpha Particle Xray Spectrometer
- Altimeter
- Anemometer
- Atomic Force Microscope
- Barometer
- Biology Experiments
- Bolometer
- Camera
- Cosmic Ray Detector
- Dust Detector
- Electrical Probe
- Energetic Particle Detector
- Gamma Ray Detector
- Gas Analyzer
- Grinding And Drilling Tool
- Hygrometer
- Imager
- Imaging Spectrometer
- Inertial Measurement Unit
- Infrared Spectrometer
- Laser Induced Breakdown Spectrometer
- Magnetometer
- Mass Spectrometer
- Microwave Spectrometer
- Moessbauer Spectrometer
- Naked Eye
- Neutral Particle Detector
- Neutron Detector
- Photometer
- Plasma Analyzer
- Plasma Detector
- Plasma Wave Spectrometer
- Polarimeter
- RADAR
- Radio Science
- Radio Spectrometer
- Radio Telescope
- Radiometer
- Reflectometer
- Spectrograph Imager
- Spectrometer

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14.3 Instrument_Host

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Instrument Host class provides a description of the physical object upon which an instrument is mounted.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. TNDO_Context</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Instrument_Host</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>description.Instrument_Host</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>naif_host_id.Instrument_Host</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Instrument_Host</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>serial_number.Instrument_Host</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>type.Instrument_Host</td>
<td>1</td>
<td>Earth Based</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rover</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Spacecraft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>version_id.Instrument_Host</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Instrument_Host</td>
<td>1</td>
<td>Physical_Object</td>
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</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Context</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14.4 Investigation

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Investigation class provides a description of activities involved in the collection of data.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Tagged_NonDigital_Object . TNDO_Context . . Investigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Investigation name.Investigation start_date.Investigation stop_date.Investigation type.Investigation</td>
<td>1</td>
<td>0..1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Individual Investigation Mission Observing Campaign Other Investigation</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>data_object.Investigation</td>
<td>1</td>
<td>Conceptual_Object</td>
</tr>
<tr>
<td>Inherited Association</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product_Context</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14.5 Other

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Other class provides a description of activities involved in the collection of data which are not otherwise modeled.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tagged_NonDigital_Object . TNDO_Context . . Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
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<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>description.Other</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>data_object.Other</td>
<td>1</td>
<td>Conceptual_Object</td>
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<td>Inherited Association</td>
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<td></td>
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</tr>
<tr>
<td>Referenced from</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product_Context</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14.6 Resource

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Resource class provides a description of a web resource.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Tagged_NonDigital_Object . TNDO_Context . . Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subclass</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>url.Resource</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0..1</td>
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<tr>
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<td>1</td>
</tr>
<tr>
<td></td>
<td>Information.Agency</td>
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<tr>
<td></td>
<td>Information.Instrument</td>
</tr>
<tr>
<td></td>
<td>Information.Instrument_Host</td>
</tr>
<tr>
<td></td>
<td>Information.Investigation</td>
</tr>
<tr>
<td></td>
<td>Information.Node</td>
</tr>
<tr>
<td></td>
<td>Information.Person</td>
</tr>
<tr>
<td></td>
<td>Information.Resource</td>
</tr>
<tr>
<td></td>
<td>Information.Science_Portal</td>
</tr>
<tr>
<td></td>
<td>Information.Target</td>
</tr>
<tr>
<td></td>
<td>System.Browse</td>
</tr>
<tr>
<td></td>
<td>System.Directory_Listing</td>
</tr>
<tr>
<td></td>
<td>System.Registry_Query</td>
</tr>
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<td></td>
<td>System.Search</td>
</tr>
<tr>
<td></td>
<td>System.Transform</td>
</tr>
<tr>
<td></td>
<td>System.Transport</td>
</tr>
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<td>Inherited Attribute</td>
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</tr>
<tr>
<td>Association</td>
<td>data_object.Resource</td>
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<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Conceptual_Object</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Context</td>
</tr>
</tbody>
</table>

14.7 Target

**Root Class:** Tagged_NonDigital_Object

**Role:** Concrete

**Class Description:** The Target class provides a description of a physical object that is the object of data collection.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>description.Target</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>name.Target</td>
<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>type.Target</td>
<td>0..*</td>
<td>Asteroid</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Comet</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Dust</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dwarf Planet</td>
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<td>Galaxy</td>
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<td>Globular Cluster</td>
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<td></td>
<td></td>
<td>Meteorite</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meteoroid</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meteoroid Stream</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nebula</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Open Cluster</td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Planet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Planetary Nebula</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Planetary System</td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td>Plasma Cloud</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ring</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Satellite</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Star</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Star Cluster</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sun</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Terrestrial Sample</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Trans-Neptunian Object</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Target</td>
<td>1</td>
<td>Physical_Object</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Context</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 14.8 Telescope

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Telescope class provides coordinates and parameters for terrestrial, ground-based telescopes.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td>Tagged_NonDigital_Object</td>
</tr>
<tr>
<td></td>
<td></td>
<td>. TND0_Context</td>
</tr>
<tr>
<td></td>
<td></td>
<td>. . Telescope</td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td>altitude.Telescope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aperture.Telescope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>coordinate_source.Telescope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>description.Telescope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>telescope_latitude.Telescope</td>
</tr>
<tr>
<td></td>
<td></td>
<td>telescope_longitude.Telescope</td>
</tr>
</tbody>
</table>

- **Datum**: 
  - Astronomical Doppler determined - WGS 72 datum
  - Geodetic - Adindan datum
  - Geodetic - Australian datum
  - Geodetic - Campo Inchauspe (Argentina) datum
  - Geodetic - Cape (South Africa) datum
  - Geodetic - Corregio Alegre (Brazil) datum
  - Geodetic - European 1979 datum
  - Geodetic - European datum
  - Geodetic - GRS 80 datum
  - Geodetic - Hermannskogel datum
  - Geodetic - Indian datum
  - Geodetic - La Canoa (Venezuela) datum
  - Geodetic - New Zealand datum
  - Geodetic - North American (1927) datum
  - Geodetic - Old Hawaiian datum
  - Geodetic - Ordnance Survey of Great Britain datum
  - Geodetic - Ordnance Survey of Great Britain (SN) 1980 datum
  - Geodetic - Potsdam datum
  - Geodetic - Puerto Rican (1940) datum
  - Geodetic - South American datum
  - Geodetic - Tokyo datum
  - Geodetic - WGS 84 datum
  - Geodetic - datum unknown
  - Satellite determined - datum unknown
  - Unknown

**Inherited Attribute**: none

**Association**: none

**Inherited Association**: none

**Referenced from**: Product_Context
15 Aggregate Products

This section provides aggregate product classes.

The class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

+ + Product_Bundle
+ + Product_Collection

The class hierarchy above includes 2 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the data product classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.
### 15.1 Product_Bundle

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** A Product_Bundle is an aggregate product and has a table of references to one or more collections.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product_Bundle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>context_area.Product_Bundle</td>
<td>0..1</td>
<td>Context_Area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>file_area.Product_Bundle</td>
<td>0..1</td>
<td>File_Area_Text</td>
<td></td>
</tr>
<tr>
<td></td>
<td>member_entry.Product_Bundle</td>
<td>1..*</td>
<td>Bundle_Member_Entry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>product_data_object.Product...</td>
<td>1</td>
<td>Bundle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Bundle</td>
<td>0..1</td>
<td>Reference_List</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Pro...</td>
<td>1</td>
<td>Identification_Area</td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 15.2 Product_Collection

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** A Product_Collection has a table of references to one or more basic products. The references are stored in a table called the inventory.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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</thead>
<tbody>
<tr>
<td>Product</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product_Collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>context_area.Product_Collec...</td>
<td>0..1</td>
<td>Context_Area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>file_area_inventory.Product...</td>
<td>1</td>
<td>File_Area_Inventory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>product_data_object.Product...</td>
<td>1</td>
<td>Collection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_Coll...</td>
<td>0..1</td>
<td>Reference_List</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Pro...</td>
<td>1</td>
<td>Identification_Area</td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
16 Aggregate Components

This section provides aggregate product classes and their component classes.

The class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ + Bundle_Member_Entry
+ + + File_Area_Inventory
+ + + + + Inventory
+ + + Bundle
+ + + Collection
```

The class hierarchy above includes 5 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the data product classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are
provided where appropriate.

16.1 Bundle

**Root Class:** Tagged\_NonDigital\_Object

**Role:** Concrete

**Class Description:** The Bundle class describes a collection of collections.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Tagged_NonDigital_Object . TNDO_Supplemental . Bundle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>bundle_type.Bundle</td>
<td>1</td>
<td>Archive Supplemental</td>
</tr>
<tr>
<td></td>
<td>description.Bundle</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Bundle</td>
<td>1</td>
<td>Conceptual_Object</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Bundle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16.2 Bundle\_Member\_Entry

**Root Class:** Product\_Components

**Role:** Concrete

**Class Description:** The Bundle Member Entry class provides a member reference to a collection.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product_Components</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Bundle_Member_Entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lid_reference.Bundle_Member...</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>lidvid_reference.Bundle_Mem...</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>member_status.Bundle_Member...</td>
<td>1</td>
<td>Primary</td>
</tr>
<tr>
<td>reference_type.Bundle_Membe...</td>
<td>1</td>
<td>Secondary</td>
</tr>
<tr>
<td>bundle_has_browse_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_calibration_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_context_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_data_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_document_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_geometry_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_member_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_schema_collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_has_spice_kernel_collection</td>
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<tr>
<td>Inherited Attribute</td>
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<tr>
<td>Association</td>
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<td></td>
</tr>
<tr>
<td>Inherited Association</td>
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<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Bundle</td>
<td></td>
</tr>
</tbody>
</table>

16.3 Collection

**Root Class:** Tagged_NonDigital_Object

**Role:** Concrete

**Class Description:** The Collection class provides a description of a set of products.
16.4 File_Area_Inventory

**Root Class:** Product_Components  
**Role:** Concrete  
**Class Description:** The File Area Inventory class describes a file and an inventory consisting of references to members.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>. TNDO_Supplemental</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>. . Collection</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td>collection_type.Collection</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>description.Collection</td>
<td>0..1</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Collection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16.5 Inventory

**Root Class:** Tagged_Digital_Object  
**Role:** Concrete  
**Class Description:** The Inventory class defines the inventory for mem-
bers of a collection.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_Digital_Object</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Byte_Stream</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . Parsable(Byte_Stream</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . . Table_Delimited</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . . . Inventory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass | none |

| Attribute | reference_type.Inventory | 1 | inventory_has_member_product |

| Inherited Attribute | local_identifier.Byte_Stream | 0..1 |    |
|                     | name.Byte_Stream | 0..1 |    |
|                     | description.Parsable(Byte_Stream | 0..1 |    |
|                     | object_length.Parsable(Byte_Stream | 0..1 |    |
|                     | offset.Parsable(Byte_Stream | 1 |    |
|                     | field_delimiter.Table_Delimited | 1 | comma |
|                     | parsing_standard_id.Table_Delimited | 1 | comma, horizontal tab |
|                     | record_delimiter.Table_Delimited | 1 | semicolon |
|                     | records.Table_Delimited | 1 | vertical bar |

| Inherited Association | data_object.Parsable(Byte_Stream | 1 | Digital_Object |
|                      | has_delimited_record.Table_Delimited | 1 | Record_Delimited |
|                      | uniformly_sampled.Table_Delimited | 0..1 | Uniformly_Sampled |

| Referenced from | File_Area_Inventory |

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17 Operational Products

This section provides the set of product classes used for PDS operations.

The operations class hierarchy is illustrated in the following diagram. This diagram presents the subclassOf relation for each class using a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ + Product_AIP
+ + Product_Attribute_Definition
+ + Product_Class_Definition
+ + Product_DIP
+ + Product_DIP_Deep_Archive
+ + Product_Data_Set_PDS3
+ + Product_File_Repository
+ + Product_Instrument_Host_PDS3
+ + Product_Instrument_PDS3
+ + Product_Mission_PDS3
+ + Product_Proxy_PDS3
+ + Product_SIP
+ + Product_Service
+ + Product_Software
+ + Product_Subscription_PDS3
+ + Product_Target_PDS3
+ + Product_Volume_PDS3
+ + Product_Volume_Set_PDS3
```

The class hierarchy above includes 18 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the operations classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

17.1 Product_AIP

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product AIP class defines a product for the Archival Information Package.
17.2 Product_Attribute_Definition

*Root Class:* Product  
*Role:* Concrete  
*Class Description:* The Product Attribute Definition provides an attribute definition in XML encoding.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>has_info_package_component</td>
<td>1..*</td>
<td>Information_Package_Component</td>
</tr>
<tr>
<td></td>
<td>product_data_object.Product_reference_list.Product_AIP</td>
<td>1</td>
<td>Archival_Information_Package_Reference_List</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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17.3 Product_Class_Definition

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product Class Definition provides a class definition in XML encoding.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td></td>
<td></td>
<td>. Product_Class_Definition</td>
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</tr>
<tr>
<td>Subclass</td>
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<td></td>
</tr>
<tr>
<td>Attribute</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td>product_data_object.Product...</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reference_list.Product_Class...</td>
<td>0..1</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product...</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17.4 Product_DIP

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product DIP class defines a product for the Dissemination Information Package.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td>Product</td>
</tr>
<tr>
<td></td>
<td></td>
<td>. Product_DIP</td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td>has_information_package_Component.Product...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>product_data_object.Product...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reference_list.Product_DIP</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product...</td>
<td>1</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

17.5 Product_DIP_Deep_Archive

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product DIP_Deep_Archive class defines a product for the Dissemination Information Package for the deep archive.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Product_DIP.Deep_Archive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass       |      | none        |
| Attribute      |      | none        |
| Inherited Attribute |      | none        |

<table>
<thead>
<tr>
<th>Association</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>has_Information_Package_Com...</td>
<td>1..*</td>
<td>Information_Package_Component</td>
</tr>
<tr>
<td>product_data_object.Product...</td>
<td>1</td>
<td>DIP.Deep_Archive</td>
</tr>
<tr>
<td>reference_list.Product_DIP...</td>
<td>0..1</td>
<td>Reference_List</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inherited Association</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>has_identification_area.Product...</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
</tbody>
</table>

| Referenced from |      | none        |

17.6 Product_Data_Set_PDS3

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Data Set PDS3 product is used to create proxy labels for the data sets in the PDS3 Data Set catalog.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Product_Data_Set_PDS3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass       |      | none        |
| Attribute      |      | none        |
| Inherited Attribute |      | none        |

<table>
<thead>
<tr>
<th>Association</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>product_data_object.Product...</td>
<td>1</td>
<td>Data_Set_PDS3</td>
</tr>
<tr>
<td>reference_list.Product_Data...</td>
<td>0..1</td>
<td>Reference_List</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inherited Association</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>has_identification_area.Product...</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
</tbody>
</table>

| Referenced from |      | none        |

17.7 Product_File_Repository

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product File Repository class consists of a single text file. This product is used to register a file in a repository.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>file_area.Product_File_Repository</td>
<td>1</td>
<td>File_Area_Binary Reference_List</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 17.8 Product_Instrument_Host_PDS3

_**Root Class:**_ Product  
_**Role:**_ Concrete  
_**Class Description:**_ An Instrument Host product describes an instrument host. This product captures the PDS3 catalog instrument host information.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>product_data_object.Product_Instrument_Host_PDS3</td>
<td>1</td>
<td>Instrument_Host_PDS3 Reference_List</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 17.9 Product_Instrument_PDS3

_**Root Class:**_ Product  
_**Role:**_ Concrete  
_**Class Description:**_ An Instrument product describes an instrument. This product captures the PDS3 catalog instrument information.
17.10 Product_Mission_PDS3

*Root Class:* Product

*Role:* Concrete

*Class Description:* An Mission product describes a mission. This product captures the PDS3 catalog mission information.

17.11 Product_Proxy_PDS3

*Root Class:* Product

*Role:* Concrete

*Class Description:* The Product Proxy PDS3 class defines a product with enough information to register a PDS3 data product.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>file_area.Product.Proxy_PDS3</td>
<td>1..*</td>
<td>File.Area_Binary</td>
</tr>
<tr>
<td></td>
<td>reference_list.Product.Proxy</td>
<td>0..1</td>
<td>Reference_List</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
<tr>
<td>Referred from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 17.12 Product_SIP

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product SIP class defines a product for the Submission Information Package.

<table>
<thead>
<tr>
<th>Entity</th>
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<th>Value/Class</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Subclass</td>
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<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>has_Information_Package_Component</td>
<td>1..*</td>
</tr>
<tr>
<td></td>
<td>product_data_object.Product</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>reference_list.Product_SIP</td>
<td>0..1</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>has_identification_area.Product</td>
<td>1</td>
</tr>
<tr>
<td>Referred from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

### 17.13 Product_Service

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product Service class defines a product for registering services. Service descriptions from this product are used to register services as intrinsic registry objects.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td>. Product</td>
<td></td>
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</tr>
<tr>
<td>. Product_Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>file_area.Product_Service</td>
<td>0..*</td>
<td>File_Area_Service_Description</td>
</tr>
<tr>
<td>reference_list.Product_Service</td>
<td>0..1</td>
<td>Reference_List</td>
</tr>
<tr>
<td>Inherited Association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>has_identification_area.Product</td>
<td>1</td>
<td>Identification_Area</td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

### 17.14 Product_Software

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** Product Software is a product consisting of a set of one or more software formats.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Product.Software</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>product_description.Product</td>
<td>1</td>
<td>Software</td>
<td></td>
</tr>
<tr>
<td>reference_list.Product.Software</td>
<td>0..1</td>
<td>Reference_List</td>
<td></td>
</tr>
<tr>
<td>software_format_set.Product</td>
<td>0..*</td>
<td>Software_Binary</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software_Binary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software_Script</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software_Source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>has_identification_area.Product</td>
<td>1</td>
<td>Identification_Area</td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 17.15 Product_Subscription_PDS3

**Root Class:** Product  
**Role:** Concrete  
**Class Description:** The Product_Subscription_PDS3 class provides the list of subscriptions for a PDS3 subscriber.
17.16  Product_Target_PDS3

*Root Class:* Product  
*Role:* Concrete  
*Class Description:* A target product describes a target. This product captures a reduced set of the PDS3 catalog target information.

17.17  Product_Volume_PDS3

*Root Class:* Product  
*Role:* Concrete  
*Class Description:* A Product Volume PDS3 product captures the PDS3 volume information.
### Product Volume Set PDS3

**Root Class**: Product  
**Role**: Concrete  
**Class Description**: A Product Volume Set PDS3 product captures the PDS3 volume set information.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>. Product.Volume_Set_PDS3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Association | product_data_object.Product...  
reference_list.Product_Volu... | 1  
0..1 | Volume_Set_PDS3  
Reference_List |
| Inherited Association | has_identification_area.Pro... | 1 | Identification_Area |
| Referenced from | none | | |
18 Operational Components

This section provides the set of product classes used for PDS operations and their component classes.

The class hierarchy is illustrated in the following diagram. This diagram presents the subclass relation for each class in a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ Data_Object
  + Conceptual_Object
  + Digital_Object
  + Physical_Object
    + External_Reference_Extended
    + File_Area_Binary
    + File_Area_Checksum_Manifest
    + File_Area_Service_Description
    + File_Area_Transfer_Manifest
    + File_Area_XML_Schema
  + Tagged_Digital_Child
  + Tagged_Digital_Object
    + Service_Description
      + Checksum_Manifest
      + Transfer_Manifest
  + Tagged_NonDigital_Child
    + DD_Association
    + DD_Association_External
    + DD_Permissible_Value
      + DD_Permissible_Value_Full
    + DD_Value_Domain
      + DD_Value_Domain_Full
    + NSSDC
    + Terminological_Entry
  + Tagged_NonDigital_Object
    + TND0_Context
      + Agency
      + Node
    + PDS_Affiliate
    + PDS_Guest
    + TND0_Context_PDS3
    + Data_Set_PDS3
    + Instrument_Host_PDS3
    + Instrument_PDS3
```
The class hierarchy above includes 56 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the data product classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

18.1 Agency

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Agency class provides a description of an entity that provides regional or national level governance over nodes within the federated Planetary Data System.
Figure 12: Product UML Class Diagram

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_NonDigital_Object . TNDO_Context . . Agency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>description.Agency name.Agency</td>
<td>1</td>
<td>European Space Agency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>National Aeronautics and Space Administration</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Agency</td>
<td>1</td>
<td>Conceptual_Object</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Context</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18.2 Archival_Information_Package

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Archival Information Package (AIP) class defines an Information Package consisting of the Content Information and the associated Preservation Description Information (PDI), which is preserved within an archive that conforms to the Open Archive Information System (OAIS) Reference Model.
18.3 Checksum_Manifest

**Root Class:** Tagged_Digital_Object

**Role:** Concrete

**Class Description:** The Checksum_Manifest class defines a two column table for file references and checksums. The table structure is compatible with the output from an MD5 checksum utility.

18.4 Conceptual_Object

**Root Class:** Data_Object

**Role:** Concrete

**Class Description:** The Conceptual_Object class defines a non-tangible object that is also not a digital object.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Data_Object . Conceptual_Object</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Agency Bundle DD_Attribute DD_Attribute_Full DD_Class DD_Class_Full Data_Set_PDS3 Field_Statistics Geometry Ingest_LDD Investigation Mission_PDS3 Node Object_Statistics Observing_System Other Quaternion Resource Update Vector Volume_PDS3 Volume_Set_PDS3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18.5 DD_Association

**Root Class:** Tagged_NonDigital_Child  
**Role:** Concrete  
**Class Description:** The DD_Association class defines the association between two classes or a class and an attribute in a data dictionary.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td>Tagged_NonDigital_Child . DD_Association</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>constant_value.DD_Association local_identifier.DD_Assoc... maximum_occurrences.DD_Assoc... minimum_occurrences.DD_Assoc... reference_type.DD_Association</td>
<td>0..1 1..* 1 1 1</td>
<td>attribute_of component_of restriction_of subclass_of</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>DD_Class DD_Class_Full</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**18.6 DD_Association_External**

*Root Class:* Tagged_NonDigital_Child  
*Role:* Concrete  
*Class Description:* The DD_Association_External class defines the association between classes and attributes within the local data dictionary and those external to the local data dictionary.
18.7 DD_Attribute

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The DD_Attribute class defines an attribute for a data dictionary.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td></td>
<td>. TNDO_Supplemental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . DD_Attribute</td>
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18.8 DD_Attribute_Full

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The DD_Attribute_Full class provides a more complete definition of an attribute in the data dictionary.
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18.9 DD_Class

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The DD_Class class defines a class for a data dictionary.

<table>
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<tr>
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<td>definition.DD_Class 1</td>
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<td>local_identifier.DD_Class 1</td>
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<td>name.DD_Class 1</td>
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<td>submitter_name.DD_Class 1</td>
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<td>version_id.DD_Class 1</td>
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<td>internal_reference.DD_Class 0..*</td>
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<td>terminological_entry.DD_Class 0..*</td>
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18.10 DD_CLASS_Full

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The DD_CLASS_Full class provides a more complete definition of a class for a data dictionary.
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<td>definition, DD_Class_Full 1</td>
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<td>local_identifier, DD_Class_Full 1</td>
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<td>name, DD_Class_Full 1</td>
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|                 | steward_id, DD_Class_Full 1 | atm
|                 | submitter_name, DD_Class_Full 1 | atm
|                 | type, DD_Class_Full 1 | atm
|                 | version_id, DD_Class_Full 1 | atm
| Inherited Attribute | none                   |      |             |     |
| Association     | data_object, DD_Class_Full 1 |      | Conceptual_Object |     |
|                 | dd_association, DD_Class_Full 0..* | DD_Association |     |
|                 | terminological_entry, DD_Class... 0..* | Terminological_Entry |     |
| Inherited Association | none |      |             |     |
| Referenced from | Product_Class_Definition |      |             |     |

18.11 DD_Permissible_Value

**Root Class:** Tagged, NonDigital, Child

**Role:** Concrete

**Class Description:** The DD_Permissible_Value class lists permissible values and their meanings.
18.12 DD_Permissible_Value_Full

*Root Class:* Tagged_NonDigital.Child
*Role:* Concrete
*Class Description:* The DD_Permissible_Value_Full class lists permissible values, their meanings, and the dates when active.

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18.13 DD_Value_Domain

*Root Class:* Tagged_NonDigital.Child
*Role:* Concrete
*Class Description:* The DD_Value_Domain class defines an attribute’s permissible values and their constraints.

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Units_of_Amount_Of_Substance
Units_of_Angle
Units_of_Angular_Velocity
Units_of_Area
Units_of_Frame_Rate
Units_of_Frequency
Units_of_Length
Units_of_Map_Scale
Units_of_Mass
Units_of_Misc
Units_of_None
Units_of_Optical_Path_Length
Units_of_Pressure
Units_of_Radiance
Units_of_Rates
Units_of_Solid_Angle
Units_of_Storage
Units_of_Temperature
Units_of_Time
Units_of_Velocity
Units_of_Voltage
Units_of_Volume
ASCII_AnyURI
ASCII_Boolean
ASCII_DOI
ASCII_Date_DOY
ASCII_Date_Time
ASCII_Date_Time_DOY
ASCII_Date_Time.UTC
ASCII_Date_Time_YMD
ASCII_Date_YMD
ASCII_Directory_Path_Name
ASCII_File_Name
ASCII_File_Specification_Name
ASCII_Integer
ASCII_LID
ASCII_LIDVID
ASCII_LIDVID_LID
ASCII_MD5_Checksum
ASCII_NonNegative_Integer
18.14 DD_Value_Domain_Full

*Root Class:* Tagged_NonDigital_Child  
*Role:* Concrete  
*Class Description:* The DD_Value_Domain_Full class provides a more complete definition of a attribute’s value domain.
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Units_of_Amount_Of_Substance
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Units_of_Angular_Velocity
Units_of_Area
Units_of_Frame_Rate
Units_of_Frequency
Units_of_Length
Units_of_Map_Scale
Units_of_Mass
Units_of_Misc
Units_of_None
Units_of_Optical_Path_Length
Units_of_Pressure
Units_of_Radiance
Units_of_Rates
Units_of_Solid_Angle
Units_of_Storage
Units_of_Temperature
Units_of_Time
Units_of_Velocity
Units_of_Voltage
Units_of_Volume
ASCII_AnyURI
ASCII_Boolean
ASCII_Decimal
ASCII_Date
ASCII_Date_Day
ASCII_Date_Time
ASCII_Date_Time_Day
ASCII_Date_Time_UTC
ASCII_Date_Time_YMD
ASCII_Date_YMD
18.15 DIP_Deep_Archive

Root Class: Tagged_NonDigital_Object
Role: Concrete
Class Description: The Dissemination Information Package Deep Archive class is an Information Package derived from one or more AIPs and is received by the National Space Science Data Center (NSSDC).

<table>
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<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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| Attribute | none |
| Inherited Attribute | description.Information_Pac... 1 |
| Association | none |
| Inherited Association | none |
| Referenced from | Product_DIP_Deep_Archive |

18.16 Data_Object

Root Class: Data_Object
Role: Abstract
Class Description: The Data_Object class defines a thing about which almost nothing is known.

<table>
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<th>Value/Class</th>
<th>Ind</th>
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<tr>
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<td></td>
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<tr>
<td>Subclass</td>
<td>Conceptual_Object Digital_Object Physical_Object</td>
<td></td>
<td></td>
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<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
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</tr>
<tr>
<td>Inherited Association</td>
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<td></td>
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</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18.17 Data_Set_PDS3

Root Class: Tagged_NonDigital_Object
Role: Concrete
Class Description: The Data Set PDS3 class is used to capture the data set information from the PDS3 Data Set Catalog.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Tagged_NonDigital_Object . TNDO_Context_PDS3 . . Data_Set_PDS3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subclass</td>
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<td>Attribute</td>
<td>abstract_desc.Data_Set_PDS3 archive_status.Data_Set_PDS3</td>
</tr>
<tr>
<td></td>
<td>citation_text.Data_Set_PDS3 confidence_level_note.Data_...</td>
</tr>
<tr>
<td></td>
<td>data_set_desc.Data_Set_PDS3 data_set_id.Data_Set_PDS3</td>
</tr>
<tr>
<td></td>
<td>data_set_name.Data_Set_PDS3 data_set_release_date.Data_...</td>
</tr>
<tr>
<td></td>
<td>data_set_terse_desc.Data_Set_... producer_full_name.Data_...</td>
</tr>
<tr>
<td></td>
<td>start_date_time.Data_Set_PDS3 stop_date_time.Data_Set_PDS3</td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Data_Set_PDS3 nssdc.Data_Set_PDS3</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_Data_Set_PDS3</td>
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</tbody>
</table>

18.18 Digital_Object

**Root Class:** Data_Object

**Role:** Concrete

**Class Description:** The Digital Object class defines a sequence of digital bits.
<table>
<thead>
<tr>
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<th>Card</th>
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<th>Ind</th>
</tr>
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<tr>
<td>Digital_Object</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass                        |      |             |     |
| Attribute                       |      |             |     |
| bit_string.Digital_Object       |      |             | 1   |

| Inherited Attribute             |      |             |     |
| Association                     |      |             |     |
|                                |      |             |     |
| Inherited Association          |      |             |     |
|                                |      |             |     |

| Referenced from                 |      |             |     |
| Array                           |      |             |     |
| Array_2D                        |      |             |     |
| Array_2D_Image                  |      |             |     |
| Array_2D_Map                    |      |             |     |
| Array_2D_Spectrum               |      |             |     |
| Array_3D                        |      |             |     |
| Array_3D_Image                  |      |             |     |
| Array_3D_Movie                  |      |             |     |
| Array_3D_Spectrum               |      |             |     |
| Checksum_Manifest               |      |             |     |
| Document                        |      |             |     |
| Document_File                   |      |             |     |
| Encoded_Binary                  |      |             |     |
| Encoded_Binary_Stream           |      |             |     |
| Encoded_Header                  |      |             |     |
| Encoded_Image                   |      |             |     |
| File                            |      |             |     |
| Header                          |      |             |     |
| Inventory                       |      |             |     |
| Parsable_Binary_Stream          |      |             |     |
| SPICE_Kernel                    |      |             |     |
| Service_Description             |      |             |     |
| Software                        |      |             |     |
| Software_Binary                 |      |             |     |
| Software_Script                 |      |             |     |
| Software_Source                 |      |             |     |
| Stream_Text                     |      |             |     |
| Table_Base                      |      |             |     |
| Table_Binary                    |      |             |     |
| Table_Character                 |      |             |     |
| Table_Delimited                 |      |             |     |
| Transfer_Manifest               |      |             |     |
| XML_Schema                      |      |             |     |
18.19 Dissemination Information Package

**Root Class:** Tagged NonDigital Object

**Role:** Concrete

**Class Description:** The Dissemination Information Package (DIP) class defines an Information Package, derived from one or more AIPs, that is received by a consumer.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>Tagged NonDigital Object</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>. TNDO_Supplemental</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>. Information Package</td>
<td></td>
<td></td>
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<td>. . Dissemination Information Package</td>
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<td></td>
</tr>
<tr>
<td>Subclass</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>description.Information_Pac...</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
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<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product_DIP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18.20 External Reference Extended

**Root Class:** Product Components

**Role:** Concrete

**Class Description:** The External Reference Extended class is used to reference a source outside the PDS registry system. This extension is used in the local data dictionary.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Product Components</td>
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<td></td>
<td></td>
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<tr>
<td>. External Reference</td>
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<tr>
<td>. . External Reference Extended</td>
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<td></td>
<td></td>
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<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>name.External Reference.Ext...</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>url.External Reference.Exte...</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>description.External Reference</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>doi.External Reference</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reference_text.External_Ref...</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
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<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>Terminological_Entry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
18.21 File_Area_Binary

*Root Class:* Product_Components

*Role:* Concrete

*Class Description:* The File Area Binary class describes a file that contains an encoded byte stream.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product_Components . File_Area . . File_Area_Binary</td>
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</table>

<table>
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<tr>
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<th>Association</th>
<th>Inherited Association</th>
<th>Referenced from</th>
</tr>
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<tbody>
<tr>
<td>none</td>
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<td>none</td>
<td>has_File.File_Area_Binary</td>
<td>File Encoded_Binary</td>
<td>Product_File_Repository</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>has_tagged_data_object.File...</td>
<td></td>
<td>Product_Proxy_PDS3</td>
</tr>
</tbody>
</table>

18.22 File_Area_Checksum_Manifest

*Root Class:* Product_Components

*Role:* Concrete

*Class Description:* The File Area Checksum Manifest class describes a file that contains a two column table for file references and checksums.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product_Components . File_Area . . File_Area_Checksum_Manifest</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
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<th>Inherited Attribute</th>
<th>Association</th>
<th>Inherited Association</th>
<th>Referenced from</th>
</tr>
</thead>
<tbody>
<tr>
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<td>none</td>
<td>none</td>
<td>has_File.File_Area_Checksum...</td>
<td>File Checksum_Manifest</td>
<td>Information_Package_Component</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>has_tagged_data_object.File...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18.23 File_Area_Service_Description

*Root Class:* Product_Components

*Role:* Concrete

*Class Description:* The File Area Service Description class describes a file that contains a service description.
## 18.24 File/Area Transfer Manifest

**Root Class:** Product.Components  
**Role:** Concrete  
**Class Description:** The File Area Transfer Manifest class describes a file that contains a two column table that maps the logical identifiers and version ids of products to their file specification names.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
</table>
| Hierarchy | Product.Components  
. File.Area  
. . File.Area_Service_Description | | |
| Subclass | none | | |
| Attribute | none | | |
| Inherited Attribute | none | | |
| Association | has_File.File.Area_Service_...  
has_tagged_data_object.File... | 1 | File  
Service_Description | |
| Inherited Association | none | | |
| Referenced from | Product_Service | | |

## 18.25 File/Area XML Schema

**Root Class:** Product.Components  
**Role:** Concrete  
**Class Description:** The File Area XML Schema class describes a file that contains a resource used for the PDS4 implementation into XML.
### 18.26 Information_Package

**Root Class:** Tagged_NonDigital_Object  
**Role:** Abstract  
**Class Description:** The Information Package class defines the Information Package as described in the OAIS Reference Model and is the parent class of all specific IP classes.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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<tbody>
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<tr>
<td>Inherited Attribute</td>
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<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Association</td>
<td>has_File.File.Area.XML_Schema has_tagged_data_object.File...</td>
<td>File XML_Schema</td>
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</tr>
<tr>
<td>Inherited Association</td>
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<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product.XML_Schema</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 18.27 Information_Package_Component

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Information_Package_Component class associates a Bundle, Collections or Basic Products with Checksum and Storage Manifests.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Tagged_NonDigital_Object</th>
<th>Card</th>
<th>Value/Class</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>. TNDO_Supplemental</td>
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<tr>
<td></td>
<td>. . Information_Package_Component</td>
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<td></td>
</tr>
<tr>
<td>Subclass</td>
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<td></td>
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</tr>
<tr>
<td>Attribute</td>
<td>checksum_manifest_checksum...</td>
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</tr>
<tr>
<td></td>
<td>checksum_type.Information_P...</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>transfer_manifest_checksum...</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
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<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>has_Transfer_Manifest.Informa...</td>
<td>0..1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>internal_reference.Informat...</td>
<td>1..*</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
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<tr>
<td>Referenced from</td>
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<td>Product_DIP</td>
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</tr>
<tr>
<td></td>
<td>Product_SIP</td>
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<td></td>
</tr>
</tbody>
</table>

18.28 Ingest_LDD

Root Class: Tagged_NonDigital_Object
Role: Concrete
Class Description: The Ingest_LDD class provides a form for collecting class and attribute definitions.
### 18.29 Instrument_Host_PDS3

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  

**Class Description:** The Instrument Host class provides a description of the physical object upon which an instrument is mounted. This class captures the PDS3 catalog Instrument Host information.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
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<td></td>
<td>. . Instrument_Host_PDS3</td>
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<td>instrument_host_desc_Instrument_Host_PDS3</td>
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<td>instrument_host_id_Instrument_Host_PDS3</td>
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<td></td>
</tr>
<tr>
<td><strong>Association</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>data_object_Instrument_Host_PDS3</td>
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<td></td>
</tr>
<tr>
<td><strong>Referenced from</strong></td>
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<td>Product_Instrument_Host_PDS3</td>
<td></td>
</tr>
</tbody>
</table>

### 18.30 Instrument_PDS3

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  

**Class Description:** The Instrument class provides a description of a physical object that collects data. This class captures the PDS3 catalog Instrument information.
18.31 Mission_PDS3

*Root Class:* Tagged_NonDigital_Object  
*Role:* Concrete  
*Class Description:* The Mission PDS3 class describes an activity involved in the collection of data. This class captures the PDS3 catalog Mission information.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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<tr>
<td>Mission_PDS3</td>
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</table>

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<tr>
<th>Attribute</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>instrument_desc.Instrument_PDS3</td>
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<td>instrument_id.Instrument_PDS3</td>
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<td></td>
</tr>
<tr>
<td>instrument_name.Instrument_PDS3</td>
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</tr>
<tr>
<td>instrument_serial_number.Instrument_PDS3</td>
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</tr>
<tr>
<td>instrument_type.Instrument_PDS3</td>
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<td>instrument_version_id.Instrument_PDS3</td>
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</table>

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<thead>
<tr>
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<th>Physical_Object</th>
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</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Referenced from</th>
<th>Product_Instrument_PDS3</th>
</tr>
</thead>
</table>

18.32 NSSDC

*Root Class:* Tagged_NonDigital_Child  
*Role:* Concrete  
*Class Description:* The NSSDC Information class provides identification
information for data submitted to the NSSDC.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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<td>medium_type.NSSDC</td>
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</tr>
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</tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
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<td></td>
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</tr>
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</table>

### 18.33 Node

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Node class provides a description of an entity that provides local governance within the federated Planetary Data System.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_NonDigital_Object . TNDO_Context . Node</td>
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<tr>
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<td>Attribute</td>
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<tr>
<td></td>
<td>institution_name.Node</td>
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</tr>
<tr>
<td></td>
<td>name.Node</td>
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<tr>
<td>Referred from</td>
<td>Product_Context</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
18.34 PDS_Affiliate

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The PDS Affiliate class provides a description of a person who has an association with the planetary science community and has access to PDS resources not normally allowed to the general public.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
</table>
| Hierarchy | Tagged_NonDigital_Object | . TNDO_Context  
| | | . PDS_Affiliate |
| Subclass | none |
| Attribute | affiliation_type.PDS_Affiliate | 1  
| | alternate_telephone_number... | 0..1  
| | description.PDS_Affiliate | 1  
| | electronic_mail_address.PDS... | 0..*  
| | institution_name.PDS_Affiliate | 1  
| | name.PDS_Affiliate | 0..1  
| | phone_book_flag.PDS_Affiliate | 1  
| | postal_address_text.PDS_Aff... | 1  
| | registration_date.PDS_Affil... | 1  
| | sort_name.PDS_Affiliate | 1  
| | team_name.PDS_Affiliate | 0..*  
| | telephone_number.PDS_Affiliate | 0..1  
| Inherited Attribute | none |
| Association | data_object.PDS_Affiliate | 1  
| Inherited Association | none |
| Referenced from | Product_Context |
18.35 PDS_Guest

*Root Class:* Tagged_NonDigital_Object

*Role:* Concrete

*Class Description:* The PDS_Guest class is the default description of a person who has an association with the planetary science community and who has the most limited access to PDS resources.

<table>
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<th>Value/Class</th>
<th>Ind</th>
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<td></td>
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<tr>
<td>Subclass</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>description.PDS_Guest 1 0..* 1 electronic_mail_address.PDS_Guest 0..1 1 name.PDS_Guest registration_date.PDS_Guest sort_name.PDS_Guest</td>
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<td></td>
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<tr>
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<td>Association</td>
<td>data_object.PDS_Guest 1 Physical_Object</td>
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<td>Referenced from</td>
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</table>

18.36 Physical_Object

*Root Class:* Data_Object

*Role:* Concrete

*Class Description:* The Physical Object class defines a tangible object.
<table>
<thead>
<tr>
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<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
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<td>Instrument_Host_PDS3</td>
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<tr>
<td></td>
<td>Volume_Set_PDS3</td>
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<td></td>
</tr>
</tbody>
</table>

18.37 Service_Description

*Root Class:* Tagged_Digital_Object

*Role:* Concrete

*Class Description:* The Service Description class defines a file that contains a standardized service specification.
18.38 Software

Root Class: Tagged_NonDigital_Object

Role: Concrete

Class Description: The Software class describes a software product.
18.39 Software_Binary

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Software Script class provides a description of a software code that is stored as a compiled binary file.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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<td></td>
<td>. TNDO_Supplemental</td>
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</tr>
<tr>
<td></td>
<td>. . Software_Binary</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass                   | none                             |      |             |     |

| Attribute                  | files.Software_Binary            | 1   |             |     |
|                            | os_version.Software_Binary       | 1..*|             |     |
|                            | program_notes_id.Software_Binary | 1   |             |     |
|                            | software_format_type.Software_B...| 1   |             |     |
|                            | supported_architecture_note_...  | 1..*|             |     |
|                            | supported_operating_system_...   | 1..*|             |     |
|                            | system_requirements_note.So...   | 1   |             |     |

| Inherited Attribute        | none                             |      |             |     |

| Association                | data_object.Software_Binary      | 1   | Digital_Object |     |

| Referenced from            | Product.Software                 |      |             |     |

18.40 Software_Script

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Software Script class provides a description of a software code that is stored as a script.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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<tbody>
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<td>. TNDO_Supplemental</td>
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<td></td>
<td>. . Software_Script</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass                   | none                             |      |             |     |

| Attribute                  | files.Software_Script            | 1   |             |     |
|                            | install_note.Software_Script     | 1   |             |     |
|                            | supported_environment_note_...   | 1   |             |     |
|                            | system_requirements_note.So...   | 1   |             |     |

| Inherited Attribute        | none                             |      |             |     |

| Association                | data_object.Software_Script      | 1   | Digital_Object |     |

| Referenced from            | Product.Software                 |      |             |     |
18.41 Software_Source

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Software Script class provides a description of a software code that is stored as source code.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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</tr>
<tr>
<td></td>
<td>. TNDO_Supplemental</td>
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<tr>
<td></td>
<td>. Software_Source</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass        | none                          |      |             |     |

| Attribute       | Compile_note.Software_Source  | 1    |             |     |
|                 | files.Software_Source         | 1    |             |     |
|                 | os_version.Software_Source    | 1    |             |     |
|                 | program_notes_id.Software_S...| 1    |             |     |
|                 | software_dialect.Software_S...| 1    |             |     |
|                 | software_format_type.Software...| 1    |             |     |
|                 | software_language.Software_...| 1    |             |     |
|                 | supported_architecture_note...| 1..* |             |     |
|                 | supported_operating_system_...| 1..* |             |     |
|                 | system_requirements_note.So...| 1    |             |     |

| Inherited Attribute | none                           |      |             |     |

| Association       | data_object.Software_Source   | 1    | Digital_Object |     |

| Inherited Association | none                          |      |             |     |

| Referenced from    | Product.Software              |      |             |     |

18.42 Submission_Information_Package

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Submission Information Package (SIP) class is an Information Package that is delivered by a Data Provider to an archive that conforms to the Open Archive Information System (OAIS) Reference Model for use in the construction of one or more AIPs.
### 18.43 Subscriber_PDS3

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Subscriber_PDS3 class provides the name of the subscriber and their subscription list.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tagged_NonDigital_Object</td>
</tr>
<tr>
<td></td>
<td>. TNDO_Context_PDS3</td>
</tr>
<tr>
<td></td>
<td>. . Subscriber_PDS3</td>
</tr>
</tbody>
</table>

| Subclass | none |
| Attribute | none |

#### Inherited Attribute
- description
- Information_Package
- Submission_Information_Package

#### Association
- none

#### Inherited Association
- none

#### Referenced from
- Product_SIP

---

### 18.44 Symbolic_Literals_PDS

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Symbolic_Literals_PDS class is used to collect orphan attributes for the pds namespace. These attributes are members by default of the USER class but not members of any domain class.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
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<td>. TNDO_Context_PDS3</td>
</tr>
<tr>
<td></td>
<td>. . Subscriber_PDS3</td>
</tr>
</tbody>
</table>

| Subclass | none |
| Attribute | full_name.Subscriber_PDS3  
|          | local_identifier.Subscriber... |
|          | subscription_id.Subscriber... |

#### Inherited Attribute
- none

#### Association
- none

#### Inherited Association
- none

#### Referenced from
- Product_Subscription_PDS3
18.45 TNDO_Context

Root Class: Tagged_NonDigital_Object

Role: Abstract

Class Description: The Tagged NonDigital Object (TNDO) Context class is an abstract class for the context class hierarchy.
18.46  TNDO_Context_PDS3

*Root Class:* Tagged_NonDigital_Object
*Role:* Concrete
*Class Description:* The Tagged NonDigital Object (TNDO) Context PDS3 class is an abstract class for the PDS3 context class hierarchy.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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<table>
<thead>
<tr>
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<th>Instrument_PDS3</th>
<th>Mission_PDS3</th>
<th>Subscriber_PDS3</th>
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</table>

18.47  TNDO_Supplemental

*Root Class:* Tagged_NonDigital_Object
*Role:* Abstract
*Class Description:* The Tagged NonDigital Object (TNDO) Supplemental class is an abstract class for the supplemental class hierarchy.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
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</tbody>
</table>

| Attribute | none | |
| Inherited Attribute | none | |
| Association | none | |
| Inherited Association | none | |
| Referenced from | none | |

18.48 Tagged_Digital_Child

*Root Class:* Tagged_Digital_Child

*Role:* Abstract

*Class Description:* The Tagged Digital Child class is an abstract class for the components of classes in the tagged digital object class hierarchy.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Tagged_Digital_Child</th>
</tr>
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<tbody>
<tr>
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<td>Axis_Array</td>
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<td>Document_Format</td>
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<td></td>
<td>Group</td>
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<table>
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<td>Inherited Association</td>
<td>none</td>
</tr>
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<td>Referenced from</td>
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</tbody>
</table>

### 18.49 Tagged_Digital_Object

*Root Class:* Tagged_Digital_Object  
*Role:* Abstract  
*Class Description:* The Tagged Digital Object class is an abstract class for the digital class hierarchy. A tagged object is an information object.

<table>
<thead>
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</tr>
</thead>
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</tr>
</tbody>
</table>

### 18.50 Tagged_NonDigital_Child

*Root Class:* Tagged_NonDigital_Child  
*Role:* Abstract  
*Class Description:* The Tagged NonDigital Child class is an abstract class for the components of classes in the tagged nondigital object class hierarchy.
### 18.51 Tagged\_NonDigital\_Object

**Root Class:** Tagged\_NonDigital\_Object  
**Role:** Abstract  
**Class Description:** The Tagged NonDigital Object class is an abstract class for the physical and conceptual class hierarchy. A tagged object is an information object.

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<th>Ind</th>
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</table>

### 18.52 Target\_PDS3

**Root Class:** Tagged\_NonDigital\_Object  
**Role:** Concrete  
**Class Description:** The Target class provides a description of a physical object that is the object of data collection. This class captures the PDS3

<table>
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<td>TNDO_Context_PDS3</td>
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<td></td>
<td></td>
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<tr>
<td>TNDO_Supplemental</td>
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<td></td>
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<td></td>
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<td>none</td>
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<tr>
<td>Inherited Association</td>
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</table>
catalog Target information.

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<td>orbit_direction.Target_PDS3 primary_body_name.Target_PDS3 target_desc.Target_PDS3 rotation_direction.Target_PDS3 target_name.Target_PDS3 target_type.Target_PDS3</td>
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<td>Referenced from</td>
<td>Product_Target_PDS3</td>
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</table>

18.53 Terminological_Entry

**Root Class:** Tagged_NonDigital_Child

**Role:** Concrete

**Class Description:** The terminological_entry class provides the name (designination) and definition of the attribute in a specified natural language.

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<td>definition.Terminological_Entry.language.Terminological_Entry name.Terminological_Entry preferred_flag.Terminological_Entry</td>
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</tr>
<tr>
<td>Referenced from</td>
<td>DD_Attribute DD_Attribute_Full DD_Class DD_Class_Full</td>
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</tbody>
</table>

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18.54 Transfer_Manifest

**Root Class:** Tagged_Digital_Object

**Role:** Concrete

**Class Description:** The Transfer_Manifest class defines a table that maps product LIDVIDs to the file specification names of the products’ XML label files.

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<th>Value/Class</th>
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<tr>
<td>. . Table_Base</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>. . . Table_Character</td>
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<td><strong>Inherited Attribute</strong></td>
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<td></td>
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</tr>
<tr>
<td>local_identifier.Byte_Stream</td>
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<td></td>
</tr>
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<td></td>
</tr>
<tr>
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<td>0..1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>offset.Table_Base</td>
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</tr>
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<td>records.Table_Base</td>
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</tr>
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<td>carriage-return line-feed</td>
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</tr>
<tr>
<td><strong>Association</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>Inherited Association</strong></td>
<td></td>
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<tr>
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<td></td>
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</table>

18.55 Volume_PDS3

**Root Class:** Tagged_NonDigital_Object

**Role:** Concrete

**Class Description:** The Volume_PDS3 class is used to capture the volume information from the PDS3 Data Set Catalog.
## Volume_Set_PDS3

**Root Class:** Tagged_NonDigital_Object  
**Role:** Concrete  
**Class Description:** The Volume_Set_PDS3 class is used to capture the volume set information from the PDS3 Data Set Catalog.
<table>
<thead>
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</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
</tr>
<tr>
<td>Association</td>
<td>data_object.Volume_Set_PDS3</td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
</tr>
<tr>
<td>Referenced from</td>
<td>Product.Volume_Set_PDS3</td>
</tr>
</tbody>
</table>
19 Imaging Discipline Classes

This section provides the sets of classes associated with the imaging discipline.

The image discipline class hierarchy is illustrated in the following diagram. This diagram presents the subclassOf relation for each class using a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

+ + Telemetry_Parameters
+ + Quaternion_Component
+ + + Cartography
+ + + Quaternion

The class hierarchy above includes 4 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the discipline classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

19.1 Cartography

Root Class: Tagged_NonDigital_Object
Role: Concrete
Class Description: The Cartography class is a placeholder for soon forthcoming Imaging cartography classes.

<table>
<thead>
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<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
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<td>. . Cartography</td>
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<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
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</tr>
</tbody>
</table>
Figure 13: Imaging Discipline UML Class Diagram
19.2 Quaternion

**Root Class:** Tagged_NonDigital_Object

**Role:** Concrete

**Class Description:** The Quaternion class models a mathematical construct that consists of four individual numeric components. Quaternions are a convenient mechanism for encapsulating orientation information since they require only four units of numeric storage, as opposed to the nine needed for a rotation matrix.

<table>
<thead>
<tr>
<th>Entity</th>
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</tr>
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<td>description.Quaternion local_identifier.Quaternion name.Quaternion type.Quaternion</td>
<td>1 0..1 1 1</td>
<td>SPICE Spacecraft Telemetry</td>
</tr>
</tbody>
</table>

| Inherited Attribute | none | | |
| Association | data_object.Quaternion quaternion_component.Quaternion | 1 4 | Conceptual_Object Quaternion_Component |

| Inherited Association | none | | |
| Referenced from | none | | |

19.3 Quaternion_Component

**Root Class:** Tagged_NonDigital_Child

**Role:** Concrete

**Class Description:** The Quaternion_Component class provides a component of a quaternion.
19.4 Telemetry_Parameters

Root Class: Product_Components
Role: Concrete

Class Description: The Telemetry_Parameters class contains downlink-related attributes used primarily during mission operations.
20 DataType Classes

This section defines the PDS4 data types.

The Data Type class hierarchy is illustrated in the following diagram. This diagram presents the subclassOf relation for each class using a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

```
+ + + Complex
  + + + ComplexLSB16
  + + + ComplexLSB8
  + + + ComplexMSB16
  + + + ComplexMSB8
  + + + Decimal_Integer
  + + + SignedBitString
  + + + SignedByte
  + + + SignedLSB2
  + + + SignedLSB4
  + + + SignedLSB8
  + + + SignedMSB2
  + + + SignedMSB4
  + + + SignedMSB8
  + + + UnsignedBitString
  + + + UnsignedByte
  + + + UnsignedLSB2
  + + + UnsignedLSB4
  + + + UnsignedLSB8
  + + + UnsignedMSB2
  + + + UnsignedMSB4
  + + + UnsignedMSB8
  + + + Decimal_Real
  + + + IEEE754LSBDouble
  + + + IEEE754LSBSingle
  + + + IEEE754MSBDouble
  + + + IEEE754MSBSingle
  + Character_Data_Type
    + ASCII:AnyURI
    + ASCII:Boolean
    + ASCII:DOI
    + ASCII:Date
    + ASCII:Date_DOY
    + ASCII:Date_Time
    + ASCII:Date_Time_DOY
```
The class hierarchy above includes 62 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.

20.1 ASCII AnyURI

Root Class: Data_Type
Role: Concrete
Class Description: The ASCII AnyURI class indicates a URI or its subclasses URN and URL.
Figure 14: Data Type UML Class Diagram
20.2 ASCII_Boolean

**Root Class:** Data_Type

**Role:** Concrete

**Class Description:** The ASCII_Boolean class indicates a boolean. The allowed values are 'true' and 'false'.

<table>
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</tr>
<tr>
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<td></td>
</tr>
</tbody>
</table>

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20.3 ASCII_DOI

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII DOI class indicates a digital object identifier (DOI).

<table>
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<tr>
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<td>ASCII</td>
<td>R</td>
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<td></td>
<td>minimum_characters.ASCII_DOI</td>
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<td></td>
<td>R</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

20.4 ASCII_Date

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII_Date class indicates a date in either YMD or DOY format.
<table>
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</tr>
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</tr>
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<td>xml_schema_base_type.ASCII_Date</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>character_encoding.Character_Date</td>
<td>1</td>
<td>UTF-8</td>
</tr>
<tr>
<td>maximum_value.Character_Date</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>minimum_value.Character_Date</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

20.5 **ASCII_Date_DOY**

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII_Date_DOY class indicates a date in DOY format.
### Entity

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data_Type</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Character_Data_Type</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>. ASCII_Date_DOY</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass | none |

<table>
<thead>
<tr>
<th>Attribute</th>
<th>ASCII_-rule.ASCII_Date_DOY</th>
<th>1</th>
<th>ASCII</th>
</tr>
</thead>
<tbody>
<tr>
<td>formation_rule.ASCII_Date_DOY</td>
<td>1</td>
<td>YYYY-DOY</td>
<td></td>
</tr>
<tr>
<td>maximum_characters.ASCII_Date_DOY</td>
<td>1</td>
<td>1-9</td>
<td></td>
</tr>
<tr>
<td>minimum_characters.ASCII_Date_DOY</td>
<td>1</td>
<td>1-9</td>
<td></td>
</tr>
<tr>
<td>pattern.ASCII_Date_DOY</td>
<td>1</td>
<td>(-)?[0-9]{4}</td>
<td></td>
</tr>
<tr>
<td>xml_schema_base_type.ASCII_Date_DOY</td>
<td>1</td>
<td>xsd:string</td>
<td></td>
</tr>
</tbody>
</table>

| Inherited Attribute | character_encoding.Character_Date_DOY | 1 | UTF-8 |
|                     | maximum_value.Character_Date_DOY | 1 |       |
|                     | minimum_value.Character_Date_DOY | 1 |       |

| Association | none |
| Inherited Association | none |
| Referenced from | none |

### 20.6 ASCII_Date_Time

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Date_Time class indicates a date in either YMD or DOY format and time.
<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data_Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Character_Data_Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. . ASCII_Date_Time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass                                      |      |             |
| Subclass                                      |      |             |
| none                                          |      |             |

| Attribute                                     |      |             |
| Attribute                                     |      |             |
| character_constraint.ASCII_Date_Time          | 1    | ASCII       |
| formation_rule.ASCII_Date_Time                | 1    | YYYY-MM-DDTHH:MM:SS.Z/ZZ/DOYTHH:MM:SS.Z/ZZ    |
| maximum_characters.ASCII_Date_Time            | 1    | (-)?[0-9]{4} |
| maximum_value.ASCII_Date_Time                 | 1    | (-)?[0-9]{4}-(00[1-9])-00[1-9]-(00[1-9])-(00[1-9])-(00[1-9]) |
| minimum_characters.ASCII_Date_Time            | 1    | (-)?[0-9]{4} |
| minimum_value.ASCII_Date_Time                 | 1    | (-)?[0-9]{4}-(00[1-9])-00[1-9]-(00[1-9])-(00[1-9])-(00[1-9]) |
| pattern.ASCII_Date_Time                       | 1    | (-)?[0-9]{4}-(00[1-9])-00[1-9]-(00[1-9])-(00[1-9])-(00[1-9]) |
| .([0-9]{1,4}))?(Z)?                           |      |             |
| .0+)))?(Z)?                                   |      |             |
| .([0-9]{1,4}))?(Z)?                           |      |             |
| .0+)))?(Z)?                                   |      |             |
| xml_schema_base_type.ASCII_Date_Time          | 1    | xsd:string  |

| Inherited Attribute                           |      |             |
| Inherited Attribute                           |      |             |
| character_encoding.Character_encoding         | 1    | UTF-8       |

| Association                                   |      |             |
| Association                                   |      |             |
| none                                          |      |             |

| Referenced from                               |      |             |
| Referenced from                               |      |             |
| none                                          |      |             |

### 20.7 ASCII_Date_Time_DOY

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Date_Time_DOY class indicates a date in DOY format and time.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>. Character_Data_Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. . ASCII_Date_Time_DOY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. character_constraint.ASCII_Date_Time_DOY</td>
<td>1</td>
<td>ASCII</td>
</tr>
<tr>
<td>. formation_rule.ASCII_Date_Time_DOY</td>
<td>1</td>
<td>YYYY-DOYTHH:MM:SS.SSS(Z)</td>
</tr>
<tr>
<td>. maximum_characters.ASCII_Date_Time_DOY</td>
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<td>1-ASCII</td>
</tr>
<tr>
<td>. maximum_value.ASCII_Date_Time_DOY</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>. minimum_characters.ASCII_Date_Time_DOY</td>
<td>1</td>
<td>1-ASCII</td>
</tr>
<tr>
<td>. minimum_value.ASCII_Date_Time_DOY</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>. pattern.ASCII_Date_Time_DOY</td>
<td>1</td>
<td>(-)?[0-9]{4}-(0[1-9]</td>
</tr>
<tr>
<td>.(0+)?)(Z)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.(0+)?)(Z)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
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<td></td>
</tr>
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<td>. character_encoding.Characte...</td>
<td>1</td>
<td>UTF-8</td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

### 20.8 ASCII_Date_Time.UTC

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Date_Time.UTC class indicates a date and time in UTC format.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
<tr>
<td>Data_Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Character_Data_Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. ASCII_Date_Time.UTC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>character_constraint.ASCII_Date_Time.UTC</td>
<td>1</td>
<td>ASCII</td>
</tr>
<tr>
<td>formation_rule.ASCII_Date_Time.UTC</td>
<td>1</td>
<td>YYYY-MM-DDTHH:MM:SS.SSSZ/YYYY-DOYTHH:MM:SS.SSSZ</td>
</tr>
<tr>
<td>maximum_characters.ASCII_Date_Time.UTC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>maximum_value.ASCII_Date_Time.UTC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>minimum_characters.ASCII_Date_Time.UTC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>minimum_value.ASCII_Date_Time.UTC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>pattern.ASCII_Date_Time.UTC</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>.([0-9]{1,4}))?((Z)</td>
<td></td>
<td>(-)?[0-9]{4}(Z)</td>
</tr>
</tbody>
</table>
| .0+))??(Z)             |      | (-)?[0-9]{4}-(00[1-9])—(01-2)
| .([0-9]{1,4}))?((Z) |      | (-)?[0-9]{4}-((00[1-9])—(01-2)
| .0+))??(Z)             |      | (-)?[0-9]{4}-((00[1-9])—(01-2)
| xml_schema_base_type.ASCII_Date_Time.UTC | 1 | xsd:string |
| Inherited Attribute    |      |             |
| character_encoding.Characte... | 1 | UTF-8 |
| Association            | none |             |
| Inherited Association  | none |             |
| Referenced from        | none |             |

### 20.9 ASCII_Date_Time_YMD

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Date_Time_YMD class indicates a date in YMD format and time.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Data_Type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>. Character_Data_Type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>. . ASCII_Date_Time_YMD</td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>character_constraint.ASCII_Date_Time_YMD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>formation_rule.ASCII_Date_Time_YMD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>maximum_characters.ASCII_Date_Time_YMD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>maximum_value.ASCII_Date_Time_YMD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>minimum_characters.ASCII_Date_Time_YMD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>minimum_value.ASCII_Date_Time_YMD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>pattern.ASCII_Date_Time_YMD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>.((0-9){1,4})?(Z)?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.(0+)?))(Z)?</td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>character_encoding.Character...</td>
<td>1</td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

**20.10 ASCII_Date_YMD**

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Date_YMD class indicates a date in YMD format.
## 20.11 ASCII_Directory_Path_Name

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII Directory Path Name class indicates a system directory path.

### Entity

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity</td>
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<td>Data_Type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Character_Data_Type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASCII_Directory_Path_Name</td>
</tr>
<tr>
<td>Subclass</td>
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<td>none</td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td>character_constraint.ASCII(...)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>formation_rule.ASCII_Date_YMD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>maximum_characters.ASCII_Di...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>minimum_characters.ASCII_Di...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pattern.ASCII_Date_YMD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>xml_schema_base_type.ASCII(...)</td>
</tr>
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<td>Inherited Attribute</td>
<td></td>
<td>character_encoding.CharacterDat...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>maximum_value.Character_Dat...</td>
</tr>
<tr>
<td></td>
<td></td>
<td>minimum_value.Character_Dat...</td>
</tr>
<tr>
<td>Association</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td>Inherited Association</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td>Referenced from</td>
<td></td>
<td>none</td>
</tr>
</tbody>
</table>

### Character Data Type

- **Max Value:** 255  
- **Min Value:** 1  
- **Pattern:** `(-)?[0-9]{4}(-)?[0-9]{4}(-)((0[1-9]|1[0-2])-((0[1-9]|1[0-2])-(3[0-1])))`  
- **Base Type:** xsd:token

### Inherited Attribute

- **Encoding:** UTF-8

---

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### 20.12 ASCII_File_Name

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII File Name class indicates a system file name.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data_Type</td>
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<td></td>
<td>R</td>
</tr>
<tr>
<td>. Character_Data_Type</td>
<td></td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>. . ASCII_File_Name</td>
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<td></td>
<td>R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
</thead>
<tbody>
<tr>
<td>character_constraint.ASCII_File_Name</td>
<td>1</td>
<td>ASCII</td>
<td>R</td>
</tr>
<tr>
<td>formation_rule.ASCII_File_Name</td>
<td>1</td>
<td>file_name.file_extension</td>
<td>R</td>
</tr>
<tr>
<td>maximum_characters.ASCII_File_Name</td>
<td>1</td>
<td>255</td>
<td>R</td>
</tr>
<tr>
<td>minimum_characters.ASCII_File_Name</td>
<td>1</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>xml_schema_base_type.ASCII_File_Name</td>
<td>1</td>
<td>xsd:token</td>
<td>R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Card</th>
<th>Value/Class</th>
<th>Inherited</th>
</tr>
</thead>
<tbody>
<tr>
<td>character_encoding.Character_Data_Type</td>
<td>1</td>
<td>UTF-8</td>
<td>R</td>
</tr>
<tr>
<td>maximum_value.Character_Data_Type</td>
<td>1</td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>minimum_value.Character_Data_Type</td>
<td>1</td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>pattern.Character_Data_Type</td>
<td>1</td>
<td></td>
<td>R</td>
</tr>
</tbody>
</table>

| Association                                    |      |                                      | R         |
| Inherited Association                          |      |                                      | R         |
| Referenced from                                |      |                                      | R         |

### 20.13 ASCII_File_Specification_Name

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII File Specification Name class indicates a system file including directory path, file name, and file extension.
### 20.14 ASCII_Integer

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Integer class indicates an integer.

<table>
<thead>
<tr>
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<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>. . ASCII_File_Specification_Name</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Subclass | none |

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>character_constraint.ASCII</td>
<td>1</td>
<td>ASCII</td>
<td>R</td>
</tr>
<tr>
<td>formation_rule.ASCII_File_Specification_Name</td>
<td>1</td>
<td>dir1/dir2/file_name,file_extension</td>
<td>R</td>
</tr>
<tr>
<td>maximum_characters.ASCII_File_Specification_Name</td>
<td>1</td>
<td>255</td>
<td>R</td>
</tr>
<tr>
<td>minimum_characters.ASCII_File_Specification_Name</td>
<td>1</td>
<td>1</td>
<td>R</td>
</tr>
<tr>
<td>xml_schema_base_type.ASCII_File_Specification_Name</td>
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<td>xsd:token</td>
<td>R</td>
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</table>

<table>
<thead>
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<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>character_encoding.Character_Data_Type</td>
<td>1</td>
<td>UTF-8</td>
<td>R</td>
</tr>
<tr>
<td>maximum_value.Character_Data_Type</td>
<td>1</td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>minimum_value.Character_Data_Type</td>
<td>1</td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>pattern.Character_Data_Type</td>
<td>1</td>
<td></td>
<td>R</td>
</tr>
</tbody>
</table>

| Association | none |

| Inherited Association | none |

| Referenced from | none |
20.15 ASCII_LID

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII_LID class indicates a logical identifier.

<table>
<thead>
<tr>
<th>Hierarchy</th>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
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<td></td>
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<tr>
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<td></td>
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<td>. . ASCII_LID</td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>character_constraint.ASCII_LID</td>
<td>1</td>
<td>ASCII</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td>formation_rule.ASCII_LID</td>
<td>1</td>
<td>urn:nasa:pds:xxxx</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td>maximum_characters.ASCII_LID</td>
<td>1</td>
<td>255</td>
<td>R</td>
</tr>
<tr>
<td></td>
<td>maximum_value.ASCII_LID</td>
<td>1</td>
<td></td>
<td>R</td>
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20.16 ASCII_LIDVID

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII_LIDVID class indicates a logical identifier and version identifier.
### ASCII_LIDVID_LID

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_LIDVID_LID class indicates a logical identifier and version identifier or simply the logical identifier.

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<td>formation_rule.ASCII_LIDVID</td>
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<td>urn:nasa:pds:xxxx:MN</td>
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| Association                      | none |                                    |           |
| Inherited Association            | none |                                    |           |
| Referenced from                  | none |                                    |           |
20.18 ASCII_MD5_Checksum

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII MD5 Checksum class indicates a checksum computed by the Message-Digest algorithm 5 (MD5).

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<th>Value/Class</th>
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20.19 ASCII_NonNegative_Integer

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_NonNegative_Integer class indicates a non-negative integer.
### 20.20 ASCII_Numeric_Base16

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII Numeric Base16 class indicates an ASCII encoded string constrained to hexadecimal digits.

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<td>minimum_value.ASCII_NonNega...</td>
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20.21 ASCII_Numeric_Base2

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII Numeric Base2 class indicates a ASCII encoded string constrained to binary digits.

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<td>ASCII_Numeric_Base2</td>
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| Subclass | none |      |             |

| Attribute | character_constraint.ASCII_Numeric_Base2 | 1 | ASCII | R |
| maximum_characters.ASCII_Numeric_Base2 | 1 | 255 | R |
| maximum_value.ASCII_Numeric_Base2 | 1 | R |   |
| minimum_characters.ASCII_Numeric_Base2 | 1 | 1 | R |
| minimum_value.ASCII_Numeric_Base2 | 1 | R |   |
| pattern.ASCII_Numeric_Base2 | 1 | [0-1]{1,255} | R |
| xml_schema_base_type.ASCII_Numeric_Base2 | 1 | xsd:string | R |

| Inherited Attribute | character_encoding.Character_Data_Type | 1 | UTF-8 |   |
| formation_rule.Character_Data_Type | 1 |   |   |

| Association | none |      |             |
| Inherited Association | none |      |             |
| Referenced from | none |      |             |

20.22 ASCII_Numeric_Base8  

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII Numeric Base8 class indicates a ASCII encoded string constrained to octal digits.
### ASCII_Numeric_Base8

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<td>minimum_characters.ASCII</td>
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<td>R</td>
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<td>pattern.ASCII_Numeric_Base8</td>
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<td>maximum_value.Character</td>
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<tr>
<td>minimum_value.Character</td>
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| Association                    |      |             |     |
|                                |      |             |     |

| Inherited Association          |      |             |     |
|                                |      |             |     |

| Referenced from                |      |             |     |
|                                |      |             |     |

### ASCII_Real

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Real class indicates a real.

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<td>R</td>
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|                                |      |             |     |

| Inherited Association          |      |             |     |
|                                |      |             |     |

| Referenced from                |      |             |     |
|                                |      |             |     |
20.24 ASCII_Short_String_Collapsed

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Short_String_Collapsed class indicates a limited length, whitespace-collapsed string.

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20.25 ASCII_Short_String_Preserved

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Short_String_Preserved class indicates a limited length, whitespace-preserved string.
## 20.26 ASCII_String

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_String class indicates a limited length ASCII text string with whitespaces removed.

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| | maximum_characters.ASCII_Short_String | 1 | 255 | R |
| | maximum_value.ASCII_Short_String | 1 | R | |
| | minimum_characters.ASCII_Short_String | 1 | 1 | R |
| | minimum_value.ASCII_Short_String | 1 | R | |
| | xml_schema_base_type.ASCII_Short_String | 1 | xsd:string | R |
| Inherited Attribute | character_encoding.Character_Datatype | 1 | UTF-8 | |
| | formation_rule.Character_Data_Type | 1 | | |
| | pattern.Character_Data_Type | 1 | | |
| Association | none | | | |
| Inherited Association | none | | | |
| Referenced from | none | | | |

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| Subclass | none | | | |
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| | minimum_characters.ASCII_Short_String | 1 | 1 | R |
| | xml_schema_base_type.ASCII_Short_String | 1 | xsd:token | R |
| Inherited Attribute | character_encoding.Character_Datatype | 1 | UTF-8 | |
| | formation_rule.Character_Data_Type | 1 | | |
| | pattern.Character_Data_Type | 1 | | |
| Association | none | | | |
| Inherited Association | none | | | |
| Referenced from | none | | | |

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20.27 ASCII_Text_Collapsed

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII_Text_Collapsed class indicates an unlimited length, whitespace-collapsed text string.

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20.28 ASCII_Text_Preserved

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The ASCII_Text_Preserved class indicates an unlimited length, whitespace-preserved text string.  

194
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### 20.29 ASCII_Time

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** The ASCII_Time class indicates a time value.
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20.30 ASCII VID

**Root Class**: Data_Type  
**Role**: Concrete  
**Class Description**: The ASCII VID class indicates a version identifier.
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20.31 Character_Data_Type

**Root Class:** Data_Type  
**Role:** Abstract  
**Class Description:** The Character Data Type class is the parent class for data types used to classify the values of attributes in class descriptions, i.e., product labels and character digital objects.
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20.32 Complex

**Root Class:** Data_Type  
**Role:** Abstract  
**Class Description:** Complex Binary Data Types

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20.33 ComplexLSB16

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** Complex number consisting of two LSB 8 byte decimal reals.

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20.34 ComplexLSB8

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** Complex number consisting of two LSB 4 byte decimal reals.
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**20.35 ComplexMSB16**

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* Complex number consisting of two MSB 8 byte decimal reals.

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**20.36 ComplexMSB8**

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*Class Description:* Complex number consisting of two MSB 4 byte decimal reals.
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### 20.37 Decimal_Integer

*Root Class:* Data_Type  
*Role:* Abstract  
*Class Description:* Decimal Integer Binary Data Types

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20.38 Decimal_Real

*Root Class:* Data_Type  
*Role:* Abstract  
*Class Description:* Floating Point Binary Data Types

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20.39 IEEE754LSBDouble

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*Class Description:* IEEE 754 LSB double precision floating point

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20.40 IEEE754LSBSingle

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* IEEE 754 LSB single precision floating point
20.41 IEEE754MSBDouble

*Root Class:* Data_Type
*Role:* Concrete
*Class Description:* IEEE 754 MSB double precision floating point

20.42 IEEE754MSBSingle

*Root Class:* Data_Type
*Role:* Concrete
*Class Description:* IEEE 754 MSB single precision floating point
### SignedBitString

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**Role:** Concrete  
**Class Description:** Signed Bit String

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### SignedByte

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**Role:** Concrete  
**Class Description:** Signed 8-bit byte

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20.45 SignedLSB2

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** Signed 2’s-complement LSB 2-byte integer

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20.46 SignedLSB4

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**Role:** Concrete  
**Class Description:** Signed 2’s-complement LSB 4-byte integer

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### 20.47 SignedLSB8

**Root Class**: Data_Type  
**Role**: Concrete  
**Class Description**: Signed 2’s-complement LSB 8-byte integer

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### 20.48 SignedMSB2

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**Role**: Concrete  
**Class Description**: Signed 2’s-complement MSB 2-byte integer

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### 20.49 SignedMSB4

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**Role:** Concrete  
**Class Description:** Signed 2’s-complement MSB 4-byte integer

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### 20.50 SignedMSB8

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** Signed 2’s-complement MSB 8-byte integer

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### Root Class: Data_Type

**Role:** Concrete

**Class Description:** The UTF8_Short_String_Collapsed class indicates a limited length, whitespace-collapsed string constrained to the UTF-8 character encoding.

### Root Class: Data_Type

**Role:** Concrete

**Class Description:** The UTF8_Short_String_Collapsed class indicates a limited length, whitespace-collapsed string constrained to the UTF-8 character encoding.

### UTF8_Short_String_Collapsed

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20.52 UTF8_Short_String_Preserved

**Root Class:** Data_Type

**Role:** Concrete

**Class Description:** The UTF8_Short_String_Preserved class indicates a limited length, whitespace-preserved string constrained to the UTF-8 character encoding.

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character encoding.

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20.53 UTF8_String

**Root Class:** Data_Type

**Role:** Concrete

**Class Description:** The UTF8_String class indicates a limited length UTF8 text string with whitespaces removed.

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20.54 UTF8_Text_Preserved

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* The UTF8_Text_Preserved class indicates an unlimited length, whitespace-preserved text string constrained to the UTF-8 character encoding.

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20.55 UnsignedBitString

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*Role:* Concrete  
*Class Description:* Unsigned Bit String

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20.56 UnsignedByte

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* Unsigned 8-bit byte

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20.57 UnsignedLSB2

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* Unsigned 2’s-complement LSB 2-byte integer

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20.58 UnsignedLSB4

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* Unsigned 2’s-complement LSB 4-byte integer
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### 20.59 UnsignedLSB8

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** Unsigned 2’s-complement LSB 8-byte integer

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### 20.60 UnsignedMSB2

**Root Class:** Data_Type  
**Role:** Concrete  
**Class Description:** Unsigned 2’s-complement MSB 2-byte integer
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**20.61 UnsignedMSB4**

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* Unsigned 2’s-complement MSB 4-byte integer

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**20.62 UnsignedMSB8**

*Root Class:* Data_Type  
*Role:* Concrete  
*Class Description:* Unsigned 2’s-complement MSB 8-byte integer
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</table>
21  Unit of Measure Classes

This section defines the PDS4 units of measure.

The units of measure class hierarchy is illustrated in the following diagram. This diagram presents the subclassOf relation for each class using a hierarchical (tree) format, providing a visual representation of the classes in relation to their parent classes.

+ Unit_Of_Measure
  + + Units_of_Acceleration
  + + Units_of_Amount_Of_Substance
  + + Units_of_Angle
  + + Units_of_Angular_Velocity
  + + Units_of_Area
  + + Units_of_Frame_Rate
  + + Units_of_Frequency
  + + Units_of_Length
  + + Units_of_Map_Scale
  + + Units_of_Mass
  + + Units_of_Misc
  + + Units_of_None
  + + Units_of_Optical_Path_Length
  + + Units_of_Pressure
  + + Units_of_Radiance
  + + Units_of_Rates
  + + Units_of_Solid_Angle
  + + Units_of_Storage
  + + Units_of_Temperature
  + + Units_of_Time
  + + Units_of_Velocity
  + + Units_of_Voltage
  + + Units_of_Volume

The class hierarchy above includes 24 unique classes.

The classes in this section are illustrated using a Unified Modeling Language (UML) class hierarchy diagram in the following figure. The following sections present the classes in a table format. The table includes the class hierarchy, class attributes, and class associations. The class attributes and associations listed include both those used to define the class and those inherited from parent classes. Cardinalities are provided where appropriate.
Figure 15: DataType UML Class Diagram
21.1 Unit_Of_Measure

Root Class: Unit_Of_Measure
Role: Abstract
Class Description: The Unit_Of_Measure is a definite magnitude of a quantity.

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<thead>
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<td>Units_of_Rates</td>
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<tr>
<td></td>
<td>Units_of_Volume</td>
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| Attribute          | specified_unit_id.Unit_Of_M...  | 1   |             |     |
|                    | type.Unit_Of_Measure            | 1   |             |     |
|                    | unit_id.Unit_Of_Measure         | 1   |             |     |

Inherited Attribute none
Association none
Inherited Association none
Referenced from none

21.2 Units_of_Acceleration

Root Class: Unit_Of_Measure
Role: Concrete
Class Description: Units of Acceleration is a magnitude of acceleration.

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<th>Value/Class</th>
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Inherited Attribute none
Association none
Inherited Association none
Referenced from none

21.3 Units_of_Amount_Of_Substance

Root Class: Unit_Of_Measure
Role: Concrete

Class Description: Units of Amount of Substance is a magnitude of mass.

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<th>Value/Class</th>
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Inherited Attribute none
Association none
Inherited Association none
Referenced from none

21.4 Units_of_Angle

Root Class: Unit_Of_Measure
Role: Concrete

Class Description: Units of Angle is a magnitude of angle.
21.5 Units_of_Angular_Velocity

Root Class: Unit_Of_Measure  
Role: Concrete  
Class Description: Units_of_Angular_Velocity is a magnitude of speed of rotation.

21.6 Units_of_Area

Root Class: Unit_Of_Measure  
Role: Concrete  
Class Description: Units_of_Area is a magnitude of area.
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### 21.7 Units_of_Frame_Rate

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Frame_Rate is a magnitude of change.

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### 21.8 Units_of_Frequency

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Frequency is a magnitude of frequency.
### Units_of_Frequency

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Frequency is a measure of frequency.

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**Association** none  
**Inherited Association** none  
**Referenced from** none

### Units_of_Length

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Length is a magnitude of length.

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**Association** none  
**Inherited Association** none  
**Referenced from** none

### Units_of_Map_Scale

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Map_Scale is a proportional representation.

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**Referenced from** none

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### 21.11 Units_of_Mass

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Mass is a magnitude of mass.

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### 21.12 Units_of_Misc

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Misc provides an assortment of derived units.
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### 21.13 Units_of_None

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_None indicates that no unit of measure applies.

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### 21.14 Units_of_Optical_Path_Length

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Optical_Path_Length is a magnitude of optical path length.
### 21.15 Units_of_Pressure

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Pressure is a magnitude of pressure.

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### 21.16 Units_of_Radiance

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Radiance is a magnitude of radiance.

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| Association | none |

| Inherited Association | none |
| Referenced from | none |

### 21.17 Units_of_Rates

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Rate is a magnitude of change.

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| Inherited Attribute | none |
| Association | none |

| Inherited Association | none |
| Referenced from | none |

### 21.18 Units_of_Solid_Angle

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Solid_Angle is a magnitude of a solid angle.
## 21.19 Units_of_Storage

**Root Class:** Unit_of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Storage is an amount of computer storage.

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## 21.20 Units_of_Temperature

**Root Class:** Unit_of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Temperature is a magnitude of temperature.

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**21.21 Units_of_Time**

*Root Class:* Unit_Of_Measure  
*Role:* Concrete  
*Class Description:* Units_of_Time is a magnitude of time.

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**21.22 Units_of_Velocity**

*Root Class:* Unit_Of_Measure  
*Role:* Concrete  
*Class Description:* Units_of_Velocity is a magnitude of velocity.
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Association: none

Inherited Association: none

Referenced from: none

### 21.23 Units_of_Voltage

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Voltage is a magnitude of voltage.

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<td></td>
</tr>
<tr>
<td>Attribute</td>
<td>specified_unit_id.Units_of_Velocity . Units_of_Voltage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>type.Units_of_Voltage</td>
<td>1</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>unit_id.Units_of_Voltage</td>
<td>1</td>
<td>Voltage</td>
</tr>
<tr>
<td></td>
<td>mV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inherited Attribute: none

Association: none

Inherited Association: none

Referenced from: none

### 21.24 Units_of_Volume

**Root Class:** Unit_Of_Measure  
**Role:** Concrete  
**Class Description:** Units_of_Volume is a magnitude of volume.
<table>
<thead>
<tr>
<th>Entity</th>
<th>Card</th>
<th>Value/Class</th>
<th>Ind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subclass</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>specified_unit_id.Units_of_Volume</td>
<td>1</td>
<td>L</td>
<td>R</td>
</tr>
<tr>
<td>type.Units_of_Volume</td>
<td>1</td>
<td>Volume</td>
<td>R</td>
</tr>
<tr>
<td>unit_id.Units_of_Volume</td>
<td>1</td>
<td>L</td>
<td>R</td>
</tr>
<tr>
<td>m**3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Attribute</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherited Association</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Referenced from</td>
<td>none</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
22 Unification

This section presents the data model for the Information Object, a fundamental component of the Open Archival Information System (OAIS) Reference Model. The Information Object provides a model for the unification of PDS Objects under the PDS defined extensions, the PDS.Information.Object, the Tagged.Data.Object, and two Context classes.

23 Specification Dictionary

The Specification Dictionary provides the definitions of data elements and associations. The data elements are those that are used as class attributes in this specification. They represent a subset of those in the Planetary Science Data Dictionary. The associations are those that are defined and used in this specification.

abstract desc in Data.Set_PDS3 The abstract desc attribute provides a summary of a text, scientific article, or document.

Type: ASCII_Text_Preserved
Class Name: Data_Set_PDS3

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

**abstract_flag in DD_Class** The abstract flag attribute indicates whether or not the class can be instantiated. Abstract flag is only included if a value of 'true' is desired and indicates that the class is abstract and cannot be used in a label.

*Type:* ASCII_Boolean

Class Name: DD_Class

Nillable: false

Attribute Concept: FLAG

Conceptual Domain: BOOLEAN

Steward: ops

Namespace Id: pds

**abstract_flag in DD_Class_Full** The abstract flag attribute indicates whether or not the class can be instantiated. Abstract flag is only included if a value of 'true' is desired and indicates that the class is abstract and cannot be used in a label.

*Type:* ASCII_Boolean

Class Name: DD_Class_Full
The acknowledgement_text attribute is a character string which recognizes another’s contribution, authority, or right.

Type: ASCII_Text_Preserved

Class Name: Document

Minimum Characters: 1

Nullable: false

Attribute Concept: TEXT

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

Acknowledgement_text in Document

The address attribute provides a mailing address.

Type: UTF8_Text_Preserved

Class Name: Facility

Minimum Characters: 1

Nullable: false

Attribute Concept: ADDRESS
Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

affiliation_type in PDS_Affiliate The affiliation type data attribute describes the type of relationship an individual has with the PDS.

Type: ASCII_Short_String_Collapsed

Class Name: PDS_Affiliate

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: Affiliate, Data Provider, Manager, Technical Staff

alias in Alias_List The alias association is a relationship to Alias, an alternate name and identification.

Type: Association

alias_list in Identification_Area The alias_list association is a relationship to Alias_List, a list of alternate names and identifications.

Type: Association

alternate_designation in Target_Identification The alternate_designation attribute provides aliases.
*alternate_id in Alias* The alternate_id attribute provides an additional identifier supplied by the data provider.

*alternate_telephone_number in PDS_Affiliate* The telephone_number attribute provides a telephone number in international notation in compliance with the E.164 telephone number format recommendation.
**alternate_title in Alias** The alternate _title attribute provides an alternate title for the product.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Alias

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TITLE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

**altitude in Telescope** The altitude attribute provides the height of anything above a given reference plane.
Type: ASCII_Real

Unit of Measure Type: Units_of_Length

Valid Units: AU, Angstrom, cm, km, m, micrometer, mm, nm

Specified Unit Id: m

Class Name: Telescope

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

**aperture in Telescope** The aperture attribute provides the diameter of an opening, usually circular, that limits the quantity of light that can enter an optical instrument.

Type: ASCII_Real

Unit of Measure Type: Units_of_Length

Valid Units: AU, Angstrom, cm, km, m, micrometer, mm, nm

Specified Unit Id: m

Class Name: Telescope

Minimum Value: 0

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: REAL
application_process_id in Telemetry_Parameters The application_process_id attribute identifies the process, or source, which created the data.

Type: ASCII_Integer

Class Name: Telemetry_Parameters

Minimum Value: 0

Nullable: false

Attribute Concept: ID

Conceptual Domain: INTEGER

Steward: img

Namespace Id: img

application_process_name in Telemetry_Parameters The application_process_name attribute provides the name associated with the source or process which created the data.

Type: ASCII_Short_String_Collapsed

Class Name: Telemetry_Parameters

Minimum Characters: 1

Maximum Characters: 127

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING
archive_status in Data_Set_PDS3 The ARCHIVE_STATUS attribute indicates the stage to which a data set has progressed in the archiving process, from IN QUEUE through ARCHIVED. It can also take on the values SUPERSEDED or SAFED, which indicate that the data set is not part of the active archive. ACCUMULATING can be appended to some values to indicate that the data set is incomplete and/or that not all components have reached the stage given by the root value; ACCUMULATING would be used, for example, when the archive is being delivered incrementally, as from a mission that lasts many months or years.

Type: ASCII.Short_String.Collapsed

Class Name: Data_Set_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: STATUS

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: ARCHIVED, ARCHIVED_ACCUMULATING, IN_LIEN_RESOLUTION, IN_LIEN_RESOLUTION_ACCUMULATING, IN_PEER_REVIEW, IN_PEER_REVIEW_ACCUMULATING, IN_QUEUE, IN_QUEUE_ACCUMULATING, LOCALLY_ARCHIVED, LOCALLY_ARCHIVED_ACCUMULATING, PRE_PEER_REVIEW, PRE_PEER_REVIEW_ACCUMULATING, SAFED, SUPERSEDED
The ARCHIVE_STATUS attribute indicates the stage to which a data set has progressed in the archiving process, from IN QUEUE through ARCHIVED. It can also take on the values SUPERSEDED or SAFED, which indicate that the data set is not part of the active archive. ACCUMULATING can be appended to some values to indicate that the data set is incomplete and/or that not all components have reached the stage given by the root value; ACCUMULATING would be used, for example, when the archive is being delivered incrementally, as from a mission that lasts many months or years.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Volume_PDS3

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** STATUS

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**Value:** ARCHIVED, ARCHIVED_ACCUMULATING, IN_LIEN_RESOLUTION, IN_LIEN_RESOLUTION_ACCUMULATING, IN_PEER_REVIEW, IN_PEER_REVIEW_ACCUMULATING, IN_QUEUE, IN_QUEUE_ACCUMULATING, LOCALLY_ARCHIVED, LOCALLY_ARCHIVED_ACCUMULATING, PRE_PEER_REVIEW, PRE_PEER_REVIEW_ACCUMULATING, SAFED, SUPERSEDED

The archive status note attribute provides a comment about the archive status.

**Type:** ASCII_Text_Preserved
Class Name: Volume_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: NOTE

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

associated_Special_Constants in Array The associated_Special_Constants association is a relationship to special constants.

Type: Association

associated_Special_Constants in Field_Binary The associated_Special_Constants association is a relationship to special constants.

Type: Association

associated_Special_Constants in Field_Bit The associated_Special_Constants association is a relationship to special constants.

Type: Association

associated_Special_Constants in Field_Character The associated_Special_Constants association is a relationship to special constants.

Type: Association

associated_Special_Constants in Field_Delimited The associated_Special_Constants association is a relationship to special constants.
Type: Association

**associated_statistics in Array** The `associated_Object_Statistics` association is a relationship to object statistics.

Type: Association

**associated_statistics in Field_Binary** The `associated_Object_Statistics` association is a relationship to object statistics.

Type: Association

**associated_statistics in Field_Character** The `associated_Object_Statistics` association is a relationship to object statistics.

Type: Association

**associated_statistics in Field_Delimited** The `associated_Object_Statistics` association is a relationship to object statistics.

Type: Association

**attribute_concept in DD_Attribute_Full** The `attribute_concept` attribute provides the type of information (classification) conveyed by the attribute – e.g., `stop_date_time` has `attribute_concept = date_time`.

Type: ASCII_Short_String_Collapsed

*Class Name:* DD_Attribute_Full

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

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The author_list attribute provides a list of people to be cited as the authors of the associated product. Lists are constructed with last names first and first and middle names and/or initials following. Initials are terminated by periods and delimited by single spaces. Suffixes (if applicable) follow everything else, after a final comma. Hyphenated names may be reduced to initials as "J.-P." Each person’s full name is separated from the next by a semi-colon. There is no "and" before the last name. If there is no author list, editor_list must be present and non-null.

Type: UTF8_Text_Preserved

Class Name: Software

Minimum Characters: 1

Nillable: false

Attribute Concept: LIST

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

The author_list attribute provides a list of people to be cited as the authors of the associated product. Lists are constructed with last names first and first and middle names
and/or initials following. Initials are terminated by periods and delimited by single spaces. Suffixes (if applicable) follow everything else, after a final comma. Hyphenated names may be reduced to initials as "J.-P." Each person’s full name is separated from the next by a semi-colon. There is no "and" before the last name. If there is no author list, editor_list must be present and non-null.

Type: UTF8_Text_Preserved

Class Name: Citation_Information

Minimum Characters: 1

Nillable: false

Attribute Concept: LIST

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

**author_list in Document** The author_list attribute provides a list of people to be cited as the authors of the associated product. Lists are constructed with last names first and first and middle names and/or initials following. Initials are terminated by periods and delimited by single spaces. Suffixes (if applicable) follow everything else, after a final comma. Hyphenated names may be reduced to initials as "J.-P." Each person’s full name is separated from the next by a semi-colon. There is no "and" before the last name. If there is no author list, editor_list must be present and non-null.

Type: UTF8_Text_Preserved

Class Name: Document

Minimum Characters: 1

Nillable: false

Attribute Concept: LIST
Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

axes in Array The axes attribute provides a count of the axes.

Type: ASCII_Integer

Class Name: Array

Minimum Value: 1

Maximum Value: 16

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

axes in Array_2D The axes attribute provides a count of the axes.

Type: ASCII_Integer

Class Name: Array_2D

Minimum Value: 1

Maximum Value: 16

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER
axes in Array_3D  The axes attribute provides a count of the axes.

Type: ASCII_Integer

Class Name: Array_3D

Minimum Value: 1

Maximum Value: 16

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

axis_index_order in Array  The axis_index_order attribute provides the axis index that varies fastest with respect to storage order.

Type: ASCII_Short_String_Collapsed

Class Name: Array

Minimum Characters: 1

Maximum Characters: 255

Nullable: false
Attribute Concept: ORDER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Last Index Fastest

**axis_name in Axis_Array** The axis_name attribute provides a word or combination of words by which the axis is known.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Axis_Array

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

*Schematron Rule:* The name of the first axis of an Array_2d_Image must be set to either Line or Sample.

*Schematron Rule:* The name of the second axis of an Array_2d_Image must be set to either Line or Sample.

*Schematron Rule:* In an Array_3D_Spectrum, if the axis_name is 'Band', then the Band_Bin_Set class must be present.
**band_number in Band_Bin**  The band_number attribute provides a number corresponding to the band in the spectral cube. The band number is equivalent to the instrument band number.

*Type:* ASCII_Integer

*Class Name:* Band_Bin

*Minimum Value:* 1

*Maximum Value:* 512

*Nillable:* false

*Attribute Concept:* NUMBER

*Conceptual Domain:* INTEGER

*Steward:* img

*Namespace Id:* pds

**band_width in Band_Bin**  The band_width attributes provides the width, at half height, of the band.

*Type:* ASCII_Real

*Unit of Measure Type:* Units_of_Length

*Valid Units:* AU, Angstrom, cm, km, m, micrometer, mm, nm

*Class Name:* Band_Bin

*Minimum Value:* 0

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* REAL

*Steward:* img

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Namespace Id: pds

**bit_fields in Packed_Data_Fields** The bit_fields attribute provides the number of defined bit fields (Field_Bit definitions) within the Packed_Data_Field.

*Type*: ASCII_Integer

*Class Name*: Packed_Data_Fields

*Minimum Value*: 1

*Nillable*: false

*Attribute Concept*: COUNT

*Conceptual Domain*: INTEGER

*Steward*: pds

Namespace Id: pds

**bit_mask in Object_Statistics** The bit_mask attribute is a series of binary digits identifying the active bits in a value; it has exactly the same number of the bits as the array element to which it is applied.

*Type*: ASCII_Numeric_Base2

*Class Name*: Object_Statistics

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: MASK

*Conceptual Domain*: NUMERIC

*Steward*: pds
Namespace Id: pds

**bit_string in Digital_Object** The bit string attribute is a sequence of digital bits. It is the content of a digital object.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Digital_Object

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

Namespace Id: pds

**bundle_type in Bundle** The bundle_type attribute provides a classification for the bundle.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Bundle

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
**Namespace Id:** pds

**Value:** Archive, Supplemental

**center_wavelength in Band_Bin** The center_wavelength attribute provides the wavelength or frequency describing the center of a bin along the band axis of a spectral cube. When describing data from a spectrometer, the value corresponds to the peak of the response function for a particular detector and/or grating position.

**Type:** ASCII_Real

**Unit of Measure Type:** Units_of_Length

**Valid Units:** AU, Angstrom, cm, km, m, micrometer, mm, nm

**Class Name:** Band_Bin

**Minimum Value:** 0

**Nillable:** false

**Attribute Concept:** VALUE2

**Conceptual Domain:** REAL

**Steward:** img

**Namespace Id:** pds

**character_constraint in ASCII_AnyURI** The character_constraint attribute limits the characters allowed.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_AnyURI

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false
Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in ASCII.DOI The character_constraint attribute limits the characters allowed.

Type: ASCII.Short_String.Collapsed

Class Name: ASCII.DOI

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in ASCII.Date The character_constraint attribute limits the characters allowed.

Type: ASCII.Short_String.Collapsed

Class Name: ASCII.Date

Minimum Characters: 1

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Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_Date_DOY** The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_DOY

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_Date_Time** The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed
Class Name: ASCII_Date_Time

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_Date_Time_DOY** The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time_DOY

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

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character_constraint in ASCII_Date_Time.UTC The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time.UTC

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in ASCII_Date_Time.YMD The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time.YMD

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds
Namespace Id: pds

Value: ASCII

class_constraint in ASCII_Date_YMD The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_YMD

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

class_constraint in ASCII_Directory_Path_Name The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Directory_Path_Name

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in ASCII_File_Name The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_File_Name

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in ASCII_File_Specification_Name The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_File_Specification_Name

Minimum Characters: 1

Maximum Characters: 255
Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_Integer** The `character_constraint` attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Integer

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**character_constraint in ASCII_LID** The `character_constraint` attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_LID

Minimum Characters: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_LIDVID** The character_constraint attribute limits the characters allowed.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_LIDVID*

*Minimum Characters: 1*

*Maximum Characters: 255*

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_LIDVID_LID** The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed
Class Name: ASCII_LIDVID_LID

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_MD5_Checksum** The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_MD5_Checksum

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

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**character_constraint in ASCII_NonNegative_Integer** The character_constraint attribute limits the characters allowed.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_NonNegative_Integer*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: VALUE2*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*

**character_constraint in ASCII_Numeric_Base16** The character_constraint attribute limits the characters allowed.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_Numeric_Base16*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: VALUE2*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*
**character_constraint in ASCII_Numeric_Base2** The character_constraint attribute limits the characters allowed.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Numeric_Base2

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* ASCII

**character_constraint in ASCII_Numeric_Base8** The character_constraint attribute limits the characters allowed.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Numeric_Base8

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
Namespace Id: pds

Value: ASCII

(character_constraint in ASCII_Real) The character_constraint attribute limits the characters allowed.

Type: ASCII.Real

Class Name: ASCII.Real

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

(character_constraint in ASCII.Short_String.Collapsed) The character_constraint attribute limits the characters allowed.

Type: ASCII.Short.String.Collapsed

Class Name: ASCII.Short.String.Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING
character_constraint in ASCII_Short_String_Preserved  The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Short_String_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

count of Short String_Preserved The count_of_short_string attribute limits the number of characters allowed.

Type: ASCII_Short_Count_Preserved

Class Name: ASCII_Short_Count_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nillable: false
Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in ASCII_Text_Collapsed The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Text_Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in ASCII_Text_Preserved The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Text_Preserved

Minimum Characters: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

**character_constraint in ASCII_Time** The character_constraint attribute limits the characters allowed.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_Time*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: VALUE2*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*

*Value: ASCII*

**character_constraint in ASCII_VID** The character_constraint attribute limits the characters allowed.

*Type: ASCII_Short_String_Collapsed*
Class Name: ASCII_VID

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII

character_constraint in Character_Data_Type The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: Character_Data_Type

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

character_constraint in UTF8_Short_String_Collapsed The character_constraint attribute limits the characters allowed.
Type: ASCII_Short_String_Collapsed

Class Name: UTF8_Short_String_Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**character_constraint in UTF8_Short_String_Preserved** The character_constraint attribute limits the characters allowed.

Type: ASCII_Short_String_Collapsed

Class Name: UTF8_Short_String_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**character_constraint in UTF8_Text_Preserved** The character_constraint attribute limits the characters allowed.
Type: ASCII_Short_String_Collapsed

Class Name: UTF8_Text_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

character_encoding in ASCII_AnyURI The character_encoding attribute identifies the standard that maps a set of allowed characters to their machine readable code.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_AnyURI

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: UTF-8
**character_encoding in Character_Data_Type**  The character_encoding attribute identifies the standard that maps a set of allowed characters to their machine readable code.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Character_Data_Type

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* UTF-8

**checksum_manifest_checksum in Information_Package_Component**  The checksum manifest checksum provides the checksum for the checksum manifest file.

*Type:* ASCII_MD5_Checksum

*Class Name:* Information_Package_Component

*Minimum Characters:* 32

*Maximum Characters:* 32

*Format:* 0123456789abcdef

*Nillable:* false

*Attribute Concept:* CHECKSUM
**Conceptual Domain: SHORT_STRING**

**Steward:** ops

**Namespace Id:** pds

**checksum_type in Information_Package_Component** The checksum type attribute provides the name of the checksum algorithm used to calculate the checksum value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Information_Package_Component

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**citation_information in Identification_Area** The citation_information is a relationship to Citation.Information, fields often used in citing the product.

**Type:** Association

**citation_text in Data_Set_PDS3** The citation_text attribute provides a character string containing a literature or other citation in sufficient detail that the material could be located in PDS or elsewhere.

**Type:** ASCII_Text_Preserved

**Class Name:** Data_Set_PDS3
class_name in DD_Attribute_Full  The class_name attribute provides the common name by which the class is identified, as well as the class within which the attribute is used.

Type: ASCII_Short_String_Collapsed
Class Name: DD_Attribute_Full
Minimum Characters: 1
Maximum Characters: 255
Nullable: false
Attribute Concept: NAME
Conceptual Domain: SHORT_STRING
Steward: ops
Namespace Id: pds

collection_type in Collection  The collection_type attribute provides a classification for the collection.

Type: ASCII_Short_String_Collapsed
Class Name: Collection
Minimum Characters: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Browse, Calibration, Context, Data, Document, Geometry, Miscellaneous, SPICE Kernel, XML Schema

**comment in DD_Attribute** The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.

Type: ASCII_Text_Preserved

Class Name: DD_Attribute

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

**comment in DD_Attribute_Full** The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.

Type: ASCII_Text_Preserved

Class Name: DD_Attribute_Full

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Minimum Characters: 1

Nullable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

**comment in DD_Class_Full** The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.

*Type: ASCII_Text_Preserved*

*Class Name: DD_Class_Full*

*Minimum Characters: 1*

*Nullable: false*

*Attribute Concept: DESCRIPTION*

*Conceptual Domain: TEXT*

*Steward: ops*

*Namespace Id: pds*

**comment in Ingest_LDD** The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.

*Type: ASCII_Text_Preserved*

*Class Name: Ingest_LDD*

*Minimum Characters: 1*

*Nullable: false*
**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** ops

**Namespace Id:** pds

**comment in Alias** The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** Alias

**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**comment in Context.Area** The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** Context.Area

**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT
**Steward:** pds

**Namespace Id:** pds

**comment in File** The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* File

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

**Steward:** pds

**Namespace Id:** pds

**comment in Internal_Reference** The comment attribute provides one or more remarks or thoughts relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Internal_Reference

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

**Steward:** pds

**Namespace Id:** pds
**compile_note in Software_Source** The compile note attribute provides a brief statement giving particulars about the compilation of the software source.

*Type:* ASCII_Text_Preserved  
*Class Name:* Software_Source  
*Minimum Characters:* 1  
*Nullable:* false  
*Attribute Concept:* NOTE  
*Conceptual Domain:* TEXT  
*Steward:* ops  
*Namespace Id:* pds

**conceptual_domain in DD_Value_Domain_Full** The conceptual_domain attribute provides the domain to which the value has been assigned.

*Type:* ASCII_Short_String_Collapsed  
*Class Name:* DD_Value_Domain_Full  
*Minimum Characters:* 1  
*Maximum Characters:* 255  
*Nullable:* false  
*Attribute Concept:* VALUE2  
*Conceptual Domain:* SHORT_STRING  
*Steward:* ops  
*Namespace Id:* pds
Value: BOOLEAN, INTEGER, NAME, NUMERIC, REAL, SHORT_STRING, TEXT, TIME, TYPE, UNKNOWN

**confidence_level_note in Data_Set_PDS3** The **confidence_level_note** attribute is a text field which characterizes the reliability of data within a data set or the reliability of a particular programming algorithm or software component. Essentially, this note discusses the level of confidence in the accuracy of the data or in the ability of the software to produce accurate results.

*Type*: ASCII_Text_Preserved

*Class Name*: Data_Set_PDS3

*Minimum Characters*: 1

*Nillable*: false

*Attribute Concept*: NOTE

*Conceptual Domain*: TEXT

*Steward*: ops

*Namespace Id*: pds

**constant_value in DD_Association** The **constant_value** attribute provides the value to be used if an attribute is static.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: DD_Association

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: VALUE

*Conceptual Domain*: SHORT_STRING
**Steward:** ops

**Namespace Id:** pds

**container_type in Zip** The container type attribute indicates the method used to package the components.

*Type:* ASCII Short String Collapsed

*Class Name:* Zip

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT STRING

**Steward:** pds

**Namespace Id:** pds

*Value:* GZIP, LZIP, TAR, ZIP

**context_area in Product_Bundle** The context_area association is a relationship to Context_Area.

*Type:* Association

**context_area in Product_Collection** The context_area association is a relationship to Context_Area.

*Type:* Association

**context_area in Product_Document** The context_area association is a relationship to Context_Area.

*Type:* Association

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context_area in Product_SPICE_Kernel The context_area association is a relationship to Context_Area.

Type: Association

coordinate_source in Telescope The coordinate_source provides the name of the source of a set of coordinates.

Type: ASCII Short String Collapsed

Class Name: Telescope

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds


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**copyright in Document**  The copyright attribute is a character string giving information about the exclusive right to make copies, license, and otherwise exploit an object, whether physical or digital.

*Type:* ASCII_Text_Preserved

*Class Name:* Document

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**country in Facility**  country

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Facility

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

**creation_date_time in File**  The creation_date_time attribute provides a date and time when the object was created.
Type: ASCII_Date_Time

Class Name: File

Format: YYYYY-MM-DDTHH:MM:SSSS(Z)/YYYY-
DOYTHH:MM:SSSS(Z)

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: pds

Namespace Id: pds

**curating_node_id in Volume_PDS3** The curating_node_id attribute provides the id of the node currently maintaining the data set or volume and is responsible for maintaining catalog information.

Type: ASCII_Short_String_Collapsed

Class Name: Volume_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**data_object in DD_Attribute** The data_object association is a relationship to Data Object.
Type: Association

data_object in DD_Attribute_Full The data_object association is a relationship to Data Object.

Type: Association
data_object in DD_Class The data_object association is a relationship to Data Object.

Type: Association
data_object in DD_Class_Full The data_object association is a relationship to Data Object.

Type: Association
data_object in Data_Set_PDS3 The data_object association is a relationship to Data Object.

Type: Association
data_object in Ingest_LDD The data_object association is a relationship to Data Object.

Type: Association
data_object in Instrument_Host_PDS3 The data_object association is a relationship to Data Object.

Type: Association
data_object in Instrument_PDS3 The data_object association is a relationship to Data Object.

Type: Association
data_object in Mission_PDS3 The data_object association is a relationship to Data Object.

Type: Association
data_object in Software The data_object association is a relationship to Data Object.
Type: Association

data_object in Software_Binary The data_object association is a relationship to Data Object.

Type: Association

data_object in Software_Script The data_object association is a relationship to Data Object.

Type: Association

data_object in Software_Source The data_object association is a relationship to Data Object.

Type: Association

data_object in Target_PDS3 The data_object association is a relationship to Data Object.

Type: Association

data_object in Volume_PDS3 The data_object association is a relationship to Data Object.

Type: Association

data_object in Volume_Set_PDS3 The data_object association is a relationship to Data Object.

Type: Association

data_object in Agency The data_object association is a relationship to Data Object.

Type: Association

data_object in Array The data_object association is a relationship to Data Object.

Type: Association

data_object in Bundle The data_object association is a relationship to Data Object.
Type: Association

data_object in Document The data_object association is a relationship to Data Object.

Type: Association

data_object in Encoded_Byte_Stream The data_object association is a relationship to Data Object.

Type: Association

data_object in Facility The data_object association is a relationship to Data Object.

Type: Association

data_object in Field_Statistics The data_object association is a relationship to Data Object.

Type: Association

data_object in File The data_object association is a relationship to Data Object.

Type: Association

data_object in Geometry The data_object association is a relationship to Data Object.

Type: Association

data_object in Instrument The data_object association is a relationship to Data Object.

Type: Association

data_object in Instrument_Host The data_object association is a relationship to Data Object.

Type: Association

data_object in Investigation The data_object association is a relationship to Data Object.
Type: Association

**data_object in Node** The data_object association is a relationship to Data Object.

Type: Association

**data_object in Object_Statistics** The data_object association is a relationship to Data Object.

Type: Association

**data_object in Observing_System** The data_object association is a relationship to Data Object.

Type: Association

**data_object in Other** The data_object association is a relationship to Data Object.

Type: Association

**data_object in PDS_Affiliate** The data_object association is a relationship to Data Object.

Type: Association

**data_object in PDS_Guest** The data_object association is a relationship to Data Object.

Type: Association

**data_object in Parsable_Byte_Stream** The data_object association is a relationship to Data Object.

Type: Association

**data_object in Quaternion** The data_object association is a relationship to Data Object.

Type: Association

**data_object in Resource** The data_object association is a relationship to Data Object.

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Type: Association

data_object in Table_Base The data_object association is a relationship to Data Object.

Type: Association

data_object in Target The data_object association is a relationship to Data Object.

Type: Association

data_object in Update The data_object association is a relationship to Data Object.

Type: Association

data_object in Vector The data_object association is a relationship to Data Object.

Type: Association

data_regime in Primary_Result_Summary The data_regime attribute provides the wavelength (or an analogous concept for things like particle detectors) of the observations, stated as a category.

Type: ASCII_Short_String_Collapsed

Class Name: Primary_Result_Summary

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds
Value: Dust, Electric Field, Electrons, Far Infrared, Gamma Ray, Infrared, Ions, Magnetic Field, Microwave, Millimeter, Near Infrared, Particles, Pressure, Radio, Sub-Millimeter, Temperature, Ultraviolet, Visible, X-Ray

data_set_desc in Data_Set_PDS3 The data_set_desc attribute describes the content and type of a data set and provides information required to use the data (such as binning information).

Type: ASCII_Text_Preserved

Class Name: Data_Set_PDS3

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

data_set_id in Data_Set_PDS3 The data_set_id provides a formal name used to refer to a data set.

Type: ASCII_Short_String_Collapsed

Class Name: Data_Set_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING
data_set_name in Data_Set_PDS3  The data_set_name attribute provides the full name given to a data set or a data product. The data_set_name typically identifies the instrument that acquired the data of that instrument. Example value data_set_id. Note This attribute is defined in the AMMOS Magellan catalog as an alias for file_name to provide backward compatibility.

Type: ASCII.Short_String_Collapsed

Class Name: Data_Set_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

data_set_release_date in Data_Set_PDS3  The data_set_release_date attribute provides the date when a data set is released by the data producer for archive or publication. In many systems this represents the end of a proprietary or validation period. Formation rule In AMMOS identify the date at which a product may be released to the general public from proprietary access. AMMOS-related systems should apply this attribute only to proprietary data.

Type: ASCII.Short_String_Collapsed

Class Name: Data_Set_PDS3

Minimum Characters: 1

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Maximum Characters: 255

Nillable: false

Attribute Concept: DATE_TIME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

data_set_terse_desc in Data_Set_PDS3 A one line description of the data set

Type: ASCII_Text_Preserved

Class Name: Data_Set_PDS3

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

data_type in Element_Array The data_type attribute provides the hardware representation used to store a value.

Type: ASCII_Short_String_Collapsed

Class Name: Element_Array

Minimum Characters: 1

Maximum Characters: 255
**Nullable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** ComplexLSB16, ComplexLSB8, ComplexMSB16, ComplexMSB8, IEEE754LSBDouble, IEEE754LSBSingle, IEEE754MSBDouble, IEEE754MSBSingle, SignedBitString, SignedByte, SignedLSB2, SignedLSB4, SignedLSB8, SignedMSB2, SignedMSB4, SignedMSB8, UnsignedBitString, UnsignedByte, UnsignedLSB2, UnsignedLSB4, UnsignedLSB8, UnsignedMSB2, UnsignedMSB4, UnsignedMSB8

**data.type in Field_Binary** The data_type attribute provides the hardware representation used to store a value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Field_Binary

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds
Value: ASCII_AnypURI, ASCII_Boolean, ASCII_DOI, ASCII_Date, ASCII_Date_DOY, ASCII_Date_Time, ASCII_Date_Time_DOY, ASCII_Date_Time.UTC, ASCII_Date_Time_YMD, ASCII_Date_YMD, ASCII_Directory_Path_Name, ASCII_File_Name, ASCII_File_Specification_Name, ASCII_Integer, ASCII_LID, ASCII_LIDVID, ASCII_LIDVID_LID, ASCII_MD5_Checksum, ASCII_NonNegative_Integer, ASCII_Numeric_Base16, ASCII_Numeric_Base2, ASCII_Numeric_Base8, ASCII_Real, ASCII_String, ASCII_Time, ASCII_VID, ComplexLSB16, ComplexLSB8, ComplexMSB16, ComplexMSB8, IEEE754LSBDouble, IEEE754LSBSingle, IEEE754MSBDouble, IEEE754MSBSingle, SignedBitString, SignedByte, SignedLSB2, SignedLSB4, SignedLSB8, SignedMSB2, SignedMSB4, SignedMSB8, UTF8_String, UnsignedBitString, UnsignedByte, UnsignedLSB2, UnsignedLSB4, UnsignedLSB8, UnsignedMSB2, UnsignedMSB4, UnsignedMSB8

data_type in Field_Bit The data_type attribute provides the hardware representation used to store a value.

Type: ASCII_Short_String_Collapsed

Class Name: Field_Bit

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: SignedBitString, UnsignedBitString

data_type in Field_Character The data_type attribute provides the hardware representation used to store a value.
**Type:** ASCII\_Short\_String\_Collapsed

**Class Name:** Field\_Character

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT\_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** ASCII\_AnyURI, ASCII\_Boolean, ASCII\_DOI, ASCII\_Date, ASCII\_Date\_DOY, ASCII\_Date\_Time, ASCII\_Date\_Time\_DOY, ASCII\_Date\_Time\_UTC, ASCII\_Date\_Time\_YMD, ASCII\_Date\_YMD, ASCII\_Directory\_Path\_Name, ASCII\_File\_Name, ASCII\_File\_Specification\_Name, ASCII\_Integer, ASCII\_LID, ASCII\_LIDVID, ASCII\_LIDVID\_LID, ASCII\_MD5\_Checksum, ASCII\_NonNegative\_Integer, ASCII\_Numeric\_Base16, ASCII\_Numeric\_Base2, ASCII\_Numeric\_Base8, ASCII\_Real, ASCII\_String, ASCII\_Time, ASCII\_VID, UTF8\_String

**data\_type in Field\_Delimited** The data\_type attribute provides the hardware representation used to store a value.

**Type:** ASCII\_Short\_String\_Collapsed

**Class Name:** Field\_Delimited

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** TYPE
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII_AnyURI, ASCII_Boolean, ASCII.DOI, ASCII_Date, ASCII_Date_DOY, ASCII_Date_Time, ASCII_Date_Time.DOY, ASCII_Date_Time.UTC, ASCII_Date_Time.YMD, ASCII_Date_YMD, ASCII_Directory_Path_Name, ASCII_File_Name, ASCII_File_Specification_Name, ASCII_Integer, ASCII_CID, ASCII_CIDVID, ASCII_CIDVID_CID, ASCII_MD5_Checksum, ASCII_NonNegative_Integer, ASCII_Numeric_Base16, ASCII_Numeric_Base2, ASCII_Numeric_Base8, ASCII_Real, ASCII_String, ASCII_Time, ASCII_CID, UTF8_String

data_type in Quaternion_Component The data_type attribute provides the hardware representation used to store a value.

Type: ASCII_Short_String_Collapsed

Class Name: Quaternion_Component

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII_Real

data_type in Vector The data_type attribute provides the hardware representation used to store a value.
Type: ASCII_Short_String_Collapsed

Class Name: Vector

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ASCII_Real

date_time in Update_Entry The date_time attribute provides the date and time of an event.

Type: ASCII_Date_Time

Class Name: Update_Entry

Format: YYYY-MM-DDTHH:MM:SS.SSS(Z)/YYYY-DOYTHH:MM:SS.SSS(Z)

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: pds

Namespace Id: pds
**dd_association in DD_Class** The local_association_attribute association provides a relationship to an attribute.

*Type: Association*

**dd_association in DD_Class_Full** The local_association_attribute association provides a relationship to an attribute.

*Type: Association*

**definition in DD_Attribute** The definition attribute provides a statement, picture in words, or account that defines the term.

*Type: ASCII_Text_Preserved*

*Class Name: DD_Attribute*

*Minimum Characters: 1*

*Nillable: false*

*Attribute Concept: DESCRIPTION*

*Conceptual Domain: TEXT*

*Steward: ops*

*Namespace Id: pds*

**definition in DD_Attribute_Full** The definition attribute provides a statement, picture in words, or account that defines the term.

*Type: ASCII_Text_Preserved*

*Class Name: DD_Attribute_Full*

*Minimum Characters: 1*

*Nillable: false*

*Attribute Concept: DESCRIPTION*
**Conceptual Domain:** TEXT

**Steward:** ops

**Namespace Id:** pds

**definition in DD_Class** The definition attribute provides a statement, picture in words, or account that defines the term.

*Type:* ASCII_Text_Preserved

*Class Name:* DD_Class

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** ops

**Namespace Id:** pds

**definition in DD_Class_Full** The definition attribute provides a statement, picture in words, or account that defines the term.

*Type:* ASCII_Text_Preserved

*Class Name:* DD_Class_Full

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** ops

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Namespace Id: pds

definition in Terminological_Entry The definition attribute provides a statement, picture in words, or account that defines the term.

Type: UTF8_Text_Preserved

Class Name: Terminological_Entry

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

description in Information_Package The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Information_Package

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

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description in Node The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Node

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

description in PDS_Affiliate The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: PDS_Affiliate

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds
description in PDS_Guest  The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

  Type: ASCII_Text_Preserved

  Class Name: PDS_Guest

  Minimum Characters: 1

  Nillable: false

  Attribute Concept: DESCRIPTION

  Conceptual Domain: TEXT

  Steward: ops

  Namespace Id: pds

description in Software  The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

  Type: ASCII_Text_Preserved

  Class Name: Software

  Minimum Characters: 1

  Nillable: false

  Attribute Concept: DESCRIPTION

  Conceptual Domain: TEXT

  Steward: ops

  Namespace Id: pds
**description in Volume_PDS3** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Volume_PDS3

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* ops

*Namespace Id:* pds

**description in Volume_Set_PDS3** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Volume_Set_PDS3

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* ops

*Namespace Id:* pds
**description in Agency** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Agency

*Minimum Characters:* 1

*Nullable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**description in Array** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Array

*Minimum Characters:* 1

*Nullable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds
**description in Bundle** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Bundle

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**description in Citation.Information** The description attribute provides a short (5KB or less) description of the product as a whole.

*Type:* UTF8_Text_Preserved

*Class Name:* Citation.Information

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

*Schematron Rule:* The description in Citation.Information must be greater than 1 and less than 5000 bytes (not counting spaces).
Schematron Rule: In Product_Bundle a description is required in Citation_Information.

Schematron Rule: In Product_Collection a description is required in Citation_Information.

Schematron Rule: In Product_Document a description is required in Citation_Information.

Schematron Rule: In Product_File_Text a description is required in Citation_Information.

description in Collection The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved  
Class Name: Collection  
Minimum Characters: 1  
Nullable: false  
Attribute Concept: DESCRIPTION  
Conceptual Domain: TEXT  
Steward: pds  
Namespace Id: pds

description in Document The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved  
Class Name: Document  
Minimum Characters: 1
**Nullable**: false

**Attribute Concept**: DESCRIPTION

**Conceptual Domain**: TEXT

**Steward**: pds

**Namespace Id**: pds

description in Document_Format The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type**: ASCII_Text_Preserved

**Class Name**: Document_Format

**Minimum Characters**: 1

**Nullable**: false

**Attribute Concept**: DESCRIPTION

**Conceptual Domain**: TEXT

**Steward**: pds

**Namespace Id**: pds

description in Encoded_Body_Stream The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type**: ASCII_Text_Preserved

**Class Name**: Encoded_Body_Stream

**Minimum Characters**: 1

**Nullable**: false
**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**description in External Reference** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** External_Reference

**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**description in Facility** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** Facility

**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION
**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**description in Field_Binary** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** Field_Binary

**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**description in Field_Bit** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** Field_Bit

**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT
description in Field_Character The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Field_Character

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

Steward: pds

Namespace Id: pds

description in Field_Delimited The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Field_Delimited

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

Steward: pds

Namespace Id: pds
Namespace Id: pds

description in Field_Statistics The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Field_Statistics

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

description in Instrument The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Instrument

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds
**description in Instrument_Host** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Instrument_Host

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**description in Investigation** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Investigation

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds
description in Modification_Detail The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Modification_Detail

Minimum Characters: 1

Nullable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

description in Object_Statistics The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Object_Statistics

Minimum Characters: 1

Nullable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds
**description in Observing_System** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Observing_System

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**description in Observing_System_Component** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Observing_System_Component

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds
**description in Other** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Other

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**description in Packed_Data.Fields** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Packed_Data.Fields

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds
**description in Parsable.Byte_Stream** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII.Text.Preserved  
*Class Name:* Parsable.Byte_Stream  
*Minimum Characters: 1*  
* Nullable: false*  
*Attribute Concept:* DESCRIPTION  
*Conceptual Domain:* TEXT  
*Steward:* pds  
*Namespace Id: pds*

**description in Primary.Result.Summary** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII.Short.String.Preserved  
*Class Name:* Primary.Result.Summary  
*Minimum Characters: 1*  
*Maximum Characters: 255*  
* Nullable: false*  
*Attribute Concept:* DESCRIPTION  
*Conceptual Domain:* SHORT.STRING  
*Steward:* pds  
*Namespace Id: pds*
description in Quaternion The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Quaternion

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

description in Quaternion_Component The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Quaternion_Component

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

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description in Resource  The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Resource

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

description in Table_Base  The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Table_Base

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds
**description in Target** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

*Type:* ASCII_Text_Preserved

*Class Name:* Target

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**description in Target_Identification** The description attribute provides additional information or clarification, as needed.

*Type:* ASCII_Text_Preserved

*Class Name:* Target_Identification

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* DESCRIPTION

*Conceptual Domain:* TEXT

*Steward:* pds

*Namespace Id:* pds

**description in Telescope** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.
Type: ASCII_Short_String_Collapsed

Class Name: Telescope

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Steward: pds

Namespace Id: pds

description in Update The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Update

Minimum Characters: 1

Nullable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

description in Update_Entry The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Update_Entry
**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**description in Vector** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** Vector

**Minimum Characters:** 1

**Nillable:** false

**Attribute Concept:** DESCRIPTION

**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**description in Vector_Component** The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

**Type:** ASCII_Text_Preserved

**Class Name:** Vector_Component

**Minimum Characters:** 1
Nullable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

description in Zip The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.

Type: ASCII_Text_Preserved

Class Name: Zip

Minimum Characters: 1

Nullable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

detector_number in Band_Bin The detector_number attribute provides the spectrometer detector number corresponding to a band of a spectral qube. Detector numbers are usually assigned consecutively from 1, in order of increasing wavelength.

Type: ASCII_Integer

Class Name: Band_Bin

Minimum Value: 1

Nullable: false
Attribute Concept: NUMBER

Conceptual Domain: INTEGER

Steward: img

Namespace Id: pds

directory_path_name in Document_File The directory_path_name attribute provides a sequence of names that locates a directory in a hierarchy of directories.

Type: ASCII_Short_String_Collapsed

Class Name: Document_File

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

document_file in Document_Format_Set The document_file association is a relationship to a document file.

Type: Association

document_format in Document_Format_Set The document_format attribute associates a Document_Format with the Document_Format_Set.

Type: Association
**document_format_set in Product_Document**  The document_format_set association is a relationship to a set of one or more document formats.

_Type:_ Association

**document_name in Document**  The document_title attribute provides the full name of the published document. This optional attribute is used only if the title in the identification area of the document product is not sufficient.

_Type:_ UTF8_Text_Preserved

_Class Name:_ Document

_Minimum Characters:_ 1

_Nillable:_ false

_Attribute Concept:_ NAME

_Conceptual Domain:_ TEXT

_Steward:_ pds

_Namespace Id:_ pds

**document_standard_id in Document_File**  The document_standard_id attribute provides the formal name of a standard used for the structure of a document file.

_Type:_ ASCII_Short_String_Collapsed

_Class Name:_ Document_File

_Minimum Characters:_ 1

.MAXIMUM Characters:_ 255

_Nillable:_ false

_Attribute Concept:_ ID
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 7-Bit ASCII Text, Encapsulated Postscript, GIF, HTML 2.0, HTML 3.2, HTML 4.0, HTML 4.01, JPEG, LaTeX, Microsoft Word, PDF, PDF/A, PNG, Postscript, Rich Text, TIFF, UTF-8 Text

doi in Document The doi attribute provides the Digital Object Identifier for an object, assigned by the appropriate DOI System Registration Agency.

Type: ASCII_Short_String_Collapsed

Class Name: Document

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: DOI

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

doi in External Reference The doi attribute provides the Digital Object Identifier for an object, assigned by the appropriate DOI System Registration Agency.

Type: ASCII_Short_String_Collapsed

Class Name: External_Reference

Minimum Characters: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: DOI

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

date_of_earth_received_start in Telemetry_Parameters The
date_of_earth_received_start attribute provides the earliest time at
which any component telemetry data for a particular product was
received.

Type: ASCII_Date_Time.UTC

Class Name: Telemetry_Parameters

Format:
YYYY-MM-DDTHH:MM:SS.SSSZ/YYYY-DOYTHH:MM:SS.SSSZ

Nillable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: img

Namespace Id: img

date_of_earth_received_stop in Telemetry_Parameters The
date_of_earth_received_stop attribute provides the latest time at
which any component telemetry data for a particular product was
received.

Type: ASCII_Date_Time.UTC

Class Name: Telemetry_Parameters
Format:
YYYY-MM-DDTHH:MM:SS.SSSZ/YYYY-DOYTHH:MM:SS.SSSZ

Nilable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: img

Namespace Id: img

editor_list in Citation_Information The editor_list attribute provides a list of people to be cited as the editors of the associated product. Lists are constructed with last names first and first and middle names and/or initials following. Initials are terminated by periods and delimited by single spaces. Suffixes (if applicable) follow everything else, after a final comma. Hyphenated names may be reduced to initials as “J.-P.” Each person’s full name is separated from the next by a semi-colon. There is no “and” before the last name.

Type: UTF8_Text_Preserved

Class Name: Citation_Information

Minimum Characters: 1

Nilable: false

Attribute Concept: LIST

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

defeditor_list in Document The editor_list attribute provides a list of people to be cited as the editors of the associated product. Lists are constructed with last names first and first and middle names and/or initials following. Initials are terminated by periods and delimited by single spaces. Suffixes (if applicable) follow everything else, after a final comma. Hyphenated names may be reduced to initials as “J.-P.” Each person’s full name is separated from the next by a semi-colon. There is no “and” before the last name.
Type: UTF8_Text_Preserved

Class Name: Document

Minimum Characters: 1

Nullable: false

Attribute Concept: LIST

Conceptual Domain: TEXT

Steward: pds

Namespace Id: pds

electronic_mail_address in PDS_Affiliate  The electronic mail address attribute provides a multi-part email address: the first part (the user name), which identifies a unique user, is separated by an "at sign" from the host name, which uniquely identifies the mail server.

Type: ASCII_Short_String_Collapsed

Class Name: PDS_Affiliate

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ADDRESS

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

electronic_mail_address in PDS_Guest  The electronic mail address attribute provides a multi-part email address: the first part (the user name), which identifies a unique user, is separated by an "at sign" from the host name, which uniquely identifies the mail server.
Type: ASCII_Short_String_Collapsed

Class Name: PDS_Guest

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ADDRESS

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**elements in Axis_Array** The elements attribute provides the count of the number of elements along an array axis.

Type: ASCII_Integer

Class Name: Axis_Array

Minimum Value: 1

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

**encoding_standard_id in Encoded_Binary** The encoding_standard_id attribute provides the formal name of a standard used for the structure of an Encoded Byte Stream digital object.

Type: ASCII_Short_String_Collapsed
Class Name: Encoded_Binary

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: CCSDS Communication Protocols

encoding_standard_id in Encoded_Byte_Stream The encoding_standard_id attribute provides the formal name of a standard used for the structure of an Encoded Byte Stream digital object.

Type: ASCII_Short_String_Collapsed

Class Name: Encoded_Byte_Stream

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds
**encoding_standard_id in Encoded_Header** The `encoding_standard_id` attribute provides the formal name of a standard used for the structure of an Encoded Byte Stream digital object.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Encoded_Header

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* TIFF

**encoding_standard_id in Encoded_Image** The `encoding_standard_id` attribute provides the formal name of a standard used for the structure of an Encoded Byte Stream digital object.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Encoded_Image

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING
The encoding_type attribute provides the storage format (binary or character).

**Type:** ASCII_Short_String_Collapsed

**Class Name:** SPICE_Kernel

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

The enumeration_flag attribute indicates whether there is an enumerated set of permissible values.

**Type:** ASCII_Boolean

**Class Name:** DD_Value_Domain

**Nullable:** false

**Attribute Concept:** FLAG

**Conceptual Domain:** BOOLEAN

**Steward:** ops

**Namespace Id:** pds

**Value:** Binary, Character

Steward: pds

Namespace Id: pds

Value: GIF, J2C, JPEG, PDF, PDF/A, PNG, TIFF
**enumeration_flag in DD_Value_Domain_Full** The enumeration_flag attribute indicates whether there is an enumerated set of permissible values.

*Type:* ASCII_Boolean

*Class Name:* DD_Value_Domain_Full

*Nillable:* false

*Attribute Concept:* FLAG

*Conceptual Domain:* BOOLEAN

*Steward:* ops

*Namespace Id:* pds

**error_constant in Special_Constants** The error_constant attribute provides a value that indicates the original value was in error.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Special_Constants

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* CONSTANT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

**expected_packets in Telemetry_Parameters** The expected_packets attribute provides the total number of telemetry packets which constitute a complete data product, i.e., a data product without missing data.
Type: ASCII_Integer

Class Name: Telemetry_Parameters

Minimum Value: 0

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: img

Namespace Id: img

**external_reference in Observing_System_Component** The external_reference association is a relationship to External_Reference.

Type: Association

**external_reference in Reference_List** The external_reference association is a relationship to External_Reference.

Type: Association

**field_delimiter in Table_Delimited** The field_delimiter attribute provides the character or characters that indicate the end of a character string.

Type: ASCII_Short_String_Collapsed

Class Name: Table_Delimited

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: DELIMITER
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: comma, horizontal tab, semicolon, vertical bar

field_format in Field.Binary The field_format attribute gives the magnitude and precision of the data value. The standard POSIX string formats are used.

Type: ASCII_Short_String_Collapsed

Class Name: Field.Binary

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: FORMAT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

field_format in Field.Bit The field_format attribute gives the magnitude and precision of the data value. The standard POSIX string formats are used.

Type: ASCII_Short_String_Collapsed

Class Name: Field.Bit

Minimum Characters: 1

Maximum Characters: 255
**Nillable:** false

**Attribute Concept:** FORMAT

**Conceptual Domain:** SHORT STRING

**Steward:** pds

**Namespace Id:** pds

**field_format in Field_Character** The `field_format` attribute gives the magnitude and precision of the data value. The standard POSIX string formats are used.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Field_Character

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** FORMAT

**Conceptual Domain:** SHORT STRING

**Steward:** pds

**Namespace Id:** pds

**field_format in Field_Delimited** The `field_format` attribute gives the magnitude and precision of the data value. The standard POSIX string formats are used.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Field_Delimited

**Minimum Characters:** 1
Maximum Characters: 255

Nillable: false

Attribute Concept: FORMAT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**field_length in Field_Binary** The field_length attribute provides the number of bytes in the field.

Type: ASCII_Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Field_Binary

Minimum Value: 1

Nillable: false

Attribute Concept: LENGTH

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

**field_length in Field_Character** The field_length attribute provides the number of bytes in the field.

Type: ASCII_Integer
**Unit of Measure Type:** Units_of_Storage

**Valid Units:** byte

**Specified Unit Id:** byte

**Class Name:** Field_Character

**Minimum Value:** 1

**Nillable:** false

**Attribute Concept:** LENGTH

**Conceptual Domain:** INTEGER

**Steward:** pds

**Namespace Id:** pds

**field_location in Field_Binary** The field_location attribute provides the starting byte for a field within a record or group, counting from ’1’.

**Type:** ASCIIInteger

**Unit of Measure Type:** Units_of_Storage

**Valid Units:** byte

**Specified Unit Id:** byte

**Class Name:** Field_Binary

**Minimum Value:** 1

**Nillable:** false

**Attribute Concept:** LOCATION

**Conceptual Domain:** INTEGER
field_location in Field_Character The field_location attribute provides the starting byte for a field within a record or group, counting from '1'.

Type: ASCII Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Field_Character

Minimum Value: 1

Nillable: false

Attribute Concept: LOCATION

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

field_number in Field The field_number attribute provides the position of a field, within a series of fields, counting from 1. If two fields within a record are physically separated by one or more groups, they have consecutive field numbers; the fields within the intervening group(s) are numbered separately. Fields within a group separated by one or more (sub)groups, will also have consecutive field numbers.

Type: ASCII Integer

Class Name: Field

Minimum Value: 1
Fields in Group: The fields attribute provides a count of the total number of scalar fields directly associated with a group. Fields within (sub)groups of the group are not included in this count.

Type: ASCII_Integer

Class Name: Group

Minimum Value: 1

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

Fields in Record: The fields attribute provides a count of the total number of scalar fields directly associated with a table record. Fields within groups within the record are not included in this count.

Type: ASCII_Integer

Class Name: Record

Minimum Value: 1

Nillable: false
Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

file in Product_Zipped The file association is a relationship to File.

Type: Association

file_area in Product_File_Repository The file_area association is a relationship to File Area

Type: Association

file_area in Product_Proxy_PDS3 The file_area association is a relationship to File Area

Type: Association

file_area in Product_Service The file_area association is a relationship to File Area

Type: Association

file_area in Product_Browse The file_area association is a relationship to File Area

Type: Association

file_area in Product_Bundle The file_area association is a relationship to File Area

Type: Association

file_area in Product_File_Text The file_area association is a relationship to File Area

Type: Association

file_area in Product_Observational The file_area association is a relationship to File Area
Type: Association

file_area in Product_SPICE_Kernel The file_area association is a relationship to File Area

Type: Association

file_area in Product_Thumbnail The file_area association is a relationship to File Area

Type: Association

file_area in Product_XML_Schema The file_area association is a relationship to File Area

Type: Association

file_area_inventory in Product_Collection The file_area association is a relationship to File Area

Type: Association

file_area_supplemental in Product_Observational The file_area_supplemental association is a relationship to File Area Supplemental.

Type: Association

file_name in File The file_name attribute provides the name of a file.

Type: ASCII Short String Collapsed

Class Name: File

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: NAME

Conceptual Domain: SHORT STRING
file_size in File  The file_size attribute provides the size of the file.

  Type: ASCII_NonNegative_Integer

  Unit of Measure Type: Units_of_Storage

  Valid Units: byte

  Specified Unit Id: byte

  Class Name: File

  Minimum Value: 0

  Nullable: false

  Attribute Concept: SIZE

  Conceptual Domain: INTEGER

files in Software_Binary  The files attribute provides the number of files.

  Type: ASCII_Integer

  Class Name: Software_Binary

  Minimum Value: 1

  Nullable: false

  Attribute Concept: COUNT

  Conceptual Domain: INTEGER

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files in Software.Script  The files attribute provides the number of files.

Type: ASCII.Integer

Class Name: Software.Script

Minimum Value: 1

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: ops

Namespace Id: pds

files in Software.Source  The files attribute provides the number of files.

Type: ASCII.Integer

Class Name: Software.Source

Minimum Value: 1

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: ops

Namespace Id: pds
filter_number in Band_Bin The filter_number attribute of a spectral qube describes the physical location of a band (identified by the band_number) in a detector array. Filter 1 is on the leading edge of the array.

Type: ASCII_Integer

Class Name: Band_Bin

Minimum Value: 1

Nillable: false

Attribute Concept: NUMBER

Conceptual Domain: INTEGER

Steward: img

Namespace Id: pds

first_sampling_parameter_value in Uniformly_Sampled The first_sampling_parameter_value element provides the first value in an ascending series and is therefore the minimum value at which a given data item was sampled.

Type: ASCII_Real

Class Name: Uniformly_Sampled

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

format_type in Document_Format The format_type attribute indicates the digital format used.
*Type:* ASCII_Short_String_Collapsed

*Class Name:* Document_Format

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* multiple file, single file

**formation_rule in DD_Value_Domain** The formation_rule attribute provides a 'user friendly' instruction for forming values.

*Type:* ASCII_Text_Collapsed

*Class Name:* DD_Value_Domain

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* TEXT

*Steward:* ops

*Namespace Id:* pds

**formation_rule in DD_Value_Domain_Full** The formation_rule attribute provides a 'user friendly' instruction for forming values.
Type: ASCII_Text_Collapsed

Class Name: DD_Value_Domain_Full

Minimum Characters: 1

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

**formation_rule in ASCII_DOI** The formation_rule attribute provides a 'user friendly' instruction for forming values.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_DOI

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: mm.mnn/nnn

**formation_rule in ASCII_Date** The formation_rule attribute provides a 'user friendly' instruction for forming values.
**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** VALUE2

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** YYYY-MM-DD/YYYY-DOY

**formation_rule in ASCII_Date_DOY** The formation_rule attribute provides a 'user friendly' instruction for forming values.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_DOY

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** VALUE2

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds
Value: YYYY-DOY

**formation_rule in ASCII_Date_Time** The formation_rule attribute provides a 'user friendly' instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* YYYY-MM-DDTHH:MM:SS.SSS(Z)/YYYY-DOYTHH:MM:SS.SSS(Z)

**formation_rule in ASCII_Date_Time_DOY** The formation_rule attribute provides a 'user friendly' instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time_DOY

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING
formation_rule in ASCII_Date_Time.UTC The formation_rule attribute provides a 'user friendly' instruction for forming values.

Type: ASCII.Short_String.Collapsed

Class Name: ASCII_Date_Time.UTC

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value:
YYYY-MM-DDTHH:MM:SS.SSSZ/YYYY-DOYTHH:MM:SS.SSSSZ

formation_rule in ASCII_Date_Time_YMD The formation_rule attribute provides a 'user friendly' instruction for forming values.

Type: ASCII.Short_String.Collapsed

Class Name: ASCII_Date_Time_YMD

Minimum Characters: 1

Maximum Characters: 255

Nullable: false
**Attribute Concept:** VALUE2

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** YYYY-MM-DDTHH:MM:SS.SSS(Z)

**formation_rule in ASCII_Date_YMD** The formation_rule attribute provides a 'user friendly' instruction for forming values.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_YMD

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** VALUE2

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** YYYY-MM-DD

**formation_rule in ASCII_Directory_Path_Name** The formation_rule attribute provides a 'user friendly' instruction for forming values.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Directory_Path_Name

**Minimum Characters:** 1
Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: dir1/dir2/

**formation_rule in ASCII_File_Name** The formation_rule attribute provides a ‘user friendly’ instruction for forming values.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_File_Name*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: VALUE2*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*

*Value: file_name.file_extension*

**formation_rule in ASCII_File_Specification_Name** The formation_rule attribute provides a ‘user friendly’ instruction for forming values.

*Type: ASCII_Short_String_Collapsed*
Class Name: ASCII_File_Specification_Name

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: dir1/dir2/file_name.file_extension

formation_rule in ASCII_LID The formation_rule attribute provides a 'user friendly' instruction for forming values.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_LID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: urn:nasa:pds:xxxx
formation_rule in ASCII_LIDVID The formation_rule attribute provides a ‘user friendly’ instruction for forming values.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_LIDVID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: urn:nasa:pds:xxxx::M.n

formation_rule in ASCII_LIDVID_LID The formation_rule attribute provides a ‘user friendly’ instruction for forming values.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_LIDVID_LID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds
*Namespace Id:* pds

*Value:*urn:nasa:pds:xxxx, urn:nasa:pds:xxxx::M.n

**formation_rule in ASCII_MD5_Checksum** The formation_rule attribute provides a ’user friendly’ instruction for forming values.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* ASCII_MD5_Checksum

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 0123456789abcdef

**formation_rule in ASCII_Time** The formation_rule attribute provides a ’user friendly’ instruction for forming values.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* ASCII_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: HH:MM:SS.SSS

**formation_rule in ASCII_VID** The formation_rule attribute provides a 'user friendly' instruction for forming values.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_VID*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: VALUE2*

**Conceptual Domain: SHORT_STRING**

Steward: pds

Namespace Id: pds

Value: M.m

**formation_rule in Character_Data_Type** The formation_rule attribute provides a 'user friendly' instruction for forming values.

*Type: ASCII_Short_String_Collapsed*

*Class Name: Character_Data_Type*

*Minimum Characters: 1*

*Maximum Characters: 255*
Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

full_name in Ingest_LDD The full_name attribute provides the complete name for a person and includes titles and suffixes.

Type: ASCII.Short_String.Collapsed

Class Name: Ingest.LDD

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

full_name in Subscriber_PDS3 The full_name attribute provides the complete name for a person and includes titles and suffixes.

Type: ASCII.Short_String.Collapsed

Class Name: Subscriber_PDS3

Minimum Characters: 1

Maximum Characters: 255
**full_name in Update_Entry** The `full_name` attribute provides the complete name for a person and includes titles and suffixes.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Update_Entry

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**grating_position in Band_Bin** The `grating_position` attribute of a spectral qube describes the grating position which corresponds to the band. Grating positions are usually assigned consecutively from 0, and increasing position causes increasing wavelength for each detector.

*Type:* ASCII_Integer

*Class Name:* Band_Bin

*Minimum Value:* 0
Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: INTEGER

Steward: img

Namespace Id: pds

group_length in Group_Field_Binary The group_length attribute provides the total length, in bytes, of a repeating field and/or group structure. It is the number of bytes in the repeating fields/groups plus any embedded unused bytes that are also repeated multiplied by the number of repetitions.

Type: ASCII_Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Group_Field_Binary

Minimum Value: 1

Nillable: false

Attribute Concept: LENGTH

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

group_length in Group_Field_Character The group_length attribute provides the total length, in bytes, of a repeating field and/or group structure. It is the number of bytes in the repeating fields/groups plus any embedded unused bytes that are also repeated multiplied by the number of repetitions.
Type: ASCII_Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Group_Field_Character

Minimum Value: 1

Nillable: false

Attribute Concept: LENGTH

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

group_location in Group_Field_Binary The group_location attribute provides the starting position for a Group_Field_Binary within the containing Record_Binary or Group_Field_Binary class, in bytes. Location ”1” denotes the first byte of the containing class.

Type: ASCII_Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Group_Field_Binary

Minimum Value: 1

Nillable: false
Attribute Concept: LOCATION

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

group_location in Group_Field_Character The group_location attribute provides the starting position for a Group_Field_Character within the containing Record_Character or Group_Field_Character class, in bytes. Location "1" denotes the first byte of the containing class.

Type: ASCII_Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Group_Field_Character

Minimum Value: 1

Nillable: false

Attribute Concept: LOCATION

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

group_number in Group The group_number attribute provides the position of a group, within a series of groups, counting from 1. If two groups within a record are physically separated by one or more fields, they have consecutive group numbers; the intervening fields are numbered separately. Groups within a parent group, but separated by one or more fields, will also have consecutive group numbers.
Type: ASCII_Integer

Class Name: Group

Nillable: false

Attribute Concept: NUMBER

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

**groups in Group** The groups attribute provides a count of the number of (sub)groups within the repeating structure of a group. (Subsub)groups within (sub)groups within the group are not included in this count.

Type: ASCII_Integer

Class Name: Group

Minimum Value: 0

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

**groups in Record** The groups attribute provides a count of the total number of groups directly associated with a table record. Groups within groups within the record are not included in this count.

Type: ASCII_Integer

Class Name: Record
Minimum Value: 0

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

has.Axis.Array in Array The has.Axis.Array association is a relationship to Axis.Array.

Type: Association

has.Axis.Array in Array.2D The has.Axis.Array association is a relationship to Axis.Array.

Type: Association

has.Axis.Array in Array.3D The has.Axis.Array association is a relationship to Axis.Array.

Type: Association


Type: Association

has.Character.Field in Record.Character The has.Character.Field association is a relationship to the field types.

Type: Association


Type: Association
**has_Delimited_Field in Record_Delimited**  The has_Delimited_Field association is a relationship to field.

*Type: Association*

**has_Delimited_Field_Grouped in Group_Field_Delimited**  The has_Delimited_Field_Grouped association is a relationship to the field types for a group.

*Type: Association*

**has_Display_2d_Imag in Array_2D_Image**  The display_2d_image association is a relationship to display_2d_image.

*Type: Association*

**has_Display_2d_Imag in Array_2D_Map**  The has_Display_2d_Imag association is a relationship to Display_2d_Image.

*Type: Association*

**has_Display_2d_Imag in Array_2D_Spectrum**  The has_Display_2d_Imag association is a relationship to Display_2d_Image.

*Type: Association*

**has_Element_Array in Array**  The has_Element_Array association is a relationship to Element_Array

*Type: Association*

**has_Field_Bit in Packed_Data_Fields**  The has_Field_Bit association is a relationship to Field_Bits.

*Type: Association*

**has_File in File_Area_Binary**  The has_File association is a relationship to File.

*Type: Association*

**has_File in File_Area_Checksum_Manifest**  The has_File association is a relationship to File.
Type: Association

has File in File Area Service Description The has File association is a relationship to File.

Type: Association

has File in File Area Transfer Manifest The has File association is a relationship to File.

Type: Association

has File in File Area Browse The has File association is a relationship to File.

Type: Association

has File in File Area Encoded Image The has File association is a relationship to File.

Type: Association

has File in File Area Inventory The has File association is a relationship to File.

Type: Association

has File in File Area Observational The has File association is a relationship to File.

Type: Association

has File in File Area Observational Supplemental The has File association is a relationship to File.

Type: Association

has File in File Area SPICE Kernel The has File association is a relationship to File.

Type: Association

has File in File Area Text The has File association is a relationship to File.

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Type: Association

has_File in File_Area.XML_Schema The has_File association is a relationship to File.

Type: Association

has_Group_Field_Binary in Group_Field_Binary The
has_Group_Field_Binary association is a relationship to the Group_Field_Binary.

Type: Association

has_Group_Field_Character in Group_Field_Character The
has_Group_Field_Character association is a relationship to the Group_Field_Character.

Type: Association

has_Information_Package_Component in Product_AIP The
has_Information_Package_Component association is a relationship to a Information_Package_Component.

Type: Association

has_Information_Package_Component in Product_DIP The
has_Information_Package_Component association is a relationship to a Information_Package_Component.

Type: Association

has_Information_Package_Component in Product_DIP_Dee Deep Archive The has_Information_Package_Component association is a relationship to a Information_Package_Component.

Type: Association

has_Information_Package_Component in Product_SIP The
has_Information_Package_Component association is a relationship to a Information_Package_Component.

Type: Association

has_Packed_Data_Fields in Field_Binary The has_Packed_Data_Fields association is a relationship to Packed_Data_Fields.
Type: Association

has_Record in Table_Binary The has_Record association is a relationship to record.

Type: Association

has_Record in Table_Character The has_Record association is a relationship to record.

Type: Association

has_Table_Field in Record_Binary The has_Table_Field association is a relationship to the field types.

Type: Association

has_Transfer_Manifest in Information_Package_Component The has_Transfer_Manifest association is a relationship to Transfer_Manifest.

Type: Association

has_band_bin in Band_Bin_Set The has_band_bin association is a relationship to band bin.

Type: Association

has_delimited_record in Table_Delimited The has_delimited_record association is a relationship to record.

Type: Association

has_discipline_area in Context_Area The has_discipline_area association is a relationship to Discipline Area.

Type: Association

has_discipline_area in Product_Context The has_discipline_area association is a relationship to Discipline Area.

Type: Association

has_identification_area in Product The has_identification_area association is a relationship to Identification Area.

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Type: Association

**has_investigation_area in Context_Area** The hsa_investigation_area association is a relationship to Investigation_Area.

Type: Association

**has_investigation_area in Observation_Area** The hsa_investigation_area association is a relationship to Investigation_Area.

Type: Association

**has_mission_area in Context_Area** The has_mission_area association is a relationship to Mission Area.

Type: Association

**has_observing_system in Context_Area** The has_observing_system association is a relationship to Observing_System.

Type: Association

**has_observing_system in Observation_Area** The has_observing_system association is a relationship to Observing_System.

Type: Association

**has_primary_result_description in Context_Area** The has_primary_result_description association is a relationship to Primary_Result_Description.

Type: Association

**has_primary_result_description in Observation_Area** The has_primary_result_description association is a relationship to Primary_Result_Description.

Type: Association

**has_tagged_data_object in File_Area_Binary** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

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**Type:** Association

**has_tagged_data_object in File_Area_Checksum_Manifest** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

**Type:** Association

**has_tagged_data_object in File_Area_Service_Description** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

**Type:** Association

**has_tagged_data_object in File_Area_Transfer_Manifest** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

**Type:** Association

**has_tagged_data_object in File_Area_Browse** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

**Type:** Association

**has_tagged_data_object in File_Area_Encoded_Image** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

**Type:** Association

**has_tagged_data_object in File_Area_Inventory** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

**Type:** Association

**has_tagged_data_object in File_Area_Observational** The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

**Type:** Association

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has_tagged_data_object in File_Area_Observational_Supplemental
The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

Type: Association

has_tagged_data_object in File_Area_SPICE_Kernel
The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

Type: Association

has_tagged_data_object in File_Area_Text
The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

Type: Association

has_tagged_data_object in File_Area_XML_Schema
The has_tagged_data_object association is a relationship to any tagged_digital_object or tagged_nondigital_object.

Type: Association

has_target_identification in Context_Area
The has_target_identification association is a relationship to Target_Identification.

Type: Association

has_target_identification in Observation_Area
The has_target_identification association is a relationship to Target_Identification.

Type: Association

has_time_coordinates in Context_Area
The has_time_coordinates association is a relationship to TimeCoordinates.

Type: Association

has_time_coordinates in Observation_Area
The has_time_coordinates association is a relationship to TimeCoordinates.

Type: Association
has_zip in Product_Zipped  The has_ZIP association is a relationship to ZIP

Type: Association

high_instrument_saturation in Special_Constants  The high_instrument_saturation attribute specifies a special value whose presence indicates the measuring instrument was saturated at the high end. The value must be less than the value of the valid_minimum attribute or more than the value of the valid_maximum attribute. Values of this attribute should be represented in the same data_type as the elements in the object with which the Special_Constants class is associated.

Type: ASCII_Collapsed

Class Name: Special_Constants

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT

Steward: pds

Namespace Id: pds

Value: -32765, 255, 3, 65534, FF7FFFFE, FFFCFFFF

high_representation_saturation in Special_Constants  The high_representation_saturation attribute specifies a special value whose presence indicates the true value cannot be represented in the chosen data type and length – in this case being above the allowable range – which may happen during conversion from another data type. The value must be less than the value of the valid_minimum attribute or more than the value of the valid_maximum attribute. Values of this attribute should be represented in the same data_type as the elements in the object with which the Special_Constants class is associated.
The `information_model_version` attribute provides the version identification of the PDS Information Model on which the label and schema are based.

### information_model_version in Identification_Area

- **Type:** ASCII.Short_String.Collapsed
- **Class Name:** Identification_Area
- **Minimum Characters:** 1
- **Maximum Characters:** 255
- **Nillable:** false
- **Attribute Concept:** VALUE2
- **Conceptual Domain:** SHORT_STRING
- **Steward:** pds
- **Namespace Id:** pds
- **Value:** -32764, 255, 4, 65535, FF7FFFF, FFFBFFFF

Information about the `information_model_version` attribute:
install_note in Software_Script The install note attribute provides a brief statement giving particulars about the installation of the software.

Type: ASCII_Text_Preserved

Class Name: Software_Script

Minimum Characters: 1

Nillable: false

Attribute Concept: NOTE

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

institution_name in Node The institution_name attribute provides the name of the associated institution.

Type: ASCII_Short_String_Collapsed

Class Name: Node

Minimum Characters: 1

Maximum Characters: 255

Pattern: [a-zA-Z]{1}([-_.a-zA-Z0-9]*)

Nillable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops
Namespace Id: pds

institution_name in PDS_Affiliate  The institution_name attribute provides the name of the associated institution.

Type: ASCII_Short_String.Collapsed

Class Name: PDS_Affiliate

Minimum Characters: 1

Maximum Characters: 255

Pattern: [a-zA-Z]{1}([-_/\.a-zA-Z0-9]*)

Nillable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

instrument_desc in Instrument_PDS3  The instrument_desc attribute describes a given instrument.

Type: ASCII_Text_Preserved

Class Name: Instrument_PDS3

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops
Namespace Id: pds

**instrument_host_desc in Instrument_Host_PDS3** The instrument_host_desc provides a description of an instrument host.

*Type*: ASCII_Text_Preserved

*Class Name*: Instrument_Host_PDS3

*Minimum Characters*: 1

*Nillable*: false

*Attribute Concept*: DESCRIPTION

*Conceptual Domain*: TEXT

*Steward*: ops

Namespace Id: pds

**instrument_host_id in Instrument_Host_PDS3** The instrument_host_id attribute provides a unique identifier for the host on which an instrument is located. This host can be either a spacecraft or an earth base (e.g. earth).

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Instrument_Host_PDS3

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: ID

*Conceptual Domain*: SHORT_STRING

*Steward*: ops
Namespace Id: pds

**instrument_host_name in Instrument_Host_PDS3** The *instrument_host_name* attribute provides the full name of the platform or facility upon which an instrument or other device is mounted. For example, the host can be a spacecraft, a ground-based telescope, or a laboratory.

*Type*: ASCII Short_String_Collapsed

*Class Name*: Instrument_Host_PDS3

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: NAME

*Conceptual Domain*: SHORT_STRING

*Steward*: ops

*Namespace Id*: pds

**instrument_host_type in Instrument_Host_PDS3** The *instrument_host_type* attribute provides the type of host on which an instrument is based. For example, instrument is located on a spacecraft, *instrument_host_type* attribute would have the value SPACECRAFT.

*Type*: ASCII Short_String_Collapsed

*Class Name*: Instrument_Host_PDS3

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

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**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**instrument_id in Instrument_PDS3** The instrument id provides a formal name used to refer to an instrument.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Instrument_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**instrument_name in Instrument_PDS3** The instrument_name attribute provides a unique name for an instrument.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Instrument_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false
Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

instrument_serial_number in Instrument_PDS3 The instrument serial number element provides the manufacturer’s serial number assigned to an instrument. This number may be used to uniquely identify a particular instrument for tracing its components or determining its calibration history, for example.

Type: ASCII Short String Collapsed

Class Name: Instrument_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: NUMBER

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

instrument_type in Instrument_PDS3 The instrument_type attribute identifies the type of an instrument. Example values: POLARIMETER SPECTROMETER

Type: ASCII Short String Collapsed

Class Name: Instrument_PDS3

Minimum Characters: 1
The Instrument_Version_Id element identifies the specific model of an instrument used to obtain data. For example, this keyword could be used to distinguish between an engineering model of a camera used to acquire test data, and a flight model of a camera used to acquire science data during a mission.

Type: ASCII_Short_String_Collapsed

Class Name: Instrument_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

The internal_reference association is a relationship to Internal_Reference.

Type: Association
**internal_reference in DD_Class** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**internal_reference in Information_Package_Component** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**internal_reference in Product_Zipped** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**internal_reference in Investigation_Area** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**internal_reference in Observing_System_Component** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**internal_reference in Reference_List** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**internal_reference in Target_Identification** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**internal_reference in Update_Entry** The internal_reference association is a relationship to Internal_Reference.

*Type:* Association

**invalid_constant in Special_Constants** The invalid_constant attribute provides a value that indicates the original value was outside the valid range for the parameter.

*Type:* ASCII_Short_String_Collapsed
Class Name: Special_Constants

Minimum Characters: 1

Maximum Characters: 255

 Nullable: false

Attribute Concept: CONSTANT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**kernel_type in SPICE_Kernel** The kernel_type attribute identifies the type of SPICE kernel.

*Type: ASCII.Short_String.Collapsed*

Class Name: SPICE_Kernel

Minimum Characters: 1

Maximum Characters: 255

 Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: CK, DBK, DSK, EK, FK, IK, LSK, MK, PCK, SCLK, SPK

**keyword in Citation_Information** The keyword attribute provides one or more words to be used for keyword search.
Type: UTF8_Short_String_Collapsed

Class Name: Citation_Information

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**language in Terminological_Entry** The language attribute provides the language used for definition and designation of the term.

Type: ASCII_Short_String_Collapsed

Class Name: Terminological_Entry

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: English, Russian
last Modification Date Time in Ingest_LDD The lastModificationDate_Time attribute gives the most recent date and time that a change was made.

Type: ASCII_Date_Time_YMD

Class Name: Ingest_LDD

Format: YYYY-MM-DDTHH:MM:SS.SSS(Z)

Nillable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: ops

Namespace Id: pds

last Sampling Parameter Value in Uniformly_Sampled The lastSamplingParameter_Value element provides the last value in an ascending series and is therefore the maximum value at which a given data item was sampled.

Type: ASCII_Real

Class Name: Uniformly_Sampled

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

ldd Version Id in Ingest_LDD The ldd_version_id attribute provides the version of the Local Data Dictionary.

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Type: ASCII_Short_String_Collapsed

Class Name: Ingest_LDD

Minimum Characters: 1

Maximum Characters: 255

Pattern: ([0-9]+)(\{1\}(0-9)+)

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**lid_reference in Bundle<Member_Entry** The *lid_reference* attribute provides the logical identifier for a product.

Type: ASCII_LID

Class Name: Bundle<Member_Entry

Minimum Characters: 14

Maximum Characters: 255

Format: urn:nasa:pds:xxxx

Nillable: false

Attribute Concept: REFERENCE

Conceptual Domain: SHORT_STRING

Steward: pds
Namespace Id: pds

**lid_reference in Internal_Reference** The lid_reference attribute provides the logical identifier for a product.

*Type:* ASCII_LID

*Class Name:* Internal_Reference

*Minimum Characters:* 14

*Maximum Characters:* 255

*Format:* urn:nasa:pds:xxxx

*Nillable:* false

*Attribute Concept:* REFERENCE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Schematron Rule:* The number of colons found in lid_reference is validated.

*Schematron Rule:* The value of the attribute lid_reference must start with `urn:nasa:pds:`

**lidvid_reference in Bundle_Member_Entry** The lidvid_reference attribute provides the logical identifier plus version id, which uniquely identifies a product.

*Type:* ASCII_LIDVID

*Class Name:* Bundle_Member_Entry

*Minimum Characters:* 19

*Maximum Characters:* 255
**Format:** urn:nasa:pds:xxxx::M.n

**Nillable:** false

**Attribute Concept:** REFERENCE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**lidvid_reference in Internal_Reference** The lidvid_reference attribute provides the logical_identifier plus version_id, which uniquely identifies a product.

**Type:** ASCII_LIDVID

**Class Name:** Internal_Reference

**Minimum Characters:** 19

**Maximum Characters:** 255

**Format:** urn:nasa:pds:xxxx::M.n

**Nillable:** false

**Attribute Concept:** REFERENCE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Schematron Rule:** The number of colons found in lidvid_reference is validated.

**Schematron Rule:** The value of the attribute lidvid_reference must start with 'urn:nasa:pds:'

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Schematron Rule: The value of the attribute lidvid_reference must include a value that contains '::' followed by version id

**line_display_direction** in **Display_2D_Image** The
line_display_direction element is the preferred orientation of lines within an image for viewing on a display device. Note that if this keyword is present in a label, the sample_display_direction keyword must also be present and must contain a value orthogonal to the value selected for this keyword.

*Type:* ASCII,Short_String,Collapsed

*Class Name:* Display_2D_Image

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* DIRECTION

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* Down, Up

**local_attribute** in **Ingest_LDD** The local_attribute association is a relationship to Local_Attribute.

*Type:* Association

**local_class** in **Ingest_LDD** The local_class association is a relationship to Local_Class.

*Type:* Association

**local_identifier** in **DD_Association** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.
**local_identifier in DD_Attribute** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

*Type:* ASCII Short String Collapsed

*Class Name:* DD_Association

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* LOCAL IDENTIFIER

*Conceptual Domain:* SHORT STRING

*Steward:* ops

*Namespace Id:* pds

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**local_identifier in DD_Attribute** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

*Type:* ASCII Short String Collapsed

*Class Name:* DD_Attribute

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* LOCAL IDENTIFIER

*Conceptual Domain:* SHORT STRING

*Steward:* ops

*Namespace Id:* pds
local_identifier in DD_Attribute_Full The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Attribute_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: LOCAL_IDENTIFIER

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

local_identifier in DD_Class The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Class

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: LOCAL_IDENTIFIER

Conceptual Domain: SHORT_STRING

Steward: ops
Namespace Id: pds

**local_identifier in DD_Class_Full** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

*Type:* ASCII, Short String, Collapsed

*Class Name:* DD_Class_Full

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* LOCAL_IDENTIFIER

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

Namespace Id: pds

**local_identifier in Subscriber_PDS3** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

*Type:* ASCII, Short String, Collapsed

*Class Name:* Subscriber_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* LOCAL_IDENTIFIER

*Conceptual Domain:* SHORT_STRING
local_identifier in Byte_Stream  The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

Type: ASCII Short String Collapsed

Class Name: Byte_Stream

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: LOCAL_IDENTIFIER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

local_identifier in Field_Statistics  The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

Type: ASCII Short String Collapsed

Class Name: Field_Statistics

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: LOCAL_IDENTIFIER
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**local_identifier in File** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

*Type:* ASCII_Short_String_Collapsed

**Class Name:** File

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

**Attribute Concept:** LOCAL_IDENTIFIER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**local_identifier in Geometry** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

*Type:* ASCII_Short_String_Collapsed

**Class Name:** Geometry

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

**Attribute Concept:** LOCAL_IDENTIFIER
**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**local_identifier in Object_Statistics** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Object_Statistics

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** LOCAL_IDENTIFIER

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**local_identifier in Quaternion** The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Quaternion

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false
Attribute Concept: LOCAL_IDENTIFIER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

local_identifier in Update The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

Type: ASCII.Short_String.Collapsed

Class Name: Update

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: LOCAL_IDENTIFIER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

local_identifier in Vector The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.

Type: ASCII.Short_String.Collapsed

Class Name: Vector

Minimum Characters: 1

Maximum Characters: 255
**local_mean_solar_time in TimeCoordinates** The local_mean_solar_time attribute provides the hour angle of the fictitious mean Sun at a fixed point on a rotating solar system body.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Time_Coordinates

*Minimum Characters:* 8

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* DATE_TIME

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

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**local_true_solar_time in TimeCoordinates** The local_true_solar_time (LTST) attribute provides the local time on a rotating solar system body where LTST is 12 h at the sub-solar point (SSP) and increases 1 h for each 15 degree increase in east longitude away from the SSP for prograde rotation.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Time_Coordinates
logical_identifier in Identification.Area A logical identifier identifies the set of all versions of an object. It is an object identifier without a version.

Type: ASCII.Short_String.Collapsed

Class Name: Identification.Area

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: LOGICAL_IDENTIFIER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Schematron Rule: In the number of colons found in logical_identifier is validated.

Schematron Rule: The value of the attribute logical_identifier must start with 'urn:nasa:pds:'
Schematron Rule: The value of the attribute logical_identifier must not include a value that contains '::'

Schematron Rule: In Product_Bundle the number of colons in logical_identifier is validated.

Schematron Rule: In Product_Collection, the number of colons found in logical identifier is validated.

**low_instrument_saturation in Special_Constants** The
low_instrument_saturation attribute specifies a special value whose presence indicates the measuring instrument was saturated at the low end. The value must be less than the value of the valid_minimum attribute. Values of this attribute should be represented in the same data_type as the elements in the object with which the Special_Constants class is associated.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Special_Constants

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* true

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* -32766, 0, 2, FF7FFFFD, FFFDFFFF

**low_representation_saturation in Special_Constants** The
low_representation_saturation attribute specifies a special value whose presence indicates the true value cannot be represented in the chosen data type and length – in this case being below the allowable range – which may happen during conversion from another data type. The value must be less than the value of the valid_minimum attribute. Values of this attribute should be represented in the same data_type as the elements in the object with which the Special_Constants class is associated.
Type: ASCII_Short_String_Collapsed

Class Name: Special_Constants

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: -32767, 1, 16#FF7FFFFC#, 16#FFFEFFFF#

maximum in Field_Statistics The maximum attribute provides the largest stored value which appears in the field over all records (empty fields and Special_Constants values are excluded).

Type: ASCII_Real

Class Name: Field_Statistics

Nullable: false

Attribute Concept: MAXIMUM

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

maximum in Object_Statistics The maximum attribute provides the largest value which appears in the stored array after application of any bit mask (Special_Constants values are excluded).
Type: ASCII_Real

Class Name: Object_Statistics

Nillable: false

Attribute Concept: MAXIMUM

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

**maximum_characters in DD_Value_Domain** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Value_Domain

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**maximum_characters in DD_Value_Domain_Full** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed
**Class Name:** DD_Value_Domain_Full

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**maximum_characters in ASCII AnyURI** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII.AnyURI

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**maximum_characters in ASCII DOI** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.
Type: ASCII_Collapsed

Class Name: ASCII_DOI

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_characters in ASCII_Date** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Collapsed

Class Name: ASCII_Date

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds
**maximum_characters in ASCII_Date_DOY** The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_DOY

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

**maximum_characters in ASCII_Date_Time** The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
Namespace Id: pds

**maximum_characters in ASCII_Date_Time_DOY** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time_DOY

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

Namespace Id: pds

**maximum_characters in ASCII_Date_Time.UTC** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time.UTC

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING
maximum_characters in ASCII_Date_Time_YMD The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time_YMD

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

maximum_characters in ASCII_Date_YMD The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_YMD

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: COUNT
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_characters in ASCII_Directory_Path_Name** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: ASCII_Directory_Path_Name

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nullable*: false

*Attribute Concept*: COUNT

**Conceptual Domain**: SHORT_STRING

*Steward*: pds

*Namespace Id*: pds

*Value*: 255

**maximum_characters in ASCII_File_Name** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: ASCII_File_Name

*Minimum Characters*: 1

*Maximum Characters*: 255

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Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 255

**maximum_characters in ASCII_FileSpecification_Name** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: ASCII_FileSpecification_Name

*Minimum Characters*: 1

*Maximum Characters*: 255

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 255

**maximum_characters in ASCII_Integer** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed
**Class Name:** ASCII_Integer

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**maximum_characters in ASCII_LID** The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_LID

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** 255
**maximum_characters in ASCII_LIDVID** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_LIDVID

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 255

**maximum_characters in ASCII_LIDVID_LID** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_LIDVID_LID

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING
Steward: pds

Namespace Id: pds

Value: 255

**maximum_characters in ASCII_MD5_Checksum** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_MD5_Checksum

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 32

**maximum_characters in ASCII_NonNegative_Integer** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_NonNegative_Integer

*Minimum Characters:* 1

*Maximum Characters:* 255
Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_characters in ASCII_Numeric_Base16** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Numeric_Base16

*Minimum Characters:* 1

*Maximum Characters:* 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

*Value:* 255

**maximum_characters in ASCII_Numeric_Base2** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Numeric_Base2
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 255

**maximum_characters in ASCII_Numeric_Base8** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Numeric_Base8

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 255
**maximum_characters in ASCII_Real** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Real

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

**maximum_characters in ASCII_Short_String_Collapsed** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Short_String_Collapsed

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
Namespace Id: pds

Value: 255

**maximum_characters in ASCII_Short_String_Preserved** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Short_String_Preserved

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 255

**maximum_characters in ASCII_Text_Collapsed** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Text_Collapsed

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false
**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**maximum_characters in ASCII_Text_Preserved**

The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Text_Preserved

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**maximum_characters in ASCII_Time**

The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Time

*Minimum Characters:* 1

*Maximum Characters:* 255
Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_characters in ASCII_VID** The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_VID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 100

**maximum_characters in Character_Data_Type** The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: Character_Data_Type
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT STRING

Steward: pds

Namespace Id: pds

**maximum_characters in UTF8_Short_String_Collapsed** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: UTF8_Short_String_Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT STRING

Steward: pds

Namespace Id: pds

Value: 255

**maximum_characters in UTF8_Short_String_Preserved** The maximum_characters attribute provides the upper, inclusive bound on the number of characters.
*Type:* ASCII_Short_String.Collapsed

*Class Name:* UTF8_Short_String_Preserved

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 255

**maximum_characters in UTF8_Text_Preserved**

The `maximum_characters` attribute provides the upper, inclusive bound on the number of characters.

*Type:* ASCII_Short_String.Collapsed

*Class Name:* UTF8_Text_Preserved

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds
**maximum_field_length in Field_Delimited** The maximum_field_length attribute sets an upper, inclusive bound on the number of bytes in the field.

*Type: ASCII_Integer*

*Unit of Measure Type: Units_of_Storage*

*Valid Units: byte*

*Specified Unit Id: byte*

*Class Name: Field_Delimited*

*Minimum Value: 1*

*Nillable: false*

*Attribute Concept: LENGTH*

*Conceptual Domain: INTEGER*

*Steward: pds*

*Namespace Id: pds*

**maximum_occurrences in DD_Association** The maximum_occurrences attribute indicates the number of times something may occur. It is also called the maximum cardinality. The asterisk character is used as a value to indicate that no upper bound exists.

*Type: ASCII_Short_String_Collapsed*

*Class Name: DD_Association*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: COUNT*
Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**maximum_occurrences in DD_Association_External** The maximum occurrences attribute indicates the number of times something may occur. It is also called the maximum cardinality. The asterisk character is used as a value to indicate that no upper bound exists.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* DD_Association_External

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**maximum_record_length in Record_Delimited** The maximum_record_length attribute provides the maximum length of a record, including the record delimiter.

*Type:* ASCII_Integer

*Unit of Measure Type:* Units_of_Storage

*Valid Units:* byte

*Specified Unit Id:* byte

*Class Name:* Record_Delimited
Minimum Value: 1

Nillable: false

Attribute Concept: LENGTH

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

**maximum_scaled_value in Object_Statistics** The maximum_scaled_value attribute provides the maximum value after application of scaling_value and value_offset (see their definitions; maximum_scaled_value is the maximum of Ov).

*Type: ASCII_Real*

*Class Name: Object_Statistics*

*Nillable: false*

*Attribute Concept: VALUE*

*Conceptual Domain: REAL*

*Steward: pds*

*Namespace Id: pds*

**maximum_value in DD_Value_Domain** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type: ASCII_Short_String_Collapsed*

*Class Name: DD_Value_Domain*

*Minimum Characters: 1*

*Maximum Characters: 255*
**Nillable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**maximum_value in DD_Value_Domain_Full** The maximum_value attribute provides the upper, inclusive bound on the value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** DD_Value_Domain_Full

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**maximum_value in ASCII_Date_Time** The maximum_value attribute provides the upper, inclusive bound on the value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_Time

**Minimum Characters:** 1

**Maximum Characters:** 255
Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Date_Time_DOY** The maximum_value attribute provides the upper, inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time_DOY

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Date_Time.UTC** The maximum_value attribute provides the upper, inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time.UTC

Minimum Characters: 1

Maximum Characters: 255
Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Date_Time_YMD** The maximum_value attribute provides the upper, inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time_YMD

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Integer** The maximum_value attribute provides the upper, inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Integer

Minimum Characters: 1

Maximum Characters: 255
Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_LID** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_LID*

*Minimum Characters: 1*

*Maximum Characters: 255*

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_NonNegative_Integer** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_NonNegative_Integer*

*Minimum Characters: 1*

*Maximum Characters: 255*
Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Numeric_Base16** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_Numeric_Base16*

*Minimum Characters: 1*

*Maximum Characters: 255*

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Numeric_Base2** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_Numeric_Base2*

*Minimum Characters: 1*

*Maximum Characters: 255*
Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Real** The `maximum_value` attribute provides the upper, inclusive bound on the value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Real

*Minimum Characters:* 1

*Maximum Characters:* 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Short_String_Collapsed** The `maximum_value` attribute provides the upper, inclusive bound on the value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Short_String_Collapsed

*Minimum Characters:* 1

*Maximum Characters:* 255
Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Short_String_Preserved** The `maximum_value` attribute provides the upper, inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Short_String_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Text_Preserved** The `maximum_value` attribute provides the upper, inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Text_Preserved

Minimum Characters: 1

Maximum Characters: 255
Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_Time** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in ASCII_VID** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_VID

*Minimum Characters:* 1

*Maximum Characters:* 255
Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in Character_Data_Type** The `maximum_value` attribute provides the upper, inclusive bound on the value.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Character_Data_Type

*Minimum Characters*: 1

*Maximum Characters*: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**maximum_value in UTF8_Short_String_Collapsed** The `maximum_value` attribute provides the upper, inclusive bound on the value.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: UTF8_Short_String_Collapsed

*Minimum Characters*: 1

*Maximum Characters*: 255
*Nullable: false*

*Attribute Concept: VALUE*

*Conceptual Domain: SHORT STRING*

*Steward: pds*

*Namespace Id: pds*

**maximum_value in UTF8_Short_String_Preserved** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type: ASCII_Short_String_Collapsed*

*Class Name: UTF8_Short_String_Preserved*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nullable: false*

*Attribute Concept: VALUE*

*Conceptual Domain: SHORT STRING*

*Steward: pds*

*Namespace Id: pds*

**maximum_value in UTF8_Text_Preserved** The maximum_value attribute provides the upper, inclusive bound on the value.

*Type: ASCII_Short_String_Collapsed*

*Class Name: UTF8_Text_Preserved*

*Minimum Characters: 1*

*Maximum Characters: 255*
**Nillable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**md5_checksum in File** The md5_checksum attribute is the 32-character hexadecimal number computed for a file using the MD5 algorithm.

**Type:** ASCII_MD5_Checksum

**Class Name:** File

**Minimum Characters:** 32

**Maximum Characters:** 32

**Format:** 0123456789abcdef

**Pattern:** ([a-f0-9]{32})

**Nillable:** false

**Attribute Concept:** CHECKSUM

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**md5_checksum in Object_Statistics** The md5_checksum attribute is the 32-character hexadecimal number computed for a file using the MD5 algorithm.

**Type:** ASCII_MD5_Checksum

**Class Name:** Object_Statistics
mean in Field_Statistics The mean attribute provides the sum of the stored field values divided by the number of values in all records (empty fields and Special_Constants values are excluded from both the sum and the count).

Type: ASCII_Real

Class Name: Field_Statistics

Nillable: false

Attribute Concept: MEAN

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

mean in Object_Statistics The mean attribute provides the sum of the stored array element values (after application of any bit mask) divided by the number of elements (Special_Constants values are excluded from both the sum and the count).
Type: ASCII_Real

Class Name: Object_Statistics

Nullable: false

Attribute Concept: MEAN

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

**median in Field_Statistics** The median attribute provides the number separating the larger half of stored field values from the algebraically smaller half over all records (empty fields and Special_Constants values are excluded from the sort).

Type: ASCII_Real

Class Name: Field_Statistics

Nullable: false

Attribute Concept: MEDIAN

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

**median in Object_Statistics** The median attribute provides the number separating the larger half of stored array element values from the algebraically smaller half after application of any bit mask (Special_Constants values are excluded from the sort).

Type: ASCII_Real

Class Name: Object_Statistics
**medium_type in NSSDC** The medium_type attribute identifies the physical storage medium for a data volume. Examples: CD-ROM, CARTRIDGE TAPE.

*Type:* ASCII\_Short\_String\_Collapsed

*Class Name:* NSSDC

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT\_STRING

*Steward:* ops

*Namespace Id:* pds

**medium_type in Volume\_PDS3** The medium_type attribute identifies the physical storage medium for a data volume. Examples: CD-ROM, CARTRIDGE TAPE.

*Type:* ASCII\_Short\_String\_Collapsed

*Class Name:* Volume\_PDS3

*Minimum Characters:* 1
**Maximum Characters:** 255

**Nilable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**member_entry in Product_Bundle** The member_entry association is a relationship to Member_Entry.

**Type:** Association

**member_status in Bundle_Member_Entry** The member_status attribute indicates whether the collection is primary and whether the file_specification_name has been provided for the product_collection label.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Bundle_Member_Entry

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nilable:** false

**Attribute Concept:** STATUS

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** Primary, Secondary
**minimum in Field_Statistics** The minimum attribute provides the algebraically smallest stored value which appears in the field over all records (empty fields and Special_Constants values are excluded).

*Type:* ASCII_Real

*Class Name:* Field_Statistics

*Nullable:* false

*Attribute Concept:* MINIMUM

*Conceptual Domain:* REAL

*Steward:* pds

*Namespace Id:* pds

**minimum in Object_Statistics** The minimum attribute provides the algebraically smallest value which appears in the stored array after application of any bit mask (Special_Constants values are excluded).

*Type:* ASCII_Real

*Class Name:* Object_Statistics

*Nullable:* false

*Attribute Concept:* MINIMUM

*Conceptual Domain:* REAL

*Steward:* pds

*Namespace Id:* pds

**minimum_characters in DD_Value_Domain** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed
Class Name: DD_Value_Domain

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**minimum_characters in DD_Value_Domain_Full**  The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCIIShort_String_Collapsed

Class Name: DD_Value_Domain_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**minimum_characters in ASCII_AnyURI**  The minimum_characters attribute provides the lower, inclusive bound on the number of characters.
Type: ASCII_Short_String_Collapsed

Class Name: ASCII_AnyURI

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_characters in ASCII_DOI** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_DOI

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds
**minimum_characters in ASCII_Date** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* ASCII_Date

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

**minimum_characters in ASCII_Date_DOY** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* ASCII_Date_DOY

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
**Namespace Id:** pds

**minimum_characters in ASCII_Date_Time** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

**minimum_characters in ASCII_Date_Time_DOY** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time_DOY

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING
minimum_characters in ASCII_Date_Time.UTC The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII.Short.String.Collapsed

Class Name: ASCII_Date_Time.UTC

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

minimum_characters in ASCII_Date_Time_YMD The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII.Short.String.Collapsed

Class Name: ASCII_Date_Time_YMD

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT
Conceptual Domain: SHORT STRING

Steward: pds

Namespace Id: pds

**minimum_characters in ASCII_Date_YMD** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_Date_YMD*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: COUNT*

*Conceptual Domain: SHORT STRING*

*Steward: pds*

*Namespace Id: pds*

**minimum_characters in ASCII_Directory_Path_Name** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type: ASCII_Short_String_Collapsed*

*Class Name: ASCII_Directory_Path_Name*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*
Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

**minimum_characters in ASCII_File_Name** The `minimum_characters` attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_File_Name

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

**minimum_characters in ASCII_File_Specification_Name** The `minimum_characters` attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_File_Specification_Name
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

**minimum_characters in ASCII_Integer** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Integer

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_characters in ASCII_LID** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.
Type: ASCII_Short_String_Collapsed

Class Name: ASCII_LID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 14

**minimum_characters in ASCII_LIDVID** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_LIDVID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

442
Value: 19

**minimum_characters in ASCII_LIDVID_LID** The **minimum_characters** attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* ASCII.LIDVID.LID

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 14

**minimum_characters in ASCII_MD5_Checksum** The **minimum_characters** attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* ASCII_MD5_Checksum

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

443
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 32

**minimum_characters in ASCII_NonNegative_Integer** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: ASCII_NonNegative_Integer

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_characters in ASCII_Numeric_Base16** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: ASCII_Numeric_Base16

*Minimum Characters*: 1

*Maximum Characters*: 255
**Nullable**: false

**Attribute Concept**: COUNT

**Conceptual Domain**: SHORT_STRING

**Steward**: pds

**Namespace Id**: pds

**Value**: 1

**minimum_characters in ASCII_Numeric_Base2** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

**Type**: ASCII_Short_String_Collapsed

**Class Name**: ASCII_Numeric_Base2

**Minimum Characters**: 1

**Maximum Characters**: 255

**Nullable**: false

**Attribute Concept**: COUNT

**Conceptual Domain**: SHORT_STRING

**Steward**: pds

**Namespace Id**: pds

**Value**: 1

**minimum_characters in ASCII_Numeric_Base8** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

**Type**: ASCII_Short_String_Collapsed

445
**Class Name:** ASCII_Numeric_Base8

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** 1

**minimum_characters in ASCII_Real** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Real

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** COUNT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds
**minimum_characters in ASCII_Short_String_Collapsed**  The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Short_String_Collapsed

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 1

**minimum_characters in ASCII_Short_String_Preserved**  The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Short_String_Preserved

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING
minimum_characters in ASCII_String The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_String

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

minimum_characters in ASCII_Text_Collapsed The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Text_Collapsed

Minimum Characters: 1

Maximum Characters: 255
Nilable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

**minimum_characters in ASCII_Text_Preserved** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Text_Preserved

*Minimum Characters:* 1

*Maximum Characters:* 255

Nilable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

**minimum_characters in ASCII_Time** The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed
Class Name: ASCII_Time

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_characters in ASCII VID** The `minimum_characters` attribute provides the lower, inclusive bound on the number of characters.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_VID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 3
minimum_characters in Character_Data_Type The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII Short_String_Collapsed

*Class Name:* Character_Data_Type

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

minimum_characters in UTF8_Short_String_Collapsed The minimum_characters attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII Short_String_Collapsed

*Class Name:* UTF8_Short_String_Collapsed

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
Namespace Id: pds

Value: 1

**minimum_characters in UTF8_Short_String_Preserved** The `minimum_characters` attribute provides the lower, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: UTF8_Short_String_Preserved

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nullable*: false

*Attribute Concept*: COUNT

*Conceptual Domain*: SHORT_STRING

*Steward*: pds

*Namespace Id*: pds

*Value*: 1

**minimum_characters in UTF8_String** The `minimum_characters` attribute provides the lower, inclusive bound on the number of characters.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: UTF8_String

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nullable*: false
Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

**minimum_characters in UTF8_Text_Preserved**

The `minimum_characters` attribute provides the lower, inclusive bound on the number of characters.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* UTF8_Text_Preserved

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 1

**minimum_occurrences in DD_Association**

The `minimum_occurrences` attribute indicates the number of times something may occur. It is also called the minimum cardinality.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* DD_Association
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**minimum_occurrences in DD_Association_External** The minimum occurrences attribute indicates the number of times something may occur. It is also called the minimum cardinality.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Association_External

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**minimum_scaled_value in Object_Statistics** The minimum_scaled_value attribute provides the minimum value after application of scaling_value and value_offset (see their definitions; minimum_scaled_value is the minimum of Ov).

Type: ASCII_Real
Class Name: Object_Statistics

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

**minimum_value** in **DD_Value_Domain**  The *minimum_value* attribute provides the lower inclusive bound on the value.

*Type*: ASCII_Short_String_Collapsed

Class Name: DD_Value_Domain

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**minimum_value** in **DD_Value_Domain_Full**  The *minimum_value* attribute provides the lower inclusive bound on the value.

*Type*: ASCII_Short_String_Collapsed

Class Name: DD_Value_Domain_Full

Minimum Characters: 1
**Minimum Characters:** 255

**Nilable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**minimum_value in ASCII_Date_Time** The `minimum_value` attribute provides the lower inclusive bound on the value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_Time

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nilable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**minimum_value in ASCII_Date_Time_DOY** The `minimum_value` attribute provides the lower inclusive bound on the value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_Time_DOY

**Minimum Characters:** 1
**Minimum Characters:** 255

**Nillable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**minimum_value in ASCII_Date_Time.UTC** The minimum_value attribute provides the lower inclusive bound on the value.

**Type:** ASCII.Short.StringCollapsed

**Class Name:** ASCII_Date_Time.UTC

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**minimum_value in ASCII_Date_Time.YMD** The minimum_value attribute provides the lower inclusive bound on the value.

**Type:** ASCII.Short.StringCollapsed

**Class Name:** ASCII_Date_Time.YMD

**Minimum Characters:** 1
Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in ASCII_Integer** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Integer

Class Name: ASCII_Integer

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in ASCII_LID** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_LID

Class Name: ASCII_LID

Minimum Characters: 1

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**Minimum Value** in **ASCII** **NonNegative** **Integer**

The `minimum_value` attribute provides the lower inclusive bound on the value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_NonNegative_Integer

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* VALUE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 0

**Minimum Value** in **ASCII** **Numeric** **Base16**

The `minimum_value` attribute provides the lower inclusive bound on the value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Numeric_Base16

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Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in ASCII_Numeric_Base2** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Numeric_Base2_COLLAPSED

Class Name: ASCII_Numeric_Base2

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in ASCII_Real** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Real_COLLAPSED

Class Name: ASCII_Real
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in ASCII_Short_String_Collapsed** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Short_String_Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in ASCII_Short_String_Preserved** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

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**Class Name:** ASCII_Short_String_Preserved

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**minimum_value in ASCII_Text_Preserved** The `minimum_value` attribute provides the lower inclusive bound on the value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Text_Preserved

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** VALUE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**minimum_value in ASCII_Time** The `minimum_value` attribute provides the lower inclusive bound on the value.

**Type:** ASCII_Short_String_Collapsed
Class Name: ASCII_Time

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in ASCII_VID** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_VID

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in Character_Data_Type** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Short_String_Collapsed
Class Name: Character_Data_Type

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

minimum_value in UTF8_Short_String_Collapsed The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCII_Short_String_Collapsed

Class Name: UTF8_Short_String_Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

minimum_value in UTF8_Short_String_Preserved The minimum_value attribute provides the lower inclusive bound on the value.
Type: ASCIIShort_String_Collapsed

Class Name: UTF8_Short_String_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**minimum_value in UTF8_Text_Preserved** The minimum_value attribute provides the lower inclusive bound on the value.

Type: ASCIIShort_String_Collapsed

Class Name: UTF8_Text_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**missing_constant in Special_Constants** The missing_constant attribute provides a value that indicates the original value was missing, such as due to a gap in coverage.
Type: ASCII_Short_String_Collapsed

Class Name: Special_Constants

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: CONSTANT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**mission_desc in Mission_PDS3** The mission_desc attribute summarizes major aspects of a planetary mission or project, including the number and type of spacecraft, the target body or bodies and major accomplishments.

Type: ASCII_Text_Preserved

Class Name: Mission_PDS3

Minimum Characters: 1

Nillable: false

Attribute Concept: DESCRIPTION

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

**mission_name in Mission_PDS3** The mission_name attribute identifies a major planetary mission or project. A given planetary mission may be associated with one or more spacecraft.
**mission_objectives_summary in Mission_PDS3**  The mission_objectives_summary attribute describes the major scientific objectives of a planetary mission or project.

*Type: ASCII_Text_Preserved*

*Class Name: Mission_PDS3*

*Minimum Characters: 1*

*Nillable: false*

*Attribute Concept: SUMMARY*

*Conceptual Domain: TEXT*

*Steward: ops*

*Namespace Id: pds*

**mission_start_date in Mission_PDS3**  The mission_start_date attribute provides the date of the beginning of a mission in UTC system format.

*Type: ASCII_Short_String_Collapsed*
Class Name: Mission_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**mission_stop_date in Mission_PDS3** The mission_stop_date attribute provides the date of the end of a mission in UTC system format.

Type: ASCII_Long_String_Collapsed

Class Name: Mission_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**model_id in Instrument** The model_id attribute helps discriminate instrument hardware. For example "flight", "engineering", or "proto" have been used.

Type: ASCII_Long_String_Collapsed
Class Name: Instrument

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**modification_date in Modification_Detail** The modification_date attribute provides date the modifications were completed

Type: ASCII_Date_YMD

Class Name: Modification_Detail

Format: YYYY-MM-DD

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: pds

Namespace Id: pds

**modification_detail in Modification_History** The modification_detail association is a relationship to Modification_Detail, the details of one round of modification for the product.

Type: Association
**modification_history in Identification Area** The modification_history association is a relationship to Modification_History, a history of changes made to the product.

*Type: Association*

**naif_host_id in Instrument_Host** The naif_instrument_id element provides the numeric ID used within the SPICE system to identify the spacecraft, spacecraft structure or science instrument.

*Type: ASCII Short_String_Collapsed*

*Class Name: Instrument_Host*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Attribute Concept: ID*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*

**naif_instrument_id in Instrument** The naif_instrument_id element provides the numeric ID used within the SPICE system to identify the spacecraft, spacecraft structure or science instrument.

*Type: ASCII Short_String_Collapsed*

*Class Name: Instrument*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*
Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

name in DD_Association_External The name attribute provides a word or combination of words by which the object is known.

Type: ASCII-Short_String_Collapsed

Class Name: DD_Association_External

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

name in DD_Attribute The name attribute provides a word or combination of words by which the object is known.

Type: ASCII-Short_String_Collapsed

Class Name: DD_Attribute

Minimum Characters: 1

Maximum Characters: 255

Nullable: false
Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**name in DD_Attribute_Full** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* DD_Attribute_Full

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**name in DD_Class** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* DD_Class

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false
Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**name in DD.Class_Full** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCII.Short.String.Collapsed

*Class Name:* DD.Class_Full

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**name in External_Reference_Extended** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCII.Short.String.Collapsed

*Class Name:* External_Reference_Extended

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

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Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

name in Ingest_LDD  The name attribute provides a word or combination of words by which the object is known.

Type: ASCII_Short_String_Collapsed

Class Name: Ingest_LDD

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

name in Node  The name attribute provides a word or combination of words by which the object is known.

Type: ASCII_Short_String_Collapsed

Class Name: Node

Minimum Characters: 1

Maximum Characters: 255

Nullable: false
Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds


**name in PDS_Affiliate**  The name attribute provides a word or combination of words by which the object is known.

Type: ASCII_Short_String_Collapsed

Class Name: PDS_Affiliate

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**name in PDS_Guest**  The name attribute provides a word or combination of words by which the object is known.

Type: ASCII_Short_String_Collapsed

Class Name: PDS_Guest

Minimum Characters: 1
**Maximum Characters**: 255

**Nillable**: false

**Attribute Concept**: NAME

**Conceptual Domain**: SHORT_STRING

**Steward**: ops

**Namespace Id**: pds

**name in Software** The name attribute provides a word or combination of words by which the object is known.

**Type**: ASCII.Short_String.Collapsed

**Class Name**: Software

**Minimum Characters**: 1

**Maximum Characters**: 255

**Nillable**: false

**Attribute Concept**: NAME

**Conceptual Domain**: SHORT_STRING

**Steward**: ops

**Namespace Id**: pds

**name in Agency** The name attribute provides a word or combination of words by which the object is known.

**Type**: ASCII.Short_String.Collapsed

**Class Name**: Agency

**Minimum Characters**: 1
Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: European Space Agency, National Aeronautics and Space Administration

**name in Byte_Stream** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* Byte_Stream

*Minimum Characters:* 1

*Maximum Characters:* 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Facility** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* Facility
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Field** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Field

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Field_Binary** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Field_Binary
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Field_Bit** The name attribute provides a word or combination of words by which the object is known.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Field_Bit

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Field_Character** The name attribute provides a word or combination of words by which the object is known.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Field_Character
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

name in Field_Delimited The name attribute provides a word or combination of words by which the object is known.

Type: ASCII.Short_StringCollapsed

Class Name: Field_Delimited

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

name in Instrument The name attribute provides a word or combination of words by which the object is known.

Type: ASCII.Short_StringCollapsed

Class Name: Instrument
The name attribute provides a word or combination of words by which the object is known.

Type: ASCIIShort_String_Collapsed

Class Name: Investigation

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Instrument.Host**

The name attribute provides a word or combination of words by which the object is known.

Type: ASCIIShort_String_Collapsed

Class Name: Instrument.Host

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Investigation**

The name attribute provides a word or combination of words by which the object is known.

Type: ASCIIShort_String_Collapsed

Class Name: Investigation
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Investigation_Area** The name attribute provides a word or combination of words by which the object is known.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Investigation_Area

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Observing_System** The name attribute provides a word or combination of words by which the object is known.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Observing_System
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Observing_System_Component** The name attribute provides a word or combination of words by which the object is known.

*Type: ASCII Short String Collapsed*

*Class Name: Observing_System_Component*

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Quaternion** The name attribute provides a word or combination of words by which the object is known.

*Type: ASCII Short String Collapsed*

*Class Name: Quaternion*
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Quaternion_Component** The name attribute provides a word or combination of words by which the object is known.

*Type: ASCII,Short_String,Collapsed*

*Class Name: Quaternion_Component*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nullable: false*

*Attribute Concept: NAME*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*

**name in Resource** The name attribute provides a word or combination of words by which the object is known.

*Type: ASCII,Short_String,Collapsed*

*Class Name: Resource*
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Target** The name attribute provides a word or combination of words by which the object is known.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Target

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Target_Identification** The name attribute provides a human-readable primary name/identification in the standard format for the target type.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Target_Identification

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Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**name in Terminological_Entry** The name attribute provides a word or combination of words by which the object is known.

*Type: UTF8.Short_String.Collapsed*

*Class Name: Terminological_Entry*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nullable: false*

*Attribute Concept: NAME*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*

**name in Vector** The name attribute provides a word or combination of words by which the object is known.

*Type: ASCII.Short_String.Collapsed*

*Class Name: Vector*
The name attribute provides a word or combination of words by which the object is known.

Type: ASCII_Short_String_Collapsed

Class Name: Vector_Component

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

The namespace_id attribute provides the abbreviation of the XML schema namespace container for this logical grouping of classes and attributes. It is assigned by the steward.

Type: ASCII_Short_String_Collapsed
Class Name: DD_Association_External

Minimum Characters: 1
Maximum Characters: 255
Nillable: false
Attribute Concept: ID
Conceptual Domain: SHORT_STRING
Steward: ops
Namespace Id: pds

namespace_id in DD_Attribute_Full The namespace_id attribute provides the abbreviation of the XML schema namespace container for this logical grouping of classes and attributes. It is assigned by the steward.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Attribute_Full
Minimum Characters: 1
Maximum Characters: 255
Nillable: false
Attribute Concept: ID
Conceptual Domain: SHORT_STRING
Steward: ops
Namespace Id: pds

namespace_id in DD_Class_Full The namespace_id attribute provides the abbreviation of the XML schema namespace container for this logical grouping of classes and attributes. It is assigned by the steward.
Type: ASCII_Short_String_Collapsed

Class Name: DD_Class_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**namespace_id in Ingest_LDD** The namespace_id attribute provides the abbreviation of the XML schema namespace container for this logical grouping of classes and attributes. It is assigned by the steward.

Type: ASCII_Short_String_Collapsed

Class Name: Ingest_LDD

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds
**nil_reason in Symbolic_Literals_PDS** The nil_reason attribute provides the permissible values allowed as reasons when an attribute assigned a nil value.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* Symbolic_Literals_PDS

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

*Value:* anticipated, inapplicable, missing, unknown

**nillable_flag in DD_Attribute** The nillable_flag attribute indicates whether an attribute is allowed to take on nil as a value.

*Type:* ASCII_Boolean

*Class Name:* DD_Attribute

*Nillable:* false

*Attribute Concept:* FLAG

*Conceptual Domain:* BOOLEAN

*Steward:* ops

*Namespace Id:* pds
**nillable_flag in DD_Attribute_Full**  The nillable_flag attribute indicates whether an attribute is allowed to take on nil as a value.

*Type:* ASCII_Boolean  
*Class Name:* DD_Attribute_Full  
*Nillable:* false  
*Attribute Concept:* FLAG  
*Conceptual Domain:* BOOLEAN  
*Steward:* ops  
*Namespace Id:* pds

**not_applicable_constant in Special_Constants**  The not_applicable_constant attribute provides a value that indicates the parameter is not applicable.

*Type:* ASCII_Short_String_Collapsed  
*Class Name:* Special_Constants  
*Minimum Characters:* 1  
*Maximum Characters:* 255  
*Nillable:* false  
*Attribute Concept:* CONSTANT  
*Conceptual Domain:* SHORT_STRING  
*Steward:* pds  
*Namespace Id:* pds

**nssdc in Data_Set_PDS3**  The nssdc association is a relationship to NSSDC.
Type: Association

**nssdc_collection_id in NSSDC** An NSSDC Collection ID is an NSSDC assigned identifier for a collection of PDS datasets.

Type: ASCII_Short_String_Collapsed

**Class Name:** NSSDC

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**object_length in Encoded_Byte_Stream** The `object_length` attribute provides the length of the digital object in bytes.

Type: ASCII_Integer

**Unit of Measure Type:** Units_of_Storage

**Valid Units:** byte

**Specified Unit Id:** byte

**Class Name:** Encoded_Byte_Stream

**Minimum Value:** 1

**Nullable:** false

**Attribute Concept:** LENGTH
Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

**object_length in Header** The `object_length` attribute provides the length of the digital object in bytes.

*Type:* ASCII_Integer

*Unit of Measure Type:* Units_of_Storage

*Valid Units:* byte

*Specified Unit Id:* byte

*Class Name:* Header

*Minimum Value:* 1

*Nillable:* false

*Attribute Concept:* LENGTH

*Conceptual Domain:* INTEGER

*Steward:* pds

*Namespace Id:* pds

**object_length in Parsable_BYTE_Stream** The `object_length` attribute provides the length of the digital object in bytes.

*Type:* ASCII_Integer

*Unit of Measure Type:* Units_of_Storage

*Valid Units:* byte

*Specified Unit Id:* byte
Class Name: Parsable_Byte_Stream

Minimum Value: 1

Nillable: false

Attribute Concept: LENGTH

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

**observation_area in Product_Observational** The observation_area association is a relationship to Observation_Area.

*Type: Association*

**observing_system_component in Observing_System** The observing_system_component association is a relationship to Observing_System_Component.

*Type: Association*

**offset in Array** The offset attribute provides the displacement of the object starting position from the beginning of the parent structure (file, record, etc.). If there is no displacement, offset=0.

*Type: ASCII_Integer*

*Unit of Measure Type: Units_of_Storage*

*Valid Units: byte*

*Specified Unit Id: byte*

Class Name: Array

Minimum Value: 0

Nillable: false
Attribute Concept: OFFSET

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

offset in Encoded_Binary_Stream The offset attribute provides the displacement of the object starting position from the beginning of the parent structure (file, record, etc.). If there is no displacement, offset=0.

Type: ASCII_Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Encoded_Binary_Stream

Minimum Value: 0

Nillable: false

Attribute Concept: OFFSET

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

offset in Parsable_Binary_Stream The offset attribute provides the displacement of the object starting position from the beginning of the parent structure (file, record, etc.). If there is no displacement, offset=0.

Type: ASCII_Integer
offset in Table_Base  The offset attribute provides the displacement of the object starting position from the beginning of the parent structure (file, record, etc.). If there is no displacement, offset=0.

Type: ASCII_Integer

Unit of Measure Type: Units_of_Storage

Valid Units: byte

Specified Unit Id: byte

Class Name: Table_Base

Minimum Value: 0

Nullable: false

Attribute Concept: OFFSET

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds
orbit_direction in Target_PDS3 The orbit_direction element provides the direction of movement along the orbit about the primary as seen from the north pole of the 'invariable plane of the solar system', which is the plane passing through the center of mass of the solar system and perpendicular to the angular momentum vector of the solar system orbit motion. PROGRADE for positive rotation according to the right-hand rule, RETROGRADE for negative rotation.

Type: ASCII_Short_String_Collapsed

Class Name: Target_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: DIRECTION

Conceptual Domain: SHORT_STRING

original_band in Band_Bin The original_band attribute of a spectral qube provides the sequence of band numbers in the qube relative to some original qube. In the original qube, the values are just consecutive integers beginning with 1. In a qube which contains a subset of the bands in the original qube, the values are the original sequence numbers from that qube.

Type: ASCII_Integer

Class Name: Band_Bin

Minimum Value: 1
Maximum Value: 512

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: INTEGER

Steward: img

Namespace Id: pds

**os_version in Software_Binary** The OS version attribute indicates the version of an operating system.

Type: ASCII_Short_String_Collapsed

Class Name: Software_Binary

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**os_version in Software_Source** The OS version attribute indicates the version of an operating system.

Type: ASCII_Short_String_Collapsed

Class Name: Software_Source

Minimum Characters: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**packet_map_mask in Telemetry_Parameters** The `packet_map_mask` attribute is a binary or hexadecimal number identifying which of a data file’s expected packets were actually received. The digits correspond positionally with the relative packet numbers of the data file. The bits are to be read left to right; i.e., the first (left-most) digit of the number corresponds to the first packet of the data file. A bit value of 1 indicates that the packet was received; a value of 0 indicates that it was not received.

*Type:* ASCII_Numeric_Base16

*Class Name:* Telemetry_Parameters

*Minimum Characters:* 1

*Maximum Characters:* 255

Nillable: false

Attribute Concept: MASK

Conceptual Domain: NUMERIC

Steward: img

Namespace Id: img

**parsing_standard_id in Checksum_Manifest** The `parsing_standard_id` attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.
**Type:** ASCII_Short_String_Collapsed

**Class Name:** Checksum_Manifest

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**Value:** MD5Deep 4.n

**parsing_standard_id in Service_Description** The `parsing_standard_id` attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Service_Description

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds
Value: WADL, WSDL 2.n

**parsing_standard_id in Header** The `parsing_standard_id` attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Header

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* 7-Bit ASCII Text, FITS 3.0, ISIS2, ISIS3, PDS DSV 1, PDS ODL 2, PDS3, Pre-PDS3, UTF-8 Text, VICAR1, VICAR2

**parsing_standard_id in Parsable_BYTE Stream** The `parsing_standard_id` attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* ParsableBYTE_Stream

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* ID
**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**parsing_standard_id in SPICE_Kernel** The `parsing_standard_id` attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** SPICE_Kernel

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** SPICE

**parsing_standard_id in Table_Delimited** The `parsing_standard_id` attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Table_Delimited

**Minimum Characters:** 1

**Maximum Characters:** 255
Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: PDS DSV 1

**parsing_standard_id in XML_Schema** The parsing_standard_id attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.

*Type: ASCII_Short_String_Collapsed*

*Class Name: XML_Schema*

*Minimum Characters: 1*

*Maximum Characters: 255*

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds


**pattern in DD_Value_Domain** The pattern attribute provides a symbolic instruction for forming values.

*Type: ASCII_Short_String_Collapsed*

*Class Name: DD_Value_Domain*
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: PATTERN

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**pattern in DD_Value_Domain_Full** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* DD_Value_Domain_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: PATTERN

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**pattern in ASCII_Doi** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Doi
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: PATTERN

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: \(10^5 \frac{\circlearrowleft}{\circlearrowright}/\frac{\circlearrowleft}{\circlearrowright}+\)

**pattern in ASCII_Date** The pattern attribute provides a symbolic instruction for forming values.

Type: ASCIIShort_String_Collapsed

Class Name: ASCII_Date

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: PATTERN

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: \((-)?[0-9]\{4\}, (-)?[0-9]\{4\}-((00[1-9])—(0[1-9][0-9])—([1-2][0-9][0-9])—(0[1-9][0-9])—([1-2][0-9][0-9])—(6[0-6]))), (-)?[0-9]\{4\}-((0[1-9])—(1[0-2]))), (-)?[0-9]\{4\}-((0[1-9])—(1[0-2]))-((0[1-9])—((3[0-1]))

505
**pattern in ASCII_Date_DOY** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_DOY

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* PATTERN

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* \((-\)?[0-9]\{4\}, (-)?[0-9]\{4\}-(00[1-9])—(0[1-9][0-9])—([1-2][0-9][0-9])—(3([0-5][0-9])—(6[0-6])\))

**pattern in ASCII_Date_Time** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* PATTERN

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>DOY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>String</td>
<td>Collapsed</td>
</tr>
</tbody>
</table>

The pattern attribute provides a symbolic instruction for forming values.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_Time_DOY

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** PATTERN

**Conceptual Domain:** SHORT_STRING

**Steward:** pds
Pattern: The pattern attribute provides a symbolic instruction for forming values.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time.UTC

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: PATTERN

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds
The pattern attribute provides a symbolic instruction for forming values.

**Type:** ASCII_Date_Time_YMD

**Class Name:** ASCII_Date_Time_YMD

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** PATTERN

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** (-)?[0-9]{4}-(00[1-9])—(0[1-9][0-9])—([1-2][0-9][0-9])—(3([0-5][0-9])-((6[0-6]))))(T)24:00(:00((0+))?):(Z),
(-)?[0-9]{4}-(00[1-9])—(0[1-9][0-9])—([1-2][0-9][0-9])—(3([0-5][0-9])-((6[0-6]))))(Z),
(-)?[0-9]{4}-(01[1-9])—(1[0-2])-((01[9])-([1-2][0-9])—(3(0-1)))(T)((0[1][0-9])—(2[0-3])):05[0-9]((0-9){1,4})?(Z),
(-)?[0-9]{4}-(0[1-9])—(1[0-2])-((01[9])-([1-2][0-9])—(3(0-1)))(T)((0[1][0-9])—(2[0-4]))(Z),
(-)?[0-9]{4}-(01[1-9])—(1[0-2])-((01[9])-([1-2][0-9])—(3(0-1)))(T)24:00((00(0+))?):(Z),
(-)?[0-9]{4}-(0[1-9])—(1[0-2])-((01[9])-([1-2][0-9])—(3(0-1)))(T)24:00(:00((0+))?):(Z),

509
**pattern in ASCII_Date_YMD** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Date_YMD

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* PATTERN

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* `(-)?[0-9]{4}, (-)?[0-9]{4}-(0[1-9]|1[0-2]), (-)?[0-9]{4}-(0[1-9]|1[0-2])-(0[1-9]|1[2-9]|0[9]) — (3[0-1])`

**pattern in ASCII_LID** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_LID

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* PATTERN

*Conceptual Domain:* SHORT_STRING

*Steward:* pds
Namespace Id: pds

**pattern in ASCII_MD5_Checksum** The pattern attribute provides a symbolic instruction for forming values.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: ASCII_MD5_Checksum

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: PATTERN

*Conceptual Domain*: SHORT_STRING

*Steward*: pds

*Namespace Id*: pds

*Value*: [0-9a-fA-F]{32}

**pattern in ASCII_Numeric_Base16** The pattern attribute provides a symbolic instruction for forming values.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: ASCII_Numeric_Base16

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: PATTERN

*Conceptual Domain*: SHORT_STRING
**Steward:** pds

**Namespace Id:** pds

**pattern in ASCII_Numeric_Base2** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII\_Short\_String\_Collapsed

*Class Name:* ASCII\_Numeric\_Base2

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* PATTERN

*Conceptual Domain:* SHORT\_STRING

**Steward:** pds

**Namespace Id:** pds

*Value:* \([0-1]\{1,255\}\)

**pattern in ASCII\_Numeric\_Base8** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII\_Short\_String\_Collapsed

*Class Name:* ASCII\_Numeric\_Base8

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* PATTERN

512
Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: [0-7]{1,255}

**pattern in ASCII_Time** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* ASCII_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* PATTERN

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: (([0-1][0-9])—(2[0-3])):[0-5][0-9](Z—),
(([0-1][0-9])—(2[0-3])):[0-5][0-9]:(([0-5][0-9])—60)(([0-9]+)—)(Z—),
(([0-1][0-9])—(2[0-4]))(Z—), 24:00((:00((0+)—))—)(Z—)

**pattern in ASCII_VID** The pattern attribute provides a symbolic instruction for forming values.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* ASCII_VID

*Minimum Characters:* 1
Maximum Characters: 255

Nullable: false

Attribute Concept: PATTERN

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 0([1-9]—([0-9][0-9][0-9]+)), [1-9][0-9]*, [1-9][0-9][0-9][0-9]+

**pattern in Character_Data_Type** The pattern attribute provides a symbolic instruction for forming values.

Type: ASCII_Short_String_Collapsed

Class Name: Character_Data_Type

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: PATTERN

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**permissible_value in DD_Value_Domain** The permissible_value association is a relationship to Permissible_Value.

Type: Association

**permissible_value in DD_Value_Domain_Full** The permissible_value association is a relationship to Permissible_Value.
Type: Association

**phone_book_flag in PDS_Affiliate** The phone_book_flag attribute indicates whether or not this person should be included in the phone book.

*Type: ASCII_Boolean*

*Class Name: PDS_Affiliate*

*Nullable: false*

*Attribute Concept: FLAG*

*Conceptual Domain: BOOLEAN*

*Steward: ops*

*Namespace Id: pds*

**postal_address_text in PDS_Affiliate** The postal_address_text attribute provides a mailing address.

*Type: ASCII_Text_Preserved*

*Class Name: PDS_Affiliate*

*Minimum Characters: 1*

*Nullable: false*

*Attribute Concept: TEXT*

*Conceptual Domain: TEXT*

*Steward: ops*

*Namespace Id: pds*

**preferred_flag in Terminological_Entry** The preferred_flag indicates whether this entry is preferred over all other entries.

*Type: ASCII_Boolean*
**Class Name:** Terminological_Entry

**Nillable:** false

**Attribute Concept:** FLAG

**Conceptual Domain:** BOOLEAN

**Steward:** ops

**Namespace Id:** pds

**primary_body_name in Target_PDS3** The `primary_body_name` attribute identifies the primary body with which a given target body is associated as a secondary body.

*Type:* ASCII_Short_String_Collapsed

**Class Name:** Target_PDS3

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** NAME

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**processing_level_id in Primary_Result_Summary** The `processing_level_id` attribute provides a broad indication of data processing level.

*Type:* ASCII_Short_String_Collapsed

**Class Name:** Primary_Result_Summary
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Calibrated, Derived, Partially Processed, Raw, Telemetry

**producer_full_name in Data_Set_PDS3** The `producer_full_name` attribute provides the full name of the individual mainly responsible for the production of the data set. This individual does not have to be registered with the PDS.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Data_Set_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**product_class in Identification_Area** The `product_class` attribute provides the name of the product class. For example the value of the attribute `product_class` must be Product_Document for any Product_Document.
Type: ASCII_Short_String_Collapsed

Class Name: Identification_Area

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds


Schematron Rule: The ROOT element must be one of the allowed types.

**product_data_object in Product_AIP** The product_data_object association is a relationship to a data object.

Type: Association

**product_data_object in Product_Attribute_Definition** The product_data_object association is a relationship to a data object.
Type: Association

product_data_object in Product_Class_Definition
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_DIP
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_DIP.Deep_Archive
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_Data_Set_PDS3
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_Instrument_Host_PDS3
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_Instrument_PDS3
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_Mission_PDS3
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_SIP
The product_data_object association is a relationship to a data object.

Type: Association

product_data_object in Product_Target_PDS3
The product_data_object association is a relationship to a data object.
**Type:** Association

**product_data_object in Product_Volume_PDS3** The product_data_object association is a relationship to a data object.

**Type:** Association

**product_data_object in Product_Volume_Set_PDS3** The product_data_object association is a relationship to a data object.

**Type:** Association

**product_data_object in Product_Bundle** The product_data_object association is a relationship to a data object.

**Type:** Association

**product_data_object in Product_Collection** The product_data_object association is a relationship to a data object.

**Type:** Association

**product_data_object in Product_Context** The product_data_object association is a relationship to a data object.

**Type:** Association

**product_data_object in Product_Update** The product_data_object association is a relationship to a data object.

**Type:** Association

**product_description in Product_Software** Description at the identifiable layer.

**Type:** Association

**product_description in Product_Document** Description at the identifiable layer.

**Type:** Association

**program_notes_id in Software_Binary** The program_notes_id attribute provides an identifier to a brief statement giving particulars about a software program.
Type: ASCII.Short.String.Collapsed

Class Name: Software.Binary

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT.STRING

Steward: ops

Namespace Id: pds

program_notes_id in Software.Source The program notes id attribute provides an identifier to a brief statement giving particulars about a software program.

Type: ASCII.Short.String.Collapsed

Class Name: Software.Source

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT.STRING

Steward: ops

Namespace Id: pds
**programmers_manual_id in Software**  The programmers manual id attribute provides an identifier to a document giving instruction about the programming of the software.

*Type:* ASCII,Short_String,Collapsed

*Class Name:* Software

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**publication_date in Volume_PDS3**  The publication_date attribute provides the date on which an item was published.

*Type:* ASCII,Date,YMD

*Class Name:* Volume_PDS3

*Format:* YYYY-MM-DD

*Nillable:* true

*Attribute Concept:* DATE_TIME

*Conceptual Domain:* TIME

*Steward:* ops

*Namespace Id:* pds
**publication_date in Document** The publication_date attribute provides the date on which an item was published.

*Type:* ASCII_Date_YMD

*Class Name:* Document

*Format:* YYYY-MM-DD

*Nullable:* true

*Attribute Concept:* DATE_TIME

*Conceptual Domain:* TIME

*Steward:* pds

*Namespace Id:* pds

**publication_year in Citation_Information** The publication_year attribute provides the year in which the product should be considered as published. Generally, this will be the year the data were declared "Certified" or " Archived".

*Type:* ASCII_Date

*Class Name:* Citation_Information

*Format:* YYYY-MM-DD/ YYYY-DOY

*Nullable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* TIME

*Steward:* pds

*Namespace Id:* pds

**purpose in Primary_Result_Summary** The purpose attribute provides an indication of the primary purpose of the observations included.
Type: ASCII_short_string_Collapsed

Class Name: Primary_Result_Summary

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Calibration, Checkout, Engineering, Navigation, Science

**quaternion_component in Quaternion** The quaternion_component association is a relationship to Quaternion_Component.

Type: Association

**received_packets in Telemetry_Parameters** The received_packets attribute provides the total number of telemetry packets which constitute a reconstructed data product, cf. expected_packets.

Type: ASCII_Integer

Class Name: Telemetry_Parameters

Minimum Value: 0

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: img
Namespace Id: img

**record_delimiter in Stream_Text** The record_delimiter attribute provides the character or characters used to indicate the end of a record.

*Type: ASCII_Short_String_Collapsed*

*Class Name: Stream_Text*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nullable: false*

*Attribute Concept: DELIMITER*

*Conceptual Domain: SHORT_STRING*

*Steward: pds*

*Namespace Id: pds*

*Value: carriage-return line-feed*

**record_delimiter in Table_Binary** The record_delimiter attribute provides the character or characters used to indicate the end of a record.

*Type: ASCII_Short_String_Collapsed*

*Class Name: Table_Binary*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nullable: false*

*Attribute Concept: DELIMITER*

*Conceptual Domain: SHORT_STRING*
record_delimiter in Table_Character The record_delimiter attribute provides the character or characters used to indicate the end of a record.

Type: ASCII_Short_String_Collapsed

Class Name: Table_Character

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: DELIMITER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: carriage-return line-feed

record_delimiter in Table_Delimited The record_delimiter attribute provides the character or characters used to indicate the end of a record.

Type: ASCII_Short_String_Collapsed

Class Name: Table_Delimited

Minimum Characters: 1

Maximum Characters: 255

Nullable: false
**Attribute Concept:** DELIMITER

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* carriage-return line-feed

**record_length in Record_Binary** The record_length attribute provides the length of a record, including a record delimiter, if present.

*Type:* ASCII_Integer

*Unit of Measure Type:* Units_of_Storage

*Valid Units:* byte

*Specified Unit Id:* byte

*Class Name:* Record_Binary

*Minimum Value:* 1

*Nillable:* false

**Attribute Concept:** LENGTH

*Conceptual Domain:* INTEGER

*Steward:* pds

*Namespace Id:* pds

**record_length in Record_Character** The record_length attribute provides the length of a record, including the record delimiter.

*Type:* ASCII_Integer

*Unit of Measure Type:* Units_of_Storage
**Valid Units:** byte

**Specified Unit Id:** byte

**Class Name:** Record_Character

**Minimum Value:** 1

**Nillable:** false

**Attribute Concept:** LENGTH

**Conceptual Domain:** INTEGER

**Steward:** pds

**Namespace Id:** pds

**records in File** The records attribute provides a count of records.

**Type:** ASCII_Integer

**Class Name:** File

**Minimum Value:** 1

**Nillable:** false

**Attribute Concept:** COUNT

**Conceptual Domain:** INTEGER

**Steward:** pds

**Namespace Id:** pds

**records in Table_Base** The records attribute provides a count of records.

**Type:** ASCII_Integer

**Class Name:** Table_Base
Minimum Value: 1

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

records in Table_Delimited The records attribute provides a count of records.

Type: ASCII_Integer

Class Name: Table_Delimited

Minimum Value: 1

Nullable: false

Attribute Concept: COUNT

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

reference_frame_id in Vector The reference frame id attribute identifies a reference frame, an origin and set of axes, the physical realization of a reference system, i.e., the reference frame orientation and axes are established by the reported coordinates of datum points in the reference system.

Type: ASCII_Short_String_Collapsed

Class Name: Vector

Minimum Characters: 1
reference_frame_id in Vector_Cartesian_3 The reference frame id attribute identifies a reference frame, an origin and set of axes, the physical realization of a reference system, i.e., the reference frame orientation and axes are established by the reported coordinates of datum points in the reference system.

Type: ASCII_Short_String_Collapsed

Class Name: Vector_Cartesian_3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: ICRF, MOON_ME.DE421

reference_list in Product_AIP The reference_list association is a relationship to Reference_List.
Type: Association

reference_list in Product_Attribute_Definition The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_Class_Definition The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_DIP The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_DIP.Deep_Archive The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_Data_Set_PDS3 The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_File_Repository The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_Instrument_Host_PDS3 The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_Instrument_PDS3 The reference_list association is a relationship to Reference_List.

Type: Association

reference_list in Product_Mission_PDS3 The reference_list association is a relationship to Reference_List.
Type: Association

**reference_list in Product_Proxy_PDS3** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_SIP** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Service** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Software** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Subscription_PDS3** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Target_PDS3** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Volume_PDS3** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Volume_Set_PDS3** The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Browse** The reference_list association is a relationship to Reference_List.
Type: Association

**reference_list in Product_Bundle**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Collection**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Context**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Document**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_File_Text**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Observational**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_SPICE_Kernel**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Thumbnail**  The reference_list association is a relationship to Reference_List.

Type: Association

**reference_list in Product_Update**  The reference_list association is a relationship to Reference_List.
**Type:** Association

**reference_list in Product_XML_Schema** The reference_list association is a relationship to Reference_List.

**Type:** Association

**reference_text in External_Reference** The reference_text attribute provides a complete bibliographic citation for a published work.

**Type:** ASCII_Text_Preserved

**Class Name:** External_Reference

**Minimum Characters:** 1

**Nullable:** false

**Attribute Concept:** TEXT

**Conceptual Domain:** TEXT

**Steward:** pds

**Namespace Id:** pds

**reference_type in DD_Association** The reference_type attribute provides the name of the association.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** DD_Association

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

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reference_type in DD_Association_External The reference_type attribute provides the name of the association.

Type: ASCII Short String Collapsed

Class Name: DD_Association_External

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: attribute_of, component_of, extension_of, restriction_of, subclass_of

reference_type in Bundle_Member_Entry The reference_type attribute provides the name of the association.

Type: ASCII Short String Collapsed

Class Name: Bundle_Member_Entry

Minimum Characters: 1

Maximum Characters: 255
Nulllable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: bundle_has_browse_collection, bundle_has_calibration_collection, bundle_has_context_collection, bundle_has_data_collection, bundle_has_document_collection, bundle_has_geometry_collection, bundle_has_member_collection, bundle_has_schema_collection, bundle_has_spice_kernel_collection

**reference_type in Internal_Reference** The reference_type attribute provides the name of the association.

Type: ASCII Short String Collapsed

Class Name: Internal_Reference

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**reference_type in Inventory** The reference_type attribute provides the name of the association.

*Type:* ASCII.Short_String_Collapsed
Class Name: Inventory

Minimum Characters: 1

Maximum Characters: 255

 Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: inventory_has_member_product

**registered_by in DD_Attribute_Full** The registered_by attribute provides the name of the person or organization that registered the object.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Attribute_Full

Minimum Characters: 1

Maximum Characters: 255

 Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**registered_by in DD_Class_Full** The registered_by attribute provides the name of the person or organization that registered the object.
**Type:** ASCII_Short_String_Collapsed

**Class Name:** DD_Class_Full

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** VALUE2

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**registration_authority_id in DD_Attribute_Full** The registration_authority_id attribute provides the name of the organization that registered the object.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** DD_Attribute_Full

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**Value:** 0001_NASA_PDS_1
The registration_authority_id attribute provides the name of the organization that registered the object.

Type: ASCII Short_String_Collapsed

Class Name: DD_Class_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

The registration_date attribute provides the date of registration within the PDS system.

Type: ASCII Date_YMD

Class Name: PDS_Affiliate

Format: YYYY-MM-DD

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: ops

Namespace Id: pds
**registration_date in PDS_Guest** The registration_date attribute provides the date of registration within the PDS system.

*Type:* ASCII_Date_YMD

*Class Name:* PDS_Guest

*Format:* YYYY-MM-DD

*Nillable:* false

*Attribute Concept:* DATE_TIME

*Conceptual Domain:* TIME

*Steward:* ops

*Namespace Id:* pds

**repetitions in Group** The repetitions attribute provides the number of times a set of repeating fields and, possibly, (sub)groups is replicated within a group.

*Type:* ASCII_Integer

*Class Name:* Group

*Minimum Value:* 1

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* INTEGER

*Steward:* pds

*Namespace Id:* pds

**revision_id in Document** The revision_id attribute provides the revision level of a document, which may be set outside PDS and may be different from its version_id.
The rotation_direction element provides the direction of rotation as viewed from the north pole of the 'invariable plane of the solar system', which is the plane passing through the center of mass of the solar system and perpendicular to the angular momentum vector of the solar system. The value for this element is PROGRADE for counter-clockwise rotation, RETROGRADE for clockwise rotation and SYNCHRONOUS for satellites which are tidally locked with the primary. Sidereal_rotation_period and rotation_direction_type are unknown for a number of satellites, and are not applicable (N/A) for satellites which are tumbling.
sample_display_direction in Display_2D_Image  The sample_display_direction attribute provides the preferred orientation of samples within a line for viewing on a display device. The attribute sample_display_direction must be used with line_display_direction.

Type: ASCII_Short_String_Collapsed

Class Name: Display_2D_Image

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: DIRECTION

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Right

sampling_parameter_interval in Uniformly_Sampled  The sampling_parameter_interval element identifies the spacing of points at which data are sampled and at which a value for an instrument or dataset parameter is available. This sampling interval can be either the original (raw) sampling or the result of some resampling process. For example, in 48-second magnetometer data the sampling interval is 48. The sampling parameter (time, in the example) is identified by the sampling_parameter_name element.

Type: ASCII_Real

Class Name: Uniformly_Sampled
**Nillable**: false

**Attribute Concept**: VALUE2

**Conceptual Domain**: REAL

**Steward**: pds

**Namespace Id**: pds

**sampling_parameter_name in Uniformly_Sampled** The sampling_parameter_name element provides the name of the parameter which determines the sampling interval of a particular instrument or dataset parameter. For example, magnetic field intensity is sampled in time increments, and a spectrum is sampled in wavelength or frequency.

**Type**: ASCII_Short_String_Collapsed

**Class Name**: Uniformly_Sampled

**Minimum Characters**: 1

**Maximum Characters**: 255

**Nillable**: false

**Attribute Concept**: NAME

**Conceptual Domain**: SHORT_STRING

**Steward**: pds

**Namespace Id**: pds

**sampling_parameter_scale in Uniformly_Sampled** The sampling_parameter_scale element specifies whether the sampling interval is linear or something other such as logarithmic.

**Type**: ASCII_Short_String_Collapsed

**Class Name**: Uniformly_Sampled

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**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** SCALE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** Exponential, Linear, Logarithmic

**sampling parameter unit in Uniformly_Sampled** The `sampling parameter unit` element specifies the unit of measure of associated data sampling parameters.

**Type:** ASCII Short_String_Collapsed

**Class Name:** Uniformly_Sampled

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** UNIT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**saturated constant in Special_Constants** The `saturated constant` attribute provides a value that indicates the original value was invalid because of sensor saturation.
Type: ASCII_Short_String_Collapsed

Class Name: Special_Constants

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: CONSTANT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**scaling_factor in Band_Bin** The scaling_factor attribute is the scaling factor to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: \( Ov = (Sv \times \text{scaling_factor}) + \text{value_offset} \). The default value is 1.

Type: ASCII_Real

Class Name: Band_Bin

Nillable: false

Attribute Concept: FACTOR

Conceptual Domain: REAL

Steward: img

Namespace Id: pds

**scaling_factor in Element_Array** The scaling_factor attribute is the scaling factor to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: \( Ov = (Sv \times \text{scaling_factor}) + \text{value_offset} \). The default value is 1.
**scaling_factor in Field_Binary**  The scaling_factor attribute is the scaling factor to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: Ov = (Sv * scaling_factor) + value_offset. The default value is 1.

**Type:** ASCII_Real

**Class Name:** Field_Binary

**Nullable:** false

**Attribute Concept:** FACTOR

**Conceptual Domain:** REAL

**Steward:** pds

**Namespace Id:** pds

**scaling_factor in Field_Bit**  The scaling_factor attribute is the scaling factor to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: Ov = (Sv * scaling_factor) + value_offset. The default value is 1.

**Type:** ASCII_Real

**Class Name:** Field_Binary

**Nullable:** false

**Attribute Concept:** FACTOR

**Conceptual Domain:** REAL

**Steward:** pds

**Namespace Id:** pds
Class Name: Field_Bit

Nillable: false

Attribute Concept: FACTOR

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

**scaling_factor in Field_Character** The scaling_factor attribute is the scaling factor to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: \( Ov = (Sv \times \text{scaling_factor}) + \text{value_offset} \). The default value is 1.

Type: ASCII_Real

Class Name: Field_Character

Nillable: false

Attribute Concept: FACTOR

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

**scaling_factor in Field_Delimited** The scaling_factor attribute is the scaling factor to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: \( Ov = (Sv \times \text{scaling_factor}) + \text{value_offset} \). The default value is 1.

Type: ASCII_Real

Class Name: Field_Delimited

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sequence_number in Axis_Array The sequence_number attribute provides a number that is used to order axes in an array.

Type: ASCII Integer

Class Name: Axis_Array

Minimum Value: 1

Maximum Value: 16

Nilable: false

Attribute Concept: NUMBER

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

Schematron Rule: The sequence number of the first axis of an Array_2d_Image must be set to 1.

Schematron Rule: The sequence number of the second axis of an Array_2d_Image must be set to 2.

sequence_number in Quaternion_Component The sequence_number attribute provides a number that is used to order axes in an array.

Type: ASCII Integer
Class Name: Quaternion_Component

Minimum Value: 1

Maximum Value: 16

Nullable: false

Attribute Concept: NUMBER

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

sequence_number in Vector_Component The sequence_number attribute provides a number that is used to order axes in an array.

Type: ASCII_Integer

Class Name: Vector_Component

Minimum Value: 1

Maximum Value: 16

Nullable: false

Attribute Concept: NUMBER

Conceptual Domain: INTEGER

Steward: pds

Namespace Id: pds

serial_number in Instrument The serial number element provides the assigned manufacturer’s serial number.

Type: ASCII_Short_String_Collapsed
Class Name: Instrument

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NUMBER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**serial_number in Instrument_Host** The serial number attribute provides the manufacturer’s serial number assigned to an instrument host.

Type: ASCII_Short_String_Collapsed

Class Name: Instrument_Host

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NUMBER

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**software_dialect in Software_Source** The software dialect attribute indicates the variety of a language used to write the software.

Type: ASCII_Short_String_Collapsed
**Class Name:** Software_Source

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** VALUE2

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**software_format_set in Product_Software** The software_format_set association is a relationship to a set of one or more software formats.

**Type:** Association

**software_format_type in Software_Binary** The software format type attribute classifies the format of the software.

**Type:** ASCII.Short_String.Collapsed

**Class Name:** Software_Binary

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

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**software_format_type in Software_Source** The software format type attribute classifies the format of the software.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* Software_Source

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**software_id in Software** The software id attribute provides a formal name used to refer to the software.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* Software

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds
**software_language in Software_Source** The software language attribute identifies the language used to write the software.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Software_Source

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**software_type in Software** The software type attribute identifies the class of which the software is a member.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Software

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds
**solar_longitude in Time_Coordinates** The `solar_longitude` attribute provides the angle between the body-Sun line at the time of interest and the body-Sun line at its vernal equinox.

*Type:* ASCII_Real

*Unit of Measure Type:* Units_of_Angle

*Valid Units:* arcmin, arcsec, deg, hr, mrad, rad

*Specified Unit Id:* deg

*Class Name:* Time_Coordinates

*Minimum Value:* 0

*Maximum Value:* 360

*Nillable:* false

*Attribute Concept:* LONGITUDE

*Conceptual Domain:* REAL

*Steward:* pds

*Namespace Id:* pds

**sort_name in PDS_Affiliate** The `sort_name` attribute provides a string to be used in ordering. For people, the last name (surname) is typically first, followed by a comma and then other names.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* PDS_Affiliate

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false
Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**sort_name in PDS_Guest** The sort name attribute provides a string to be used in ordering. For people, the last name (surname) is typically first, followed by a comma and then other names.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* PDS_Guest

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**source in Terminological_Entry** The bibliographic_reference association is a relationship to bibliographic reference.

*Type:* Association

**specified_unit_id in DD_Value_Domain** The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* DD_Value_Domain

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Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

specified_unit_id in DD_Value_Domain_Full The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Value_Domain_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

specified_unit_id in Unit_Of_Measure The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed
Class Name: Unit_Of_Measure

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

specified_unit_id in Units_of_Acceleration The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Acceleration

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: m/s**2
specified_unit_id in Units_of_Amount_Of_Substance The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII Short_String_COLLAPSED

Class Name: Units_of_Amount_Of_Substance

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: mol

specified_unit_id in Units_of_Angle The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII Short_String_COLLAPSED

Class Name: Units_of_Angle

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

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*Steward*: pds

*Namespace Id*: pds

*Value*: deg

**specified_unit_id in Units_of_Angular_Velocity** The `specified_unit_id` attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Units_of_Angular_Velocity

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nullable*: false

*Attribute Concept*: ID

*Conceptual Domain*: SHORT_STRING

*Steward*: pds

*Namespace Id*: pds

*Value*: deg/s

**specified_unit_id in Units_of_Area** The `specified_unit_id` attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Units_of_Area

*Minimum Characters*: 1

*Maximum Characters*: 255
Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: m**2

specified_unit_id in Units_of_Frame_Rate The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Frame_Rate

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: frames/s

specified_unit_id in Units_of_Frequency The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed
*Class Name:* Units_of_Frequency

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* Hz

**specified_unit_id in Units_of_Length** The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Units_of_Length

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* m

---

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specified_unit_id in Units_of_Map_Scale  The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Map_Scale

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: pixel/deg

specified_unit_id in Units_of_Mass  The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Mass

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING
The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Units_of_Misc

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** DN

The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Units_of_None

**Minimum Characters:** 1

**Maximum Characters:** 255
Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: none

**specified_unit_id in Units_of_Optical_Path_Length**  The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Optical_Path_Length

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: airmass

**specified_unit_id in Units_of_Pressure**  The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed
Class Name: Units_of_Pressure

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: bar

specified_unit_id in Units_of_Radiance The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_SHORT_STRING_Collapsed

Class Name: Units_of_Radiance

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: W*m**-2*sr**-1

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specified_unit_id in Units_of_Rates The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Rates

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: counts/bin

specified_unit_id in Units_of_Solid_Angle The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Solid_Angle

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

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specified_unit_id in Units_of_Storage  The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Storage

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: byte

specified_unit_id in Units_of_Temperature  The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Temperature

Minimum Characters: 1

Maximum Characters: 255
Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: degC

**specified_unit_id in Units_of_Time** The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Time

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: s

**specified_unit_id in Units_of_Velocity** The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed
Class Name: Units_of_Velocity

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: m/s

specified_unit_id in Units_of_Voltage The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Voltage

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: V
**specified_unit_id in Units_of_Volume** The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Units_of_Volume

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* L

**spice_file_name in Telemetry_Parameters** The spice_file_name attribute provides the names of the SPICE files used in processing the data.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Telemetry_Parameters

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING
The standard deviation attribute provides the standard deviation of values in the associated object; empty and SpecialConstants values are excluded.

*Type:* ASCII_Real

*Class Name:* Band_Bin

*Nullable:* false

*Attribute Concept:* DEVIATION

*Conceptual Domain:* REAL

The standard deviation attribute provides the standard deviation of the stored field over all records (empty fields and SpecialConstants values are excluded from the computation).

*Type:* ASCII_Real

*Class Name:* Field_Statistics

*Minimum Value:* 0

*Nullable:* false

*Attribute Concept:* DEVIATION

*Conceptual Domain:* REAL
**standard deviation in Object_Statistics** The `standard_deviation` attribute provides the standard deviation of the stored array element values after application of any bit mask (Special_Constants values are excluded from the computation).

*Type:* ASCII_Real

*Class Name:* Object_Statistics

*Minimum Value:* 0

*Nillable:* false

*Attribute Concept:* DEVIATION

*Conceptual Domain:* REAL

*Steward:* pds

*Namespace Id:* pds

**start_bit in Field_Bit** The `start_bit` attribute provides the position of the first bit within an ordered sequence of bits.

*Type:* ASCII_Integer

*Class Name:* Field_Bit

*Minimum Value:* 1

*Nillable:* false

*Attribute Concept:* BIT

*Conceptual Domain:* INTEGER

*Steward:* pds

*Namespace Id:* pds

**start_date in Investigation** The `start_date` attribute provides the date when an activity began.
Type: ASCII_Date_YMD

Class Name: Investigation

Format: YYYY-MM-DD

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: pds

Namespace Id: pds

**start_date_time** in **DataSet_PDS3** The start_date_time attribute provides the date and time at the beginning of the data set.

Type: ASCII_Date_Time

Class Name: DataSet_PDS3

Format: YYYY-MM-DDTHH:MM:SS.SSS(Z)/YYYY-DOYTHH:MM:SS.SSS(Z)

Nullable: true

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: ops

Namespace Id: pds

**start_date_time** in **Time_Coordinates** The start_date_time attribute provides the date and time appropriate to the beginning of the product being labeled.

Type: ASCII_Date_Time.UTC

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Class Name: Time_Coordinates

Format:
YYYY-MM-DDTHH:MM:SS.SSSZ/YYYY-DOYTHH:MM:SS.SSSZ

Nullable: true

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: pds

Namespace Id: pds

starting_point_identifier in Document_Format The starting_point attribute provides the local_identifier of the object to be accessed first.

Type: ASCII.Short_String.Collapsed

Class Name: Document_Format

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

steward_id in DD_Attribute_Full The steward attribute indicates the person or organization who manages a set of registered attributes and classes.

Type: ASCII.Short_String.Collapsed
Class Name: DD_Attribute_Full

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: atm, geo, img, naif, ops, pds, ppi, rings, rs, sbn

**steward_id in DD_Class_Full** The steward_id attribute provides the abbreviation of the organization that manages the set of registered attributes and classes.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Class_Full

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: atm, geo, img, naif, ops, pds, ppi, rings, rs, sbn

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**steward_id in Ingest_LDD**  The steward_id attribute provides the abbreviation of the organization that manages the set of registered attributes and classes.

*Type: ASCII Short_String_Collapsed*

*Class Name: Ingest_LDD*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nullable: false*

*Attribute Concept: ID*

*Conceptual Domain: SHORT_STRING*

*Steward: ops*

*Namespace Id: pds*

**stop_bit in Field_Bit**  The stop-bit attribute provides the location of the last bit in this bit field relative to the first bit in the packed_data field. Bits are numbered continuously across byte boundaries. The first bit location in the packed data field is "1".

*Type: ASCII Integer*

*Class Name: Field_Bit*

*Minimum Value: 1*

*Nullable: false*

*Attribute Concept: BIT*

*Conceptual Domain: INTEGER*

*Steward: pds*

*Namespace Id: pds*
**stop_date in Investigation** The stop_date attribute provides the date when an activity ended.

*Type:* ASCII_Date_YMD

*Class Name:* Investigation

*Format:* YYYY-MM-DD

*Nillable:* true

*Attribute Concept:* DATE_TIME

*Conceptual Domain:* TIME

*Steward:* pds

*Namespace Id:* pds

**stop_date_time in Data_Set_PDS3** The stop_date_time attribute provides the date and time at the end of the data set.

*Type:* ASCII_Date_Time

*Class Name:* Data_Set_PDS3

*Format:* YYYY-MM-DDTHH:MM:SS.SSS(Z)/YYYY-DOYTHH:MM:SS.SSS(Z)

*Nillable:* true

*Attribute Concept:* DATE_TIME

*Conceptual Domain:* TIME

*Steward:* ops

*Namespace Id:* pds

**stop_date_time in Time_Coordinates** The stop_date_time attribute provides the date and time appropriate to the end of the product being labeled.
Type: ASCII_Date_Time.UTC

Class Name: Time_Coordinates

Format:
YYYY-MM-DDTHH:MM:SS.SSSZ/YYYY-DOYTHH:MM:SS.SSSZ

Nullable: true

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: pds

Namespace Id: pds

submitter_name in DD_Attribute The submitter_name attribute provides the name of the author, who submits the item to the steward.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Attribute

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

submitter_name in DD_Attribute_Full The submitter_name attribute provides the name of the author, who submits the item to the steward.

Type: ASCII_Short_String_Collapsed
**Class Name:** DD_Attribute_Full

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**submitter_name in DD_Class** The submitter_name attribute provides the name of the author, who submits the item to the steward.

*Type:* ASCII_Short_String_Collapsed

**Class Name:** DD_Class

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**submitter_name in DD_Class_Full** The submitter_name attribute provides the name of the author, who submits the item to the steward.

*Type:* ASCII_Short_String_Collapsed
Class Name: DD_Class_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**subscriber in Product_Subscription_PDS3** The subscriber association is a relationship to a Subscriber_PDS3 class.

*Type:* Association

**subscription_id in Subscriber_PDS3** The subscriber_id provides the identification of a PDS subscription.

*Type:* ASCII_Short_String_Collapsed

Class Name: Subscriber_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds
supported_architecture_note in Software_Binary  The supported architecture note attribute identifies the hardware architecture that can process the software.

Type: ASCII_Text_Preserved

Class Name: Software_Binary

Minimum Characters: 1

Nillable: false

Attribute Concept: NOTE

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

supported_architecture_note in Software_Source  The supported architecture note attribute identifies the hardware architecture that can process the software.

Type: ASCII_Text_Preserved

Class Name: Software_Source

Minimum Characters: 1

Nillable: false

Attribute Concept: NOTE

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds
**supported_environment_note in Software_Script** The supported environment note attribute identifies the environment that can process the software.

*Type*: ASCII_Text_Preserved  
*Class Name*: Software_Script  
*Minimum Characters*: 1  
*Nillable*: false  
*Attribute Concept*: NOTE  
*Conceptual Domain*: TEXT  
*Steward*: ops  
*Namespace Id*: pds

**supported_operating_system_note in Software_Binary** The supported operating system note attribute identifies the Operating System that supports the software.

*Type*: ASCII_Text_Preserved  
*Class Name*: Software_Binary  
*Minimum Characters*: 1  
*Nillable*: false  
*Attribute Concept*: NOTE  
*Conceptual Domain*: TEXT  
*Steward*: ops  
*Namespace Id*: pds

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supported_operating_system_note in Software_Source

The supported operating system note attribute identifies the Operating System that supports the software.

Type: ASCII_Text_Preserved

Class Name: Software_Source

Minimum Characters: 1

Nullable: false

Attribute Concept: NOTE

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

system_requirements_note in Software_Binary

The system requirements note attribute identifies what is necessary to process the software.

Type: ASCII_Text_Preserved

Class Name: Software_Binary

Minimum Characters: 1

Nullable: false

Attribute Concept: NOTE

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds
**system_requirements_note in Software_Script** The system requirements note attribute identifies what is necessary to process the software.

*Type:* ASCII_Text_Preserved

*Class Name:* Software_Script

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* NOTE

*Conceptual Domain:* TEXT

*Steward:* ops

*Namespace Id:* pds

**system_requirements_note in Software_Source** The system requirements note attribute identifies what is necessary to process the software.

*Type:* ASCII_Text_Preserved

*Class Name:* Software_Source

*Minimum Characters:* 1

*Nillable:* false

*Attribute Concept:* NOTE

*Conceptual Domain:* TEXT

*Steward:* ops

*Namespace Id:* pds

**target_desc in Target_PDS3** The target_desc attribute describes the characteristics of a particular target.
**target_name in Target_PDS3** The target_name attribute provides a name by which the target is formally known.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Target_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**target_type in Target_PDS3** The target_type attribute identifies the type of a named target.

*Type:* ASCII_Short_String_Collapsed
Class Name: Target_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

team_name in PDS_Affiliate The team_name attribute provides the name of a group of individuals.

Type: ASCII_Short_String_Collapsed

Class Name: PDS_Affiliate

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: Engineering, Geosciences, Headquarters, Imaging, Management, National Space Science Data Center, Navigation Ancillary Information Facility, Planetary Atmospheres, Planetary Plasma Interactions, Planetary Rings, Radio Science, Small Bodies
telemetry_format_id in Telemetry_Parameters The telemetry_format_id attribute supplies a telemetry format code.

Type: ASCII_Short_String_Collapsed

Class Name: Telemetry_Parameters

Minimum Characters: 1

Maximum Characters: 4

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: img

Namespace Id: img

telemetry_provider_id in Telemetry_Parameters The telemetry_provider_id attribute identifies the provider and or version of the telemetry data used in the generation of this data.

Type: ASCII_Short_String_Collapsed

Class Name: Telemetry_Parameters

Minimum Characters: 1

Maximum Characters: 20

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: img

Namespace Id: img
**telemetry_source_name in Telemetry_Parameters** The telemetry_source_name attribute identifies the telemetry source used in creation of a data set.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Telemetry_Parameters

*Minimum Characters:* 1

*Maximum Characters:* 60

*Nullable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING

*Steward:* img

*Namespace Id:* img

**telemetry_source_type in Telemetry_Parameters** The telemetry_source_type attribute classifies the source of the telemetry used in creation of this data collection.

*Type:* ASCII.Short_String.Collapsed

*Unit of Measure Type:* Units_of_None

*Valid Units:* none

*Class Name:* Telemetry_Parameters

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* TYPE
Conceptual Domain: SHORT_STRING

Steward: img

Namespace Id: img

Value: DATA_PRODUCT, SFDU

telephone_number in PDS_Affiliate The telephone_number attribute provides a telephone number in international notation in compliance with the E.164 telephone number format recommendation.

Type: ASCII_Short_String_Collapsed

Class Name: PDS_Affiliate

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: NUMBER

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

telescope_latitude in Telescope The latitude attribute provides the angular distance north or south from the equator of a point on the object’s surface, measured on the meridian of the point.

Type: ASCII_Real

Unit of Measure Type: Units_of_Angle

Valid Units: arcmin, arcsec, deg, hr, mrad, rad

Specified Unit Id: deg
Class Name: Telescope

Minimum Value: -90

Maximum Value: 90

Nullable: false

Attribute Concept: LATITUDE

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds

telescope_longitude in Telescope The longitude attribute provides the angular distance east or west on the object’s surface, measured by the angle contained between the meridian of a particular place and some prime meridian.

Type: ASCII_Real

Unit of Measure Type: Units_of_Angle

Valid Units: arcmin, arcsec, deg, hr, mrad, rad

Specified Unit Id: deg

Class Name: Telescope

Nullable: false

Attribute Concept: LONGITUDE

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds
**terminological_entry in DD_Attribute**  The terminological_entry association is a relationship to Terminological_Entry.

*Type:* Association

**terminological_entry in DD_Attribute_Full**  The terminological_entry association is a relationship to Terminological_Entry.

*Type:* Association

**terminological_entry in DD_Class**  The terminological_entry association is a relationship to Terminological_Entry.

*Type:* Association

**terminological_entry in DD_Class_Full**  The terminological_entry association is a relationship to Terminological_Entry.

*Type:* Association

**title in Identification_Area**  The name given to the resource. Typically, a Title will be a name by which the resource is formally known. - Dublin Core - The title is used to refer to an object in a version independent manner.

*Type:* UTF8 SHORT STRING COLLAPSED

*Class Name:* Identification_Area

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TITLE

*Conceptual Domain:* SHORT STRING

*Steward:* pds

*Namespace Id:* pds
**transfer_manifest_checksum in Information_Package_Component**

The transfer manifest checksum provides the checksum for the transfer manifest file.

*Type:* ASCII_MD5_Checksum

*Class Name:* Information_Package_Component

*Minimum Characters:* 32

*Maximum Characters:* 32

*Format:* 0123456789abcdef

*Nillable:* false

*Attribute Concept:* CHECKSUM

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**type in DD_Attribute_Full** The type attribute provides a classification for the resource.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* DD_Attribute_Full

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* ops
Namespace Id: pds

Value: PDS3, PDS4

type in DD_Class_Full The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Class_Full

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: PDS3, PDS4

type in Facility The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Facility

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE
*Conceptual Domain:* SHORTSTRING

*Steward:* pds

*Namespace Id:* pds

*Value:* Laboratory, Observatory

**type in Instrument** The type attribute provides a classification for the resource.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Instrument

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORTSTRING

*Steward:* pds

*Namespace Id:* pds

**type in Instrument\_Host**  The type attribute provides a classification for the resource.

*Type*: ASCII\_Short\_String\_Collapsed

*Class Name*: Instrument\_Host

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: TYPE

*Conceptual Domain*: SHORT\_STRING

*Steward*: pds

*Namespace Id*: pds

*Value*: Earth Based, Rover, Spacecraft

**type in Investigation**  The type attribute provides a classification for the resource.

*Type*: ASCII\_Short\_String\_Collapsed

*Class Name*: Investigation

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: TYPE

*Conceptual Domain*: SHORT\_STRING

*Steward*: pds
Namespace Id: pds

Value: Individual Investigation, Mission, Observing Campaign, Other Investigation

type in Investigation_Area The type attribute provides a classification for the resource.

Type: ASCII Short_String_Collapsed

Class Name: Investigation_Area

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Individual Investigation, Mission, Observing Campaign, Other Investigation

type in Observing_System_Component The type attribute provides a classification for the resource.

Type: ASCII Short_String_Collapsed

Class Name: Observing_System_Component

Minimum Characters: 1

Maximum Characters: 255

Nullable: false
Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Artificial Illumination, Instrument, Laboratory, Literature Search, Naked Eye, Observatory, Spacecraft, Telescope

**type in Primary_Result_Summary** The type attribute provides a classification for the resource.

Type: ASCII_Long_String_Collapsed

Class Name: Primary_Result_Summary

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Altimetry, Astrometry, Count, E/B-Field Vectors, Gravity Model, Image, Lightcurves, Magnetometry, Map, Meteorology, Null Result, Occultation, Photometry, Physical Parameters, Polarimetry, Radiometry, Reference, Shape Model, Spectrum

**type in Quaternion** The type attribute provides a classification for the resource.

Type: ASCII_Long_String_Collapsed
Class Name: Quaternion

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: SPICE, Spacecraft Telemetry

**type in Resource** The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Resource

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**type in Target** The type attribute provides a classification for the resource.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Target

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds


**type in Target_Identification** The type attribute provides a target’s type, used to determine correct nomenclature for the name field.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Target_Identification

*Minimum Characters:* 1
The type attribute provides a classification for the resource.

**Type**: ASCII_Short_String_Collapsed

**Class Name**: Unit_Of_Measure

**Minimum Characters**: 1

**Maximum Characters**: 255

**Nullable**: false

**Attribute Concept**: TYPE

**Conceptual Domain**: SHORT_STRING

**Steward**: pds

**Namespace Id**: pds

**type in Units_of_Acceleration** The type attribute provides a classification for the resource.

**Type**: ASCII_Short_String_Collapsed

**Class Name**: Units_of_Acceleration

**Minimum Characters**: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Acceleration

**type in Units_of_Amount_Of_Substance** The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Amount_Of_Substance

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Amount_Of_Substance

**type in Units_of_Angle** The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed
Class Name: Units_of_Angle

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Angle

type in Units_of_Angular_Velocity  The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Angular_Velocity

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Angular_Velocity
**type in Units_of_Area** The type attribute provides a classification for the resource.

*Type*: ASCII Short String_Collapsed

*Class Name*: Units_of_Area

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: TYPE

*Conceptual Domain*: SHORT STRING

*Steward*: pds

*Namespace Id*: pds

*Value*: Area

**type in Units_of_Frame_Rate** The type attribute provides a classification for the resource.

*Type*: ASCII Short String_Collapsed

*Class Name*: Units_of_Frame_Rate

*Minimum Characters*: 1

*Maximum Characters*: 255

*Nillable*: false

*Attribute Concept*: TYPE

*Conceptual Domain*: SHORT STRING

*Steward*: pds

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Namespace Id: pds

Value: Frame_Rate

type in Units_of_Frequency The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Frequency

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Frequency

type in Units_of_Length The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Length

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE
**Conceptual Domain:** SHORT STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** Length

**type in Units_of_Map_Scale** The type attribute provides a classification for the resource.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Units_of_Map_Scale

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** Scale

**type in Units_of_Mass** The type attribute provides a classification for the resource.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Units_of_Mass

**Minimum Characters:** 1

**Maximum Characters:** 255
Nulllable: false 

Attribute Concept: TYPE 

Conceptual Domain: SHORT_STRING 

Steward: pds 

Namespace Id: pds 

Value: Mass 

type in Units_of_Misc The type attribute provides a classification for the resource. 

Type: ASCII_Short_String_Collapsed 

Class Name: Units_of_Misc 

Minimum Characters: 1 

Maximum Characters: 255 

Nulllable: false 

Attribute Concept: TYPE 

Conceptual Domain: SHORT_STRING 

Steward: pds 

Namespace Id: pds 

Value: Miscellaneous 

type in Units_of_None The type attribute provides a classification for the resource. 

Type: ASCII_Short_String_Collapsed 

Class Name: Units_of_None
type in Units_of_Optical_Path_Length The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Optical_Path_Length

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Optical_Path_Length

type in Units_of_Pressure The type attribute provides a classification for the resource.
Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Pressure

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Pressure

type in Units_of_Radiance The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Radiance

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds
Value: Radiance

**type** in **Units_of_Rates** The type attribute provides a classification for the resource.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Units_of_Rates

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* Rates

**type** in **Units_of_Solid_Angle** The type attribute provides a classification for the resource.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Units_of_Solid_Angle

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING
type in Units_of_Storage  The type attribute provides a classification for the resource.

Type: ASCII.Short.String.Collapsed

Class Name: Units_of_Storage

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Storage

type in Units_of_Temperature  The type attribute provides a classification for the resource.

Type: ASCII.Short.String.Collapsed

Class Name: Units_of_Temperature

Minimum Characters: 1

Maximum Characters: 255

Nullable: false
Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Temperature

**type in Units_of_Time**  The type attribute provides a classification for the resource.

*Type: ASCII_Short_String_Collapsed*

*Class Name: Units_of_Time*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Time

**type in Units_of_Velocity**  The type attribute provides a classification for the resource.

*Type: ASCII_Short_String_Collapsed*

*Class Name: Units_of_Velocity*

*Minimum Characters: 1*
**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** Velocity

**type in Units_of_Voltage** The type attribute provides a classification for the resource.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Units_of_Voltage

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** Voltage

**type in Units_of_Volume** The type attribute provides a classification for the resource.

*Type:* ASCII_Short_String_Collapsed
Class Name: Units_of_Volume

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Volume

type in Vector The type attribute provides a classification for the resource.

Type: ASCII_Short_String_Collapsed

Class Name: Vector

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: Acceleration, Pointing, Position, Velocity
**uniformly_sampled in Table_Binary**  The uniformly_sampled association is a relationship to Uniformly_Sampled.

*Type: Association*

**uniformly_sampled in Table_Character**  The uniformly_sampled association is a relationship to Uniformly_Sampled.

*Type: Association*

**uniformly_sampled in Table_Delimited**  The uniformly_sampled association is a relationship to Uniformly_Sampled.

*Type: Association*

**unit in Axis_Array**  The unit attribute provides the unit of measurement.

*Type: UTF8_Short_String_Collapsed*

*Class Name: Axis_Array*

*Minimum Characters: 1*

*Maximum Characters: 255*

*Nillable: false*

*Conceptual Domain: TEXT*

*Steward: pds*

*Namespace Id: pds*

**unit in Element_Array**  The unit attribute provides the unit of measurement.

*Type: UTF8_Short_String_Collapsed*

*Class Name: Element_Array*

*Minimum Characters: 1*

*Maximum Characters: 255*
**Nillable:** false

**Attribute Concept:** UNIT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**unit in Field_Binary** The unit attribute provides the unit of measurement.

**Type:** UTF8.Short_String.Collapsed

**Class Name:** Field_Binary

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** UNIT

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**unit in Field_Bit** The unit attribute provides the unit of measurement.

**Type:** UTF8.Short_String.Collapsed

**Class Name:** Field_Bit

**Minimum Characters:** 1

**Maximum Characters:** 255
Nullable: false

Attribute Concept: UNIT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**unit in Field_Character** The unit attribute provides the unit of measurement.

Type: UTF8_Short_String_Collapsed

Class Name: Field_Character

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: UNIT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**unit in Field_Delimited** The unit attribute provides the unit of measurement.

Type: UTF8_Short_String_Collapsed

Class Name: Field_Delimited

Minimum Characters: 1

Maximum Characters: 255
Nillable: false

Attribute Concept: UNIT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**unit in Vector_Component** The unit attribute provides the unit of measurement.

Type: UTF8_Short_String_Collapsed

Class Name: Vector_Component

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: UNIT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**unit_id in Unit_Of_Measure** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII_Short_String_Collapsed

Class Name: Unit_Of_Measure

Minimum Characters: 1

Maximum Characters: 255

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Nilable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**unit_id in Units_of_Acceleration** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Units_of_Acceleration

*Minimum Characters*: 1

*Maximum Characters*: 255

Nilable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: cm/s**2, km/s**2, m/s**2

**unit_id in Units_of_Amount_Of_Substance** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: Units_of_Amount_Of_Substance
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: mol

**unit_id in Units_of_Angle** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Units_of_Angle

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: arcmin, arcsec, deg, hr, mrad, rad
unit_id in Units_of_Angular_Velocity The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII Short_String_Collapsed

Class Name: Units_of_Angular_Velocity

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: deg/day, deg/s, rad/s

unit_id in Units_of_Area The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII Short_String_Collapsed

Class Name: Units_of_Area

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING
**Steward**: pds

**Namespace Id**: pds

**Value**: m**2**

**unit_id in Units_of_Frame_Rate** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

**Type**: ASCII, Short String, Collapsed

**Class Name**: Units_of_Frame_Rate

**Minimum Characters**: 1

**Maximum Characters**: 255

**Nullable**: false

**Attribute Concept**: ID

**Conceptual Domain**: SHORT_STRING

**Steward**: pds

**Namespace Id**: pds

**Value**: frames/s

**unit_id in Units_of_Frequency** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

**Type**: ASCII, Short String, Collapsed

**Class Name**: Units_of_Frequency

**Minimum Characters**: 1

**Maximum Characters**: 255
**unit_id in Units_of_Length** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII Short String Collapsed

*Class Name:* Units_of_Length

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* Hz

**unit_id in Units_of_Map_Scale** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII Short String Collapsed
Class Name: Units_of_Map_Scale

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: km/pixel, m/pixel, mm/pixel, pixel/deg

**unit_id in Units_of_Mass** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Mass

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: g, kg
**unit_id in Units_of_Misc** The `unit_id` attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII Short String Collapsed

*Class Name:* Units_of_Misc

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* DN, electron/DN, pixel

**unit_id in Units_of_None** The `unit_id` attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII Short String Collapsed

*Class Name:* Units_of_None

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING
unit_id in Units_of_Optical_Path_Length The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Optical_Path_Length

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: airmass

unit_id in Units_of_Pressure The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Pressure

Minimum Characters: 1

Maximum Characters: 255
**unit_id in Units_of_Radiance** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Units_of_Radiance

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

**Conceptual Domain:** SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* Pa, bar, hPa, mbar

**unit_id in Units_of_Rates** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Units_of_Rates

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

**Conceptual Domain:** SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* W*m**-2*sr**-1
Class Name: Units_of_Rates

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: counts/bin, kilobits/s

**unit_id in Units_of_Solid_Angle** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII_Short_String_Collapsed

Class Name: Units_of_Solid_Angle

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: sr
**unit_id in Units_of_Storage** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Units_of_Storage

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* byte

**unit_id in Units_of_Temperature** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

*Type:* ASCII.Short_String.Collapsed

*Class Name:* Units_of_Temperature

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nullable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING
unit_id in Units_of_Time The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Time

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: day, hr, julian day, microseconds, min, ms, s, yr

unit_id in Units_of_Velocity The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

Type: ASCII_Short_String_Collapsed

Class Name: Units_of_Velocity

Minimum Characters: 1

Maximum Characters: 255
**Nillable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** cm/s, km/s, m/s

**unit_id in Units_of_Voltage** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** Units_of_Voltage

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** pds

**Namespace Id:** pds

**Value:** V, mV

**unit_id in Units_of_Volume** The unit_id attribute provides a character or character string which serves as an abbreviation for, or symbol representing, a unit of measure.

**Type:** ASCII_Short_String_Collapsed

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Class Name: Units_of_Volume

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: L, m**3

unit_of_measure_type in DD_Value_Domain The unit_of_measure_type attribute provides the named grouping of units to be used for this attribute - for example Units_of_Length and Units_of_Time.

Type: ASCII Short_String_Collapsed

Class Name: DD_Value_Domain

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

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unit_of_measure_type in DD_Value_Domain_Full

The unit_of_measure_type attribute provides the named grouping of units to be used for this attribute - for example Units_of_Length and Units_of_Time.

Type: ASCII Short_String_Collapsed

Class Name: DD_Value_Domain_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds


unknown_constant in Special_Constants

The unknown_constant attribute provides a value that indicates the original value was unknown.
Type: ASCII_Short_String_Collapsed

Class Name: Special_Constants

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: CONSTANT

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

update_entry in Update The update_entry association is a relationship to Update_Entry.

Type: Association

url in External_Reference_Extended The url attribute provides a Uniform Resource Identifier (URI) that specifies where a resource is available and the mechanism for retrieving it.

Type: ASCII_URID

Class Name: External_Reference_Extended

Nullable: false

Attribute Concept: ANYURI

Conceptual Domain: ANYURI

Steward: ops

Namespace Id: pds

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**url in Resource** The url attribute provides a Uniform Resource Identifier (URI) that specifies where a resource is available and the mechanism for retrieving it.

*Type:* ASCII:AnyURI

*Class Name:* Resource

*Nillable:* false

*Attribute Concept:* ANYURI

*Conceptual Domain:* ANYURI

*Steward:* pds

*Namespace Id:* pds

**users_manual_id in Software** The users manual id attribute provides a formal name used to refer to a manual that describes how to use the software.

*Type:* ASCII:Short_String_Collapsed

*Class Name:* Software

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds
valid_maximum in Special_Constants The valid_maximum attribute specifies the maximum valid value in the field or digital object with which the Special_Constants class is associated. Values above the valid_maximum have a special meaning. Values of this attribute should be represented in the same data_type as the elements in the object or field described. (Note that PDS3 had no qube-related valid_maximum values because all special constants were set below the valid_minimum.)

Type: ASCII_Short_String_Collapsed

Class Name: Special_Constants

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: MAXIMUM

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: 254, 32767, 65522

valid_minimum in Special_Constants The valid_minimum attribute specifies the minimum valid value in the field or digital object with which the Special_Constants class is associated. Values below the valid_minimum have a special meaning. Values of this attribute should be represented in the same data_type as the elements in the object or field described.

Type: ASCII_Short_String_Collapsed

Class Name: Special_Constants

Minimum Characters: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: MINIMUM

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: -32752, 1, 3, 5, FF7FFFFA, FFEFFFFF

**value in DD_Permissible_Value** The value attribute provides a single, allowed numerical or character string value.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: DD_Permissible_Value

*Minimum Characters*: 1

*Maximum Characters*: 255

Nillable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**value in DD_Permissible_Value_Full** The value attribute provides a single, allowed numerical or character string value.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: DD_Permissible_Value_Full

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value in Quaternion_Component The value attribute provides a single, allowed numerical or character string value.

Type: ASCIIShort_String_Collapsed

Class Name: Quaternion_Component

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

value in Vector_Component The value attribute provides a single, allowed numerical or character string value.

Type: ASCIIShort_String_Collapsed

Class Name: Vector_Component
Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: VALUE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

value_begin_date in DD_Permissible_Value_Full The
value_begin_date attribute provides the first date on which the
permissible value is in effect.

Type: ASCII_Date_Time_YMD

Class Name: DD_Permissible_Value_Full

Format: YYYY-MM-DDTHH:MM:SS.SSS(Z)

Nullable: false

Attribute Concept: DATE_TIME

Conceptual Domain: TIME

Steward: ops

Namespace Id: pds

value_data_type in DD_Value_Domain The value_data_type attribute
provides the data type used to represent the value.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Value_Domain

Minimum Characters: 1
Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: ASCII_AnyURI, ASCII_Boolean, ASCII_DOI, ASCII_Date_DOY, ASCII_Date_Time, ASCII_Date_Time_DOY, ASCII_Date_Time.UTC, ASCII_Date_Time_YMD, ASCII_Date_YMD, ASCII_Directory_Path_Name, ASCII_File_Name, ASCII_File_Specification_Name, ASCII_Integer, ASCII_LID, ASCII_LIDVID, ASCII_LIDVID_LID, ASCII_MD5_Checksum, ASCII_NonNegative_Integer, ASCII_Numeric_Base16, ASCII_Numeric_Base2, ASCII_Numeric_Base8, ASCII_Real, ASCII_Short_String_Collapsed, ASCII_Short_String_Preserved, ASCII_Text_Collapsed, ASCII_Text_Preserved, ASCII_Time, ASCII_VID, UTF8_Short_String_Collapsed, UTF8_Short_String_Preserved, UTF8_Text_Preserved, Vector_Cartesian_3, Vector_Cartesian_3_Acceleration, Vector_Cartesian_3_Pointing, Vector_Cartesian_3_Position, Vector_Cartesian_3_Velocity

**value_data_type in DD_Value_Domain_Full** The value_data_type attribute provides the data type used to represent the value.

Type: ASCII_Short_String_Collapsed

Class Name: DD_Value_Domain_Full

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE
Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds


value_domain_entry in DD_Attribute  The value_domain_entry association is a relationship to Value_Domain.

Type: Association

value_domain_entry in DD_Attribute_Full The value_domain_entry association is a relationship to Value_Domain.

Type: Association

value_end_date in DD_Permmissible_Value_Full The value_end_date attribute provides the last date on which the permissible value is in effect.

Type: ASCII:Date_Time.YMD

Class Name: DD_Permmissible_Value_Full

Format: YYYY-MM-DDTHH:MM:SS.SSS(Z)

Nillable: false

Attribute Concept: DATE_TIME

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Conceptual Domain: TIME

Steward: ops

Namespace Id: pds

**value_meaning in DD_Permissible_Value** The value_meaning attribute provides the meaning, or semantic content, of the associated permissible value.

Type: ASCII_Text_Preserved

Class Name: DD_Permissible_Value

Minimum Characters: 1

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: TEXT

Steward: ops

Namespace Id: pds

**value_meaning in DD_Permissible_Value_Full** The value_meaning attribute provides the meaning, or semantic content, of the associated permissible value.

Type: ASCII_Text_Preserved

Class Name: DD_Permissible_Value_Full

Minimum Characters: 1

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: TEXT
value_offset in Band_Bin The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: Ov = (Sv * scaling_factor) + value_offset. The default value is 0.

Type: ASCII_Real

Class Name: Band_Bin

Nullable: false

Attribute Concept: OFFSET

Conceptual Domain: REAL

Steward: img

Namespace Id: pds

value_offset in Element_Array The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: Ov = (Sv * scaling_factor) + value_offset. The default value is 0.

Type: ASCII_Real

Class Name: Element_Array

Nullable: false

Attribute Concept: OFFSET

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds
**Value_offset in Field_Binary**  The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: \( Ov = (Sv \times \text{scaling\_factor}) + \text{value\_offset} \). The default value is 0.

*Type:* ASCII_Real

*Class Name:* Field_Binary

*Nillable:* false

*Attribute Concept:* OFFSET

*Conceptual Domain:* REAL

*Steward:* pds

*Namespace Id:* pds

**Value_offset in Field_Bit**  The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: \( Ov = (Sv \times \text{scaling\_factor}) + \text{value\_offset} \). The default value is 0.

*Type:* ASCII_Real

*Class Name:* Field_Bit

*Nillable:* false

*Attribute Concept:* OFFSET

*Conceptual Domain:* REAL

*Steward:* pds

*Namespace Id:* pds

**Value_offset in Field_Character**  The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: \( Ov = (Sv \times \text{scaling\_factor}) + \text{value\_offset} \). The default value is 0.
value_offset in Field_Delimited The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: Ov = (Sv * scaling_factor) + value_offset. The default value is 0.

vector in Geometry The vector association is a relationship to Vector objects.

vector_component in Vector The vector_component association is a relationship to the vector_component.

Class Name: Field_Character
Nillable: false
Attribute Concept: OFFSET
Conceptual Domain: REAL
Steward: pds
Namespace Id: pds

Class Name: Field_Delimited
Nillable: false
Attribute Concept: OFFSET
Conceptual Domain: REAL
Steward: pds
Namespace Id: pds

Type: ASCII_Real

Type: Association
**vector_components in Vector** The `vector_components` attribute provides a count of vector components.

*Type:* ASCII,Integer

*Class Name:* Vector

*Nillable:* false

*Attribute Concept:* COUNT

*Conceptual Domain:* INTEGER

*Steward:* pds

*Namespace Id:* pds

**version_id in DD_Attribute** The `version_id` attribute provides the version of the product, expressed in the PDS [m.n] notation.

*Type:* ASCII,Short_String,Collapsed

*Class Name:* DD_Attribute

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

**version_id in DD_Attribute_Full** The `version_id` attribute provides the version of the product, expressed in the PDS [m.n] notation.

*Type:* ASCII,Short_String,Collapsed
**Class Name:** DD_Attribute_Full

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**version_id in DD_Class** The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** DD_Class

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

**Attribute Concept:** ID

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**version_id in DD_Class_Full** The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.

**Type:** ASCII_Short_String_Collapsed

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Class Name: DD_Class_Full

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**version_id in Software** The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.

Type: ASCII_Short_String_Collapsed

Class Name: Software

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**version_id in Identification_Area** The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.

Type: ASCII_Short_String_Collapsed
Class Name: Identification_Area

Minimum Characters: 1

Maximum Characters: 255

Pattern: ([0-9]+)(\{1\})([0-9]+)

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

version_id in Instrument_Host The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.

Type: ASCII_Short_String_Collapsed

Class Name: Instrument_Host

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

version_id in Modification_Detail The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.
Type: ASCII_Short_String_Collapsed

Class Name: Modification_Detail

Minimum Characters: 1

Maximum Characters: 255

Pattern: ([0-9]+)(\{1\}([0-9]+))

Nillable: false

Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

**volume_de_fullname in Volume_PDS3** The `volume_de_fullname` attribute provide the full name of the data engineer.

Type: ASCII_Short_String_Collapsed

Class Name: Volume_PDS3

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: VALUE2

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

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**volume_format in Volume_PDS3** The volume_format attribute identifies the logical format used in writing a data volume.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* FORMAT

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds


*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds
**volume_name in Volume_PDS3** The `volume_name` attribute contains the name of a data volume.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

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**volume_series_name in Volume_Set_PDS3** The `volume_series_name` element provides a full, formal name that describes a broad categorization of data products or data sets related to a planetary body or a research campaign (e.g. International Halley Watch). A volume series consists of one or more volume sets that represent data from one or more missions or campaigns.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_Set_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* NAME

*Conceptual Domain:* SHORT_STRING
**Steward:** ops

**Namespace Id:** pds

**volume_set_id in Volume_PDS3** The `volume_set_id` attribute identifies a data volume or a set of volumes. Volume sets are normally considered as a single orderable entity. Examples: USA_NASA_PDS_MG_1001, USA_NASA_PDS_GR_0001_TO_GR_0009

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* ID

*Conceptual Domain:* SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**volume_set_id in Volume_Set_PDS3** The `volume_set_id` attribute identifies a data volume or a set of volumes. Volume sets are normally considered as a single orderable entity. Examples: USA_NASA_PDS_MG_1001, USA_NASA_PDS_GR_0001_TO_GR_0009

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_Set_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false
Attribute Concept: ID

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**volume_set_name in Volume_Set_PDS3** The *volume_set_name* element provides the full, formal name of one or more data volumes containing a single data set or a collection of related data sets. Volume sets are normally considered as a single orderable entity.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_Set_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

Attribute Concept: NAME

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

**volume_size in Volume_PDS3** The *volume_size* attribute provide the number of bytes in the volume.

*Type:* ASCII_NonNegative_Integer

*Class Name:* Volume_PDS3

*Minimum Value:* 0

*Nillable:* false
**volume_version_id in Volume_PDS3** The `volume_version_id` attribute identifies the version of a data volume. All original volumes should use a `volume_version_id` of ‘Version 1’.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* Volume_PDS3

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

**volumes in Volume_Set_PDS3** The `volumes` element provides the number of physical data volumes contained in a volume set.

*Type:* ASCII_Integer

*Class Name:* Volume_Set_PDS3

*Minimum Value:* 0

*Nillable:* false

*Attribute Concept:* COUNT
**Conceptual Domain:** INTEGER

**Steward:** ops

**Namespace Id:** pds

**x in Vector.Cartesian_3** The x attribute provides the value of the x coordinate in a position vector.

**Type:** ASCII_Real

**Class Name:** Vector.Cartesian_3

**Nillable:** false

**Attribute Concept:** VALUE2

**Conceptual Domain:** REAL

**Steward:** pds

**Namespace Id:** pds

**xml_schema_base_type in ASCII.AnyURI** The xml schema base type attribute provides the data type needed for the XML schema implementation.

**Type:** ASCII.Short_String.Collapsed

**Class Name:** ASCII.AnyURI

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops
Namespace Id: pds

Value: xsd:anyURI

xml_schema_base_type in ASCII_DOI The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Long_String_Collapsed

Class Name: ASCII_DOI

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string

xml_schema_base_type in ASCII_Date_DAY The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Long_String_Collapsed

Class Name: ASCII_Date_DAY

Minimum Characters: 1

Maximum Characters: 255

Nillable: false
xml_schema_base_type in ASCII_Date_Time The xml schema base type attribute provides the data type needed for the XML schema implementation.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_Time

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nullable:** false

xml_schema_base_type in ASCII_Date_Time_DOY The xml schema base type attribute provides the data type needed for the XML schema implementation.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Date_Time_DOY

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Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string

```xml
<xs:simpleType name="ASCII_Date_Time.UTC">
  <xs:restriction base="xs:string">
    <xs:minLength value="1"/>
    <xs:maxLength value="255"/>
    <xs:restriction base="xs:string">
      <xs:minLength value="1"/>
      <xs:maxLength value="255"/>
    </xs:restriction>
  </xs:restriction>
</xs:simpleType>
```

xml_schema_base_type in ASCII_Date_Time.UTC The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date_Time.UTC

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string
**xml_schema_base_type in ASCII_Date_Time_YMD**  The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* ASCII_Date_Time_YMD

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

*Value:* xsd:string

**xml_schema_base_type in ASCII_Date_YMD**  The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCIIShort_String_Collapsed

*Class Name:* ASCII_Date_YMD

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING
xml_schema_base_type in ASCII_Directory_Path_Name The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Directory_Path_Name

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:token

xml_schema_base_type in ASCII_File_Name The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_File_Name

Minimum Characters: 1

Maximum Characters: 255
Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:token

**xml_schema_base_type in ASCII_File_Specification_Name** The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_File_Specification_Name

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:token

**xml_schema_base_type in ASCII_Integer** The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed
Class Name: ASCII_Integer

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:int

xml_schema_base_type in ASCII_LID The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_LID

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string

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**xml_schema_base_type in ASCII_LIDVID** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_LIDVID

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

*Value:* xsd:string

**xml_schema_base_type in ASCII_MD5_Checksum** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_MD5_Checksum

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING
The xml schema base type attribute provides the data type needed for the XML schema implementation.

**Type**: ASCII_Short_String_Collapsed

**Class Name**: ASCII_NonNegative_Integer

**Minimum Characters**: 1

**Maximum Characters**: 255

**Nillable**: false

**Attribute Concept**: TYPE

**Conceptual Domain**: SHORT_STRING

---

The xml schema base type attribute provides the data type needed for the XML schema implementation.

**Type**: ASCII_Short_String_Collapsed

**Class Name**: ASCII_Real

**Minimum Characters**: 1

**Maximum Characters**: 255
**Nillable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**Value:** xsd:double

**xml_schema_base_type in ASCII_Short_String_Collapsed** The xml schema base type attribute provides the data type needed for the XML schema implementation.

**Type:** ASCII_Short_String_Collapsed

**Class Name:** ASCII_Short_String_Collapsed

**Minimum Characters:** 1

**Maximum Characters:** 255

**Nillable:** false

**Attribute Concept:** TYPE

**Conceptual Domain:** SHORT_STRING

**Steward:** ops

**Namespace Id:** pds

**Value:** xsd:token

**xml_schema_base_type in ASCII_Short_String_Preserved** The xml schema base type attribute provides the data type needed for the XML schema implementation.

**Type:** ASCII_Short_String_Collapsed

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Class Name: ASCII_Short_String_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string

xml_schema_base_type in ASCII_Text_Preserved The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Text_Preserved

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string
**xml_schema_base_type in ASCII_Time** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCII Short String Collapsed

*Class Name:* ASCII_Time

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* ops

*Namespace Id:* pds

*Value:* xsd:string

---

**xml_schema_base_type in ASCII_VID** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCII Short String Collapsed

*Class Name:* ASCII_VID

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING
xml_schema_base_type in UTF8_Short_String_Collapsed The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: UTF8_Short_String_Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:token

xml_schema_base_type in UTF8_Short_String_Preserved The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: UTF8_Short_String_Preserved

Minimum Characters: 1

Maximum Characters: 255
Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string

**xml_schema_base_type in UTF8_Text_Preserved** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type*: ASCII_Short_String_Collapsed

*Class Name*: UTF8_Text_Preserved

*Minimum Characters*: 1

*Maximum Characters*: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: ops

Namespace Id: pds

Value: xsd:string

**xml_schema_base_type in ASCII_Boolean** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type*: ASCII_Short_String_Collapsed
Class Name: ASCII_Boolean

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: xsd:boolean

xml_schema_base_type in ASCII_Date The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Date

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: xsd:string

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**xml_schema_base_type in ASCII_LIDVID_LID** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_LIDVID_LID

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

*Steward:* pds

*Namespace Id:* pds

*Value:* xsd:string

**xml_schema_base_type in ASCII_Numeric_Base16** The xml schema base type attribute provides the data type needed for the XML schema implementation.

*Type:* ASCII_Short_String_Collapsed

*Class Name:* ASCII_Numeric_Base16

*Minimum Characters:* 1

*Maximum Characters:* 255

*Nillable:* false

*Attribute Concept:* TYPE

*Conceptual Domain:* SHORT_STRING

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xml_schema_base_type in ASCII_Numeric_Base2 The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Numeric_Base2

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: xsd:string

xml_schema_base_type in ASCII_Numeric_Base8 The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_Numeric_Base8

Minimum Characters: 1

Maximum Characters: 255
Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: xsd:string

**xml_schema_base_type in ASCII_String** The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: ASCII_String

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: xsd:token

**xml_schema_base_type in ASCII_Text_Collapsed** The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed
Class Name: ASCII_Text_Collapsed

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: xsd:token

xml_schema_base_type in Character_Data_Type The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII_Short_String_Collapsed

Class Name: Character_Data_Type

Minimum Characters: 1

Maximum Characters: 255

Nillable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

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xml_schema_base_type in UTF8_String The xml schema base type attribute provides the data type needed for the XML schema implementation.

Type: ASCII,Short_String,Collapsed

Class Name: UTF8_String

Minimum Characters: 1

Maximum Characters: 255

Nullable: false

Attribute Concept: TYPE

Conceptual Domain: SHORT_STRING

Steward: pds

Namespace Id: pds

Value: xsd:token

y in Vector_Cartesian_3 The y attribute provides the value of the y coordinate in a position vector.

Type: ASCII,Real

Class Name: Vector_Cartesian_3

Nullable: false

Attribute Concept: VALUE2

Conceptual Domain: REAL

Steward: pds

Namespace Id: pds
The z attribute provides the value of the z coordinate in a position vector.

*Type:* ASCII_Real

*Class Name:* Vector_Cartesian_3

*Nillable:* false

*Attribute Concept:* VALUE2

*Conceptual Domain:* REAL

*Steward:* pds

*Namespace Id:* pds

## 24 Glossary

The following glossary contains a list of terms used within this specification and the definitions for those terms.

**Archive** A place in which public records or historical documents are preserved; also the material preserved - often used in plural. Sometimes capitalized when referring to all of PDS holdings - the PDS Archive.

**Array** An N-dimensional data structure in which every element has an identical data type. For example, a structure with 5 rows and 3 columns in which each element is a 2-byte signed integer would be an array.

**Association** An attribute that establishes a unidirectional relationship between two classes. For example, a table has records; 'has record' is the relationship between one entity (the table) and another (a record).

**Attribute** A property or characteristic that provides a unit of information. For example, 'color' and 'length' are possible attributes.

**Basic_Product** The simplest product in PDS4; one or more data objects (and their description objects), which constitute (typically) a single observation, document, etc. The only PDS4 products that are not basic products are Product_Collection and Product_Bundle. Every basic product must be a primary member of one (and only one) collection. Basic products may be secondary members of any number of collections.
Bundle A list of collections. Product_Bundle, the bundle’s manifestation, is itself a product (because it is simply a list embedded within a label); but it is not a basic product. For example, a bundle could list a collection of raw data obtained by an instrument during its mission lifetime, a collection of the calibration products associated with the instrument, and a collection of all documentation relevant to the first two collections.

Cardinality The number of values allowed to an attribute or association in a single class. Cardinality in general is stated as a range with a minimum and maximum. For example, an optional attribute that may be multi-valued will have a cardinality of "0..*". A cardinality where the minimum and maximum are the same is often shown as the single value; for example, an attribute required to have exactly one value will have a cardinality of "1". When a value is required, the minimum cardinality is at least 1.

Class The set of attributes (including a name) which defines a family. A class is generic - a template from which individual members of the family may be constructed. If the class ‘rope’ (its name) is defined by attributes ‘color’ and ‘length’, we can construct a family of ropes - e.g., red and 3 m long, red and 4 m long, blue and 2 m long, ...

Class_Hierarchy An ordering of classes which shows parent-child relationships.

Collection A list of basic products, all of which are closely related in some way. The collection’s manifestation, Product_Collection, is itself a product (because it is simply a list, with its label); but it is not a basic product.

Conceptual_Object An object which is intangible (and, because it is intangible, does not fit into a digital archive). Examples of ‘conceptual objects’ include the Cassini mission and NASA’s strategic plan for solar system exploration. Note that a PDF describing the Cassini mission is a digital object, not a conceptual object (nor a component of a conceptual object).

Consulting_Node A PDS discipline node assigned as the contact for a mission, instrument, or project.

Container The physical equivalent of a package (see below); the product manifest and all related files wrapped together for transfer - for example, in a ZIP, GZIP, or TAR file.

Data_Dictionary A repository for definitions of classes and attributes
**Data_Object**  A physical, conceptual, or digital object.

**Data_Preparer**  Same as data provider

**Data_Provider**  A person or organization that assembles archival data for delivery to PDS.

**Data_Structure**  A particular way of storing data in a computer that facilitates efficient use.

**Description_Object**  Something that describes an object. As appropriate, it will have structural and descriptive components. Technically speaking, a ’description object’ in PDS4 is a ’digital object’ - a string of bits; but we assume that we can read it and, on that basis, give it a special name.

**Digital_Object**  An object which is real data - for example, a binary image of a redwood tree or an ASCII table of atmospheric composition versus altitude.

**Discipline_Area**  That part of a label which is specified by a discipline.

**Encoded_Byte_Stream**  A byte stream that may only be interpreted after it has been ’decoded’ according to some well known standard

**Entity**  Something that has a distinct, separate existence.

**Extension**  (1) See subclass. (2) The character string following the last period in a file name.

**Identifier**  A unique character string by which a product, object, or other entity may be identified and located. Identifiers can be global, in which case they are unique across all of PDS (and its federation partners). A local identifier must be unique within a label.

**Information_Model**  A representation of concepts, relationships, constraints, rules, and operations to specify data semantics for a chosen domain of discourse. Specifically, the PDS Information Model (IM) is the representation that specifies PDS4.

**Information_Object**  A data object paired with its description

**Inventory**  An itemized list of current assets or holdings

**Label**  The aggregation of one or more description objects such that the aggregation describes a single PDS product. In the PDS4 implementation, labels are constructed using XML, which imposes a small amount of overhead.
**Label_Template** A text file which serves as a pattern for constructing labels.

**Lead_Node** One of several consulting nodes designated as the PDS coordinator and primary contact with a mission.

**Local** (1) Within a single label. (2) Within an archiving entity - e.g., local data dictionary.

**Local_Data_Dictionary_(LDD)** A data dictionary for classes and attributes which are not defined across the entire PDS. Examples include data dictionaries for discipline nodes, missions, and individual archiving projects.

**Logical_Identifier_(LID)** An identifier which identifies the set of all versions of an object

**Manifest** A list of contents

**Meta-Attribute** An attribute of an attribute - that is, a 'dictionary' attribute, which is used to define one or more attributes in the PDS4 Information Model. For example, 'conceptual_domain' and 'maximum_value' are used in defining some attributes.

**Metadata** Data about data - for example, a 'description object' contains information (metadata) about an 'object'.

**Mission** A task with which a group of people have been charged, usually by a government agency and including priority (if not exclusive) use of one or more spacecraft (see attribute type within class Investigation_Area)

**Mission_Area** That part of a label which is specified by a mission

**Model** A representation or description designed to show an entity and its composition.

**Namespace** A context for defining classes and attributes. Two items with the same name but from different namespaces generally have different definitions. For example, "title" has a very different meaning in a movie namespace compared with its meaning in an automobile namespace.

**Object** The realization of a single member of a family defined by a class. If the class 'rope' has attributes 'color' and 'length', we can construct a 'rope' family with three members - red and 3 m long, red and 4 m long, and blue and 2 m long. Each member is an object.

**Observational_Data** Raw measurements from one or more instruments, or the results from processing such raw measurements.
Observing Campaign An observational assignment with which a group of people have been charged (sometimes voluntarily) which extends over some period of time and which can be accomplished without significant construction of new equipment. (see attribute type within class Investigation_Area)

Package A product manifest and all related files logically grouped together for transfer.

Parsable_BYTE_STREAM A byte stream which can be parsed with standard rules - e.g., comma separated entries or standard punctuation; 'decoding software' is not needed.

Physical Object An object which is physical or tangible (and, therefore, does not itself fit into a digital archive). Examples of 'physical objects' include the planet Saturn and the Venus Express magnetometer. Note that an ASCII file describing Saturn is a digital object, not a physical object (nor a component of a physical object).

Primary Member A basic product is a primary member of the collection within which it first enters PDS4. Every basic product must be a primary member of one (and only one) collection. A product’s member status (primary or secondary) is based on its first association with the collection. Although the product may be omitted from a later version of the collection, it retains its primary or secondary member status through all subsequent versions of the collection based on its initial association. In a similar way, collections are categorized as having either primary or secondary 'member status' in their bundles.

Product One or more tagged objects (digital, non-digital, or both) grouped together and having a single PDS-unique identifier. In the PDS4 implementation, the descriptions are combined into a single XML label. Although it may be possible to locate individual objects within PDS (and to find specific bit strings within digital objects), PDS4 defines 'products' to be the smallest granular unit of addressable data within its complete holdings.

Registration Authority An organization responsible for maintaining a registry - in this case, the PDS4 Information Model and its components. The registration authority for the Planetary Data System is 'PDS'.

Registry A data base that provides services for sharing content and metadata.

Repository A place, room, or container where something is deposited or stored (often for safety or preservation)
**Resource** The target (referent) of any Uniform Resource Identifier; the thing to which a URI points.

**Restored_Data** Data which have been recovered from storage and successfully prepared for archive in PDS.

**Restriction** A limit placed on the range of a variable; specifically, the narrowing of possible choices for a class or attribute. For example, attribute axes may have values between 1 and 16 in the definition of Array, but it is restricted to the value ’2’ in Array_2D.

**Schema** A structural definition given in a formal language which serves as a blueprint for construction.

**Science_Bundle** Observational data from a science investigation, documentation, and other supplementary data organized into a bundle structure for delivery to PDS.

**Secondary_Member** A basic product may be a secondary member of any number of collections. A collection which lists references to basic products already registered in PDS would identify those products as its secondary members. For example, if all Voyager images were in one primary collection, an analyst could define a new (subset) collection containing images which had Saturn’s rings within the field of view; each of those image products would be a secondary member of the new collection. A product’s member status (primary or secondary) is based on its first association with the collection. Although the product may be omitted from a later version of the collection, it retains its primary or secondary member status through all subsequent versions of the collection based on its initial association. In a similar way, collections are categorized as having either primary or secondary ’member status’ in their bundles.

**Steward** A person or organization that manages a set of registered attributes and classes, typically as an agent for another or others. A registration authority must have at least one steward; it may have many. Stewards for PDS4 include PDS, the discipline nodes, and any mission wishing to conform to the PDS4 Information Model.

**Subclass** In PDS4 a subclass is a class extension. Subclasses are more specialized versions of a class. They inherit attributes and behaviors from their parent classes, and they can have attributes of their own. For example, Array_2D is a PDS4 subclass of Array_Base.

**Supplementary_Data** Additional archival material which is useful in understanding observational data. Examples include browse products,
descriptions of instruments and other facilities important to data acquisition, information about observing geometry, calibrations, and observing and command logs.

**Table** A two-dimensional data structure composed of records, which themselves are heterogeneous but which repeat throughout the table. For example, a table could have 20 ASCII records, each of which has a 10-character date field, a comma, an 8-character time field, a comma, a 3-digit integer temperature field, and a 'carriage-return line-feed' record delimiter.

**Tag** Fundamental syntax in XML; a tag is a character string delimited by "¡" and "¿". For example '¡date¿' is a tag.

**Tagged_Digital_Object** A digital object paired with its companion description object. [Note: In the OAIS RM this pair is known as an 'information object']

**Tagged_Non-Digital_Object** A physical object or a conceptual object paired with its companion description object. [Note: In the OAIS RM this pair is known as an 'information object']

**Version_ID** An identifier which identifies the version of something else

**Versioned_ID** The concatenation of a logical identifier (LID) with a version identifier (VID).

**XML_Attribute** An attribute-value pair that is inserted into an XML element to provide additional information, such as units; the value is always enclosed in double quotes. For example ¡date unit="year"¿2009¡/date¿

**XML_Document** A file that contains syntactically correct XML-formatted text

**XML_Editor** An editor, which has special features allowing XML tag completion, XML validation, etc.

**XML_Element** An XML structure that begins with ¡tag¿, contains 'content', and ends with ¡/tag¿. For example, "¡date¿2009¡/date¿" is an XML element establishing the date as 2009. The allowed 'content' is specified in the PDS4 Information Model, which is propagated to the PDS4 Data Dictionary.

**XML_Label** A label written using XML

**XML_Root_Tag** The first (and highest-level) XML tag in an XML document
**XML Schema** The definition of an XML document, specifying required and optional XML elements, their order, and parent-child relationships.

**XML Tag** Same as tag.

**XML Template** A text file which serves as a pattern for constructing XML documents.