Ingest LDD
Users Guide

Version 1.2.0

August 6, 2014

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Contents

Change Log

Version 1.2.0

Date	Section(s)	Changes(s)
2014-04-16	Change Log	First draft

1 Introduction

The *Ingest LDD* schema is defined in the PDS4 Information Model (IM) and is used to define local data dictionaries. Once a local data dictionary is defined it can be ingested into the IM and the PDS4 Data Dictionary Data Base (DDDB). A local data dictionary at the discipline level is required to be ingested. A dictionary at the mission level can optionally be ingested.

The PDS4 Information Model (IM) is the fundamental reference for PDS4 structure; its requirements can be validated automatically using eXtensible Markup Language (XML) schemas.

The PDS4 Data Dictionary Data Base (DDDB) is the fundamental reference for definitions of classes and attributes.

1.1 Purpose

This document describes the elements of *Ingest LDD* and how they are used to create a local data dictionary.

Ingest LDD is both an XML schema defined in the PDS4 IM and an XML template generated from the schema. The *Ingest LDD* template is used during the design of a local data dictionary to capture the components of the local data dictionary.

1.2 Scope

The *Ingest LDD* Users Guide applies to local data dictionaries at the discipline and mission levels of the PDS. The *Ingest LDD* constrains the design of a local data dictionary so that it is consistent with the core PDS4 IM and DDDB and all controlling standards documents.

1.3 Audience

The Ingest LDD Users Guide is intended primarily to serve the community of scientists and engineers responsible for creating local data dictionaries for the PDS4 Information Model. These new dictionaries augment the common model and have their own stewards and unique namespaces. The audience includes personnel at PDS discipline and data nodes, principal investigators and their staffs, and ground data system engineers. The document will be most useful to people who have prior experience with the PDS Information Model and modeling practices.

1.4 Document Organization

The Ingest LDD Users Guide is divided into four parts. The first is this part. The second provides detailed information on the components of Ingest LDD. The third describes special considerations for building a local data dictionary. The final part is an example of a completed Ingest_LDD template.

1.5 External Standards

External standards, which apply to this document and to PDS4-compliant data, include the following:

International Standards Organization (ISO)

- ISO/IEC 11179-3:2003 *Metadata registries (MDR) – Part 3: Registry metamodel and basic attributes*

- ISO/IEC 19757-3:2006 *Information technology -- Document Schema Definition Languages (DSDL) -- Part 3: Rule-based validation -- Schematron*

World Wide Web Consortium (W3C)

- *Extensible Markup Language (XML) 1.0* (Fifth Edition)

- *W3C XML Schema Definition Language (XSD) 1.1 Part 1: Structures* (W3C, 2012a)

- W3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes (W3C, 2012b)

1.6 Document Availability

PDS4 documents governing archive preparation are available online at:

<div align="center">

http://pds.nasa.gov/pds4/doc/

</div>

For questions concerning these documents, contact any PDS data engineer or contact the PDS Operator at pds_operator@jpl.nasa.gov or 818-393-7165.

Associated schemas for current and past versions of PDS4 can be found at

<div align="center">

http://pds.nasa.gov/pds4/schema/released/

</div>

2 Ingest LDD

An *Ingest LDD* template is used during the design of a local data dictionary to capture the components of the local data dictionary. In the following sections each class is described as a series of attribute definitions[1]. If the class has component classes, these are referenced by name. The component classes are each defined in their own section.

Note that the *Ingest_LDD*, *DD_Attribute*, and *DD_Class* classes described in this section are strictly classified as meta-classes since they are being used to define classes at the user level. Likewise the *comment*, *name*, and *description* attributes are strictly classified as meta-attributes since they are used in the meta-classes. This distinction is important to keep in mind while discussiong the Ingest_LDD template since the meta-class uses meta-attributes to define user level classes and attributes. However for the remainder of this document and for simplicity the simpler terms *attribute* and *class* will be used.

Finally there are special considerations for selected attributes. For example, attributes defined in an external dictionary can be referenced as a component when defining a class. The mechanism for distinguishing local from external attributes is described in section three.

2 Ingest LDD Components

2.1 Ingest LDD

The *Ingest_LDD* schema is used to define a new local data dictionary. The *Ingest_LDD* class is the header for the dictionary.

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[1] Note that the classes *Ingest_LDD*, *DD_Attribute*, and *DD_Class* described in this section are strictly classified as meta-classes since they are being used to define classes at the *user* level. Likewise the attributes *comment*, *name*, and *description* are strictly classified as meta-attributes since they are used in the meta-classes. This distinction is important to keep in mind while discussiong the Ingest_LDD template since the meta-class uses meta-attributes to define the *user* level classes and attributes. However for the remainder of this document and for simplicity the simpler terms *attribute* and *class* will be used.

Class	Attribute/Association	Permissible Value	Description	Cardinality
Ingest_LDD				
	name		The name attribute provides a word or combination of words by which the object is known. Within Ingest_LDD the value of name is used as the name of the dictionary. However the value is not used for any of the files that are produced.	Required
	ldd_version_id		The ldd_version_id attribute provides the version of the Local Data Dictionary.	Required
	full_name		The full_name attribute provides the complete name for a person and includes titles and suffixes. Within Ingest_LDD, the value of full_name should name the individual or group that authored this dictionary.	Required
	steward_id		The steward_id attribute provides the abbreviation of the organization that manages the set of registered attributes and classes.	Required
	namespace_id		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.	Required
	comment		The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.	Optional
	last_modification_date_time		The last_modification_date_time attribute gives the most recent date and time that a change was made.	Required
	DD_Attribute		The DD_Attribute class defines each attribute in the local data dictionary.	Required / Unbounded
	DD_Class		The DD_Class class defines each class in the local data dictionary.	Optional / Unbounded
	DD_Rule		The DD_Rule class define each rule in the local data dictionary.	Optional / Unbounded

2.2 DD_Attribute

The *DD_Attribute* class is used to define an attribute for the local data dictionary. All attributes should be defined before any class is defined. Each attribute is subsequently referenced in the class definitions zero or more times. Within a class, an attribute is indicated as Optional if its minimum and maximum cardinalities are 0:1. An attribute is indicated as Required if its minimum and maximum cardinalities are 1:1. For example "comment" is an Optional attribute which may be omitted when completing a DD_Attribute class.

Class	Attribute/Association	Permissible Value	Description	Cardinality
DD_Attribute			The DD_Attribute class defines an attribute for a data dictionary.	
	name		The name attribute provides a word or combination of words by which the object is known. Within DD_Attribute, the value of name will be used as the name of the attribute being defined.	Required
	version_id		The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.	Required
	local_identifier		The local_identifier attribute provides a character string which uniquely identifies the containing object within the label. Within the Ingest_LDD, the local identifier provided within a DD_Attribute is referenced by an instance of DD_Association. A single DD_Attribute definition can be referenced by zero or more DD_Associations.	Required
	nillable_flag		The nillable_flag attribute indicates whether an attribute is allowed to take on nil as a value.	Required
	submitter_name		The submitter_name attribute provides the name of the author, who submits the item to the steward.	Required
	definition		The definition attribute provides a statement, picture in words, or account that defines the term.	Required
	comment		The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.	Optional
	Internal_Reference		The Internal_Reference is used to reference a product in the PDS4 registry. Within Ingest_LDD the product is typically a Product_Document. The	Optional / Unbounded
	Terminological_Entry		The Terminological_Entry class is used to provide one or more alternate names and definitions for the attribute. The preferred name and definition is assumed to be the values of name and definition, respectively, that are provided in DD_Attribute.	Optional / Unbounded
	DD_Value_Domain		The DD_Value_Domain class is used to define the attribute data type, constrains on the values, and permissible value list if enumerated.	Required

2.2.1 Internal_Reference

The Internal Reference class is used to reference a product in a PDS4 registry. Either the LID or the LIDVID of the product, but not both, may be used.

Class	Attribute	Permissible Value	Description	Cardinality
Internal_Reference				
	lid_reference		The lid_reference attribute provides the logical_identifier for a product. In Ingest_LDD, either the lid_reference or the lidvid_reference can be used. When used the reference is typically to a document that provides source material for the definition.	Optional
	lidvid_reference		The lidvid_reference attribute provides the logical_identifier plus version_id, which uniquely identifies a product. In Ingest_LDD, either the lid_reference or the lidvid_reference can be used. When used the reference is typically to a document that provides source material for the definition.	Optional
	reference_type		The reference_type attribute provides the name of the association. In Ingest_LDD the value of reference_type should be "LDD_to_Source".	Required
	comment		The comment attribute provides one or more remarks or thoughts relevant to the object.	Optional

2.2.2 Terminological_Entry

The Terminological Entry class is used to provide an alternate name and definition.

Class	Attribute	Permissible Value	Description	Cardinality
Terminological _Entry				
	name		The name attribute provides a word or combination of words by which the object is known.	Required
	definition		The definition attribute provides a statement, picture in words, or account that defines the term.	Required
	language	English Russian	The language attribute provides the language used for definition and designation of the term.	Required
	preferred_flag	true false	The preferred_flag indicates whether this entry is preferred over all other entries.	Required
	External_Reference _Extended		The External_Reference_Extended class provides a reference to a document or resource that is external to the system.	Optional / Unbounded

2.2.2.1 Internal_Reference_Extended

The Internal_Reference_Extended provides a reference to documents or resources that are external to a PDS4 registry.

Class	Attribute	Permissible Value	Description	Cardinality
External_Reference _Extended				
	doi		The doi attribute provides the Digital Object Identifier for an object, assigned by the appropriate DOI System Registration Agency.	Optional
	reference_text		The reference_text attribute provides a complete bibliographic citation for a published work.	Required
	description		The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.	Optional
	name		The name attribute provides a word or combination of words by which the object is known.	Optional
	url		The url attribute provides a Uniform Resource Identifier (URI) that specifies where a resource is available and the mechanism for retrieving it.	Optional

2.2.3 DD_Value_Domain

The DD_Value_Domain class is used to define the data type and value constraints for a DD_Attribute.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Value _Domain			The DD_Value_Domain class defines an attribute's permissible values and their constraints.	
	enumeration_flag	true false	The enumeration_flag attribute indicates whether there is an enumerated set of permissible values.	Required
	value_data_type	See complete list in the PDS4 Data Dictionary.	The value_data_type attribute provides the data type used to represent the value.	Required
	formation_rule		The formation_rule attribute provides a 'user friendly' instruction for forming values.	Optional
	minimum_characters		The minimum_characters attribute provides the lower, inclusive bound on the number of characters.	Optional
	maximum_characters		The maximum_characters attribute provides the upper, inclusive bound on the number of characters.	Optional
	minimum_value		The minimum_value attribute provides the lower inclusive bound on the value.	Optional
	maximum_value		The maximum_value attribute provides the upper, inclusive bound on the value.	Optional
	pattern		The pattern attribute provides a symbolic instruction for forming values.	Optional
	unit_of_measure_type	See complete list in the PDS4 Data Dictionary.	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.	Optional
	specified_unit_id		The specified_unit_id attribute provides the units chosen for maximum_value, minimum_value, and permissible_value.	Optional
	DD_Permissible_Value		The DD_Permissible_Value class is used to provide the permissible values and their value meanings.	Optional / Unbounded

2.2.3.1 DD_Permissible_Value

The DD_Permissible_Value class is used to define the permissible values and value meanings for an attribute.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Permissible _Value			The DD_Permissible_Value class lists permissible values and their meanings.	
	value		The value attribute provides a single, allowed numerical or character string value.	Required
	value_meaning		The value_meaning attribute provides the meaning, or semantic content, of the associated permissible value.	Required

2.3 DD_Class

The DD_Class class is used to define a new class for the local data dictionary. Once all attributes are defined, the classes are defined by referencing their component attributes and classes through the DD_Association class. Each attribute or class can be referenced zero or more times.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Class			The DD_Class class defines a class for a data dictionary.	
	name		The name attribute provides a word or combination of words by which the object is known. Within DD_Class, the value of name will be used as the name of the class being defined.	Required
	version_id		The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.	Required
	local_identifier		The local_identifier attribute provides a character string which uniquely identifies the containing object within the label. Within Ingest_LDD, the local identifier provided within a DD_Class is referenced by an instance of DD_Association. A single DD_Class definition can be referenced by zero or more DD_Associations.	Required
	submitter_name		The submitter_name attribute provides the name of the author, who submits the item to the steward.	Required
	definition		The definition attribute provides a statement, picture in words, or account that defines the term.	Required
	abstract_flag	true false	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.	Optional
	Internal_Reference		The Internal_Reference is used to reference a product in the PDS4 registry. Within Ingest_LDD the product is typically a Product_Document. The document itself typically provides source information for the definition.	Optional / Unbounded
	DD_Association		The DD_Association class used used to define the components of the class. Each instance provides a reference to either an attribute definition (DD_Attribute) or a class definition (DD_Class). The sequential order of the DD_Associations is the order assigned to the components in the resulting document.	Required / Unbounded
	Terminological_Entry		The Terminological_Entry class is used to provide one or more alternate names and definitions for the class. The preferred name and definition is assumed to be those provided in DD_Class.	Optional / Unbounded

2.3.1 DD_Association

The DD_Association class is used to relate a class to each of its components. The sequence order of the DD_Association classes is the order assigned to the components.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Association			The DD_Association class defines the association between two classes or a class and an attribute in a data dictionary.	
	local_identifier		The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.	Required / Unbounded
	reference_type		The reference_type attribute provides the name of the association.	Required
		attribute_of	The referenced attribute is a member of this class	
		component_of	The referenced class is a component of this class	
		parent_of	This class is a parent of the referenced class	
	minimum_occurrences		The minimum occurrences attribute indicates the number of times something may occur. It is also called the minimum cardinality.	Required
	maximum_occurrences		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.	Required
	constant_value		The constant value attribute provides the value to be used if an attribute is static.	Optional

2.4 DD Rule

The DD_Rule class is used to define a rule for validating constraints.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Rule			The DD_Rule class defines a Schematron rule for a data dictionary.	
	local_identifier		The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.	Required
	rule_context		The rule_context attribute provides the xpath for the rule.	Required
	rule_assign		The rule_assign attribute provides an assignment statement for a schematron rule.	Optional / Unbounded
	DD_Rule_Statement		The DD_Rule_Statement is used to define one schematron assert statement.	Required / Unbounded

2.4.1 DD Rule Statement

The DD_Rule_Statement class is used to define a rule for validating constraints.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Rule_Statement			The DD_Rule_Statement class defines a Schematron rule statemet.	
	rule_type		The rule_type attribute indicates the type of statement to be executed.	Required
		Assert	The rule statement type is generic Assert.	Required
		Assert Every	The rule statement type is Assert Every.	Required
		Assert If	The rule statement type is Assert If.	Required
		Report	The rule statement type is Report.	Required
	rule_test		The rule_test attribute provides the body of the statement to be executed by the schematron processor.	Required
	rule_message		The rule_message attribute provides a message to be displayed by the schematron processor when the test condition is met.	Required
	rule_description		The rule_description attribute provides a description of the rule statement suitable for user documentation.	Optional
	rule_value		The rule_value attribute provides values to be used to complete certain schematon statements.	Optional / Unbounded

3 Special Considerations

3.1 References to Attributes or Classes from Other Namespaces

In DD_Association, an attribute or a class can be referenced from another namespace. The reference is provided as a value of local_identifier and consists of the namespace followed by a period '.' followed by the name of the attribute or class. In the case of an attribute, assume that the attribute definition is generic and has not been restricted in the referenced namespace.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Association			The DD_Association class defines the association between two classes or a class and an attribute in a data dictionary.	
	local_identifier	namespace.name	The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.	Required / Unbounded

3.2 Restrictions of Attributes from Other Namespaces

In DD_Attribute, an attribute from an external namespace can be restricted and used in this namespace. The name of the attribute may or may not change. The local attribute definition takes precedence over the definition of the external attribute. The reference to the external attribute is provided as a value of local_identifier and consists of the unique identifier of the attribute. This identifier consists of the class namespace id, class name, attribute namespace id, and attribute name, each delimted by a period '.'.

Class	Attribute	Permissible Value	Description	Cardinality	Minimum Cardinality	Maximum Cardinality
DD_Attribute			The DD_Attribute class defines an attribute for a data dictionary.			
	local_identifier	ns.class.ns.attribute	The local_identifier attribute provides a character string which uniquely identifies the attribute in the external namespace	Required / Unbounded	1	1

3.3 Allowing a Choice Between Several Attributes or Classes

In DD_Association a choice between several attributes or classes can be indicated by including the special token *XSChoice#* as a value of local_identifier. All remaining values of local_identifier, attribute or class names, will subsequently be grouped in a choice block.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Association			The DD_Association class defines the association between two classes or a class and an attribute in a data dictionary.	
	local_identifier	XSChoice#	The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.	Required / Unbounded

3.4 Allowing Any Attribute or Class

In DD_Association the special token *XSAny#* used as a value of local_identifier indicates that any attribute or class can be added and that they will not be verified as required or optionoal members. Any remaining values of local_identifier, attribute or class names, will subsequently be grouped in the *Any* block.

Class	Attribute	Permissible Value	Description	Cardinality
DD_Association			The DD_Association class defines the association between two classes or a class and an attribute in a data dictionary.	
	local_identifier	XSAny#	The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.	Required / Unbounded

4 Example

4.1 Display Local Data Dictionary

The *Display* dictionary describes how to display Array data on a display device. In the following example, snippets of the dictionary have been inserted.

4.1.1 Ingest_LDD – The header for the local data dictionary

The Ingest_LDD class provides general information about the local data dictionary. The names_space_id and ldd_version_id in particular are used to name the resulting files, for example the XML schema file.

```
</Ingest_LDD>
  <name>Display</name>
```

```
<ldd_version_id>1.1.0.0</ldd_version_id>
<full_name>Elizabeth D. Rye</full_name>
<steward_id>img</steward_id>
<namespace_id>disp</namespace_id>
<comment>This dictionary describes how to display Array data on a display
  device.</comment>
<last_modification_date_time>2014-02-21T20:12:59Z</last_modification_date_time>
```

4.1.2 DD_Attribute – Defining an attribute

DD_Attribute is used to define an attribute. The two instances of DD_Attribute provide below define a standard attribute that accepts a simple token as a value and an attribute that has set of permissible values, respectively.

```
<DD_Attribute>
  <name>horizontal_display_axis</name>
  <version_id>1.0</version_id>
  <local_identifier>disp.horizontal_display_axis</local_identifier>
  <nillable_flag>false</nillable_flag>
  <submitter_name>Elizabeth D. Rye</submitter_name>
  <definition>The horizontal_display_axis attribute identifies, by name,
    the axis of an Array (or Array subclass) that is intended to be
    displayed in the horizontal or "sample" dimension on a display
    device.  The value of this attribute must match the value of one, and
    only one, axis_name attribute in an Axis_Array class of the
    associated Array.</definition>
  <DD_Value_Domain>
    <enumeration_flag>false</enumeration_flag>
    <value_data_type>ASCII_Short_String_Collapsed</value_data_type>
    <unit_of_measure_type>Units_of_None</unit_of_measure_type>
  </DD_Value_Domain>
</DD_Attribute>

<DD_Attribute>
  <name>horizontal_display_direction</name>
  <version_id>1.0</version_id>
  <local_identifier>disp.horizontal_display_direction</local_identifier>
  <nillable_flag>false</nillable_flag>
  <submitter_name>Elizabeth.D.Rye</submitter_name>
  <definition>The horizontal_display_direction attribute specifies the
    direction across the screen of a display device that data along the
    horizontal axis of an Array is supposed to be displayed.</definition>
  <DD_Value_Domain>
    <enumeration_flag>true</enumeration_flag>
    <value_data_type>ASCII_Short_String_Collapsed</value_data_type>
    <unit_of_measure_type>Units_of_None</unit_of_measure_type>
    <DD_Permissible_Value>
      <value>Left to Right</value>
      <value_meaning>The lowest indexed element along an array axis should be
displayed at the left edge of a display device and elements with higher indices should
be displayed further to the right.  Note that this is the standard display direction
for most major image formats.</value_meaning>
    </DD_Permissible_Value>
    <DD_Permissible_Value>
      <value>Right to Left</value>
      <value_meaning>The lowest indexed element along an array axis should be
displayed at the right edge of a display device and elements with higher indices
should be displayed further to the left.  Note that virtually no image display formats
```

```
use this display direction.  Use this only when deliberately mirroring the image
around the vertical axis.</value_meaning>
      </DD_Permissible_Value>
    </DD_Value_Domain>
  </DD_Attribute>
```

4.1.3 DD_Class – Defining a class

DD_Class is used to define a class. The namespace_id of the class is inherited from the
Ingest_LDD class. The local_identifier is used if necessary to reference the class in this XML
file however it has no role in the resulting files, for example the XML schema file.

```
<DD_Class>
  <name>Display_Direction</name>
  <version_id>1.0</version_id>
  <local_identifier>disp.Display_Direction</local_identifier>
  <submitter_name>Elizabeth D. Rye</submitter_name>
  <definition>The Display_Direction class specifies how two of the
    dimensions of an Array object should be displayed in the vertical
    (line) and horizontal (sample) dimensions of a display
    device.</definition>
```

4.1.4 DD_Association – Relating the components to the class

DD_Association is used to relate the components to the class. The attribute local_identifier
is used to reference either an attribute or a class that is defined in this XML file. The
reference_type attribute indicates the type of the relationship. The minimum_occurrences
and the maximum_occurences indicate whether the component is optional or required. As
and example of a special consideration, in the following, the attribute *comment* is being
referenced from the pds namespace. This is inferred since the value of local_identifier is not
present in this XML file.

```
    <DD_Association>
      <local_identifier>pds.comment</local_identifier>
      <reference_type>attribute_of</reference_type>
      <minimum_occurrences>0</minimum_occurrences>
      <maximum_occurrences>1</maximum_occurrences>
    </DD_Association>
    <DD_Association>
      <local_identifier>disp.horizontal_display_axis</local_identifier>
      <reference_type>attribute_of</reference_type>
      <minimum_occurrences>1</minimum_occurrences>
      <maximum_occurrences>1</maximum_occurrences>
    </DD_Association>
    <DD_Association>
      <local_identifier>disp.horizontal_display_direction</local_identifier>
      <reference_type>attribute_of</reference_type>
      <minimum_occurrences>1</minimum_occurrences>
      <maximum_occurrences>1</maximum_occurrences>
    </DD_Association>
...
  </DD_Class>
```

4.1.2 DD_Rule – Defining a rule

DD_Rule is used to define a rule for validating constraints. The following validates that if the Display_Direction class is in the label then it must be contained in the Display_Settings class.

```
  <DD_Rule>
    <local_identifier>Display_Direction_Display_Settings</local_identifier>
    <rule_context>pds:Discipline_Area</rule_context>
    <DD_Rule_Statement>
      <rule_type>Assert</rule_type>
      <rule_test>if (disp:Display_Direction) then
(disp:Display_Settings/disp:Display_Direction) else true()</rule_test>
      <rule_message>Display Dictionary: If the Display_Direction class is in the
label, it must be contained in a Display_Settings class.</rule_message>
    </DD_Rule_Statement>
  </DD_Rule>

</Ingest_LDD>
```