PDS4 GENERATION TOOL

Development Lead: Jordan Padams

Contributors: Elizabeth Rye, Paul Ramirez, Alice Stanboli, Adrian Tinio

OVERVIEW

- Basic Information
- Velocity Templates
- Mock Scenarios
- Example

BASIC INFORMATION

- Java-based
- Leverages
  - MIPL Transcoder (PDSLabelToDom)
  - Apache Velocity Templates
    - http://velocity.apache.org/
- Provides Java wrapper to Velocity Template Engine
  - CLI or Java API
- http://goto.jpl.nasa.gov/pdsimg-wiki

VELOCITY TEMPLATES

- Open source software maintained by Apache
- One template for each PDS3 Data Set
- Template = XML populated with variables
- Variables specify PDS3 metadata
- Several different scenarios of mapping PDS3 data into PDS4

SCENARIOS

SCENARIOS FORMAT

PDS3 (pds3_example.lbl)

PDS3 LABEL INPUT

PDS4 (pds4_example.xml)

PDS4 XML OUTPUT

Velocity (template_example.vm)

VELOCITY TEMPLATE ENTRY

SCENARIO 1 – HARD-CODED VALUES

PDS4

```
<Product_Array_2D_Image>
  <Data_Standards>
    <dd_version_id>0311B_20110709</dd_version_id>
 </Data_Standards>
</Product_Array_2D_Image>
```

Velocity

```
<Product_Array_2D_Image>
  <Data_Standards>
    <dd_version_id>0311B_20110709</dd_version_id>
 </Data_Standards>
</Product_Array_2D_Image>
```

SCENARIO 2 – BASE ELEMENT

PDS3

```
TARGET_NAME                    = "DEIMOS"
```

PDS4

```
<Subject_Area>
    <target_name>DEIMOS</target_name>
</Subject_Area>
```

Velocity

```
<Subject_Area>
        <target_name>$label.TARGET_NAME</target_name>
</Subject_Area>
```

SCENARIO 3 – SUB-ELEMENTS

PDS3

```
OBJECT                                  = IMAGE
        MEAN                            = 8.6319
        MEDIAN                          = 8
        MINIMUM                         = 8
END_OBJECT                              = IMAGE
```

PDS4

```
<Object_Statistics>
    <mean>8.6319</maximum>
    <median>8</mean>
    <minimum>8</median>
</Object_Statistics>
```

SCENARIO 3 – SUB-ELEMENTS

Velocity

```
<Object_Statistics>
        <mean>$label.IMAGE.MEAN</mean>
        <median>$label.IMAGE.MEDIAN</median>
        <minimum>$label.IMAGE.MINIMUM</minimum>
</Object_Statistics>
```

SCENARIO 4 – MULTIPLE INSTANCES

PDS3

```
GROUP = BAND_BIN
  BANDS = 4
  BAND_BIN_UNIT = MICROMETER
  CENTER = (0.374, 0.384, 0.394, 0.404)
  WIDTH = (0.0155, 0.0115, 0.0114, 0.0112)
END_GROUP = BAND_BIN
```

SCENARIO 4 –MULTIPLE INSTANCES

PDS4

```
<Band_Bin_Set>
  <Band_Bin>
    <center>0.374</center>
    <width>0.0155</width>
  </Band_Bin>
  <Band_Bin>
    <center>0.384</center>
    <width>0.0115</width>
  </Band_Bin>
    .
    .
    .
</Band_Bin_Set>
```

SCENARIO 4 – MULTIPLE INSTANCES

Velocity

```
<Band_Bin_Set>
#set( $bandBinList = $label.getRecords('BAND_BIN.CENTER','BAND_BIN.WIDTH') )
#foreach ( $bandBin in $bandBinList )
  <Band_Bin>
    <center>$bandBin.CENTER</center>
    <width>$bandBin.WIDTH</width>
  </Band_Bin>
#end
</Band_Bin_Set>
```

SCENARIO 5 – SAME CLASS, DIFFERENT VALUES

PDS3

```
OBJECT                          = IMAGE
  INTERCHANGE_FORMAT            = BINARY
  LINES                         = 192
  LINE_SAMPLES                  = 320
END_OBJECT                      = IMAGE
```

SCENARIO 5 – SAME CLASS, DIFFERENT VALUES

PDS4

```
 <Array_Axis>
        <name>SAMPLES</name>
        <elements>320</elements>
        <sequence_number>1</sequence_number>
</Array_Axis>
<Array_Axis>
        <name>LINES</name>
        <elements>192</elements>
        <sequence_number>2</sequence_number>
</Array_Axis>
```

SCENARIO 5 – SAME CLASS, DIFFERENT VALUES

Velocity

```
<Array_2D_Image base_class="Array_Base">
  <Array_Axis>
    <name>SAMPLES</name>
    <elements>$label.IMAGE.LINES_SAMPLES</elements>
    <sequence_number>1</sequence_number>
  </Array_Axis>
  <Array_Axis>
    <name>LINES</name>
    <elements>$label.IMAGE.LINES</elements>
    <sequence_number>2</sequence_number>
  </Array_Axis>
</Array_2D_Image>
```

SCENARIO 6 – UNITS

PDS3

```
INST_AZIMUTH                    = 114.0210 <deg>
```

PDS4

```
<Geometry_Parameters>
  <azimuth units="deg”>114.0210</azimuth>
</Geometry_Parameters>
```

SCENARIO 6 - UNITS

Velocity

```
<Geometry_Parameters>
  <azimuth units="$label.getUnits('INST_AZIMUTH')”>
    $label.INST_AZIMUTH
  </azimuth>
</Geometry_Parameters>
```

SCENARIO 7 – GENERATED VALUES

PDS4

```
<File_Area>
  <md5_checksum>2a6f0be7f63d0aa032457f1f29d3e51d</md5_checksum>
</File_Area>
```

Velocity

```
<File_Area>
  <md5_checksum>$generate.md5_checksum</md5_checksum>
</File_Area>
```

COMMAND-LINE INTERFACE

PDS4GENERATE COMMAND-LINE INTERFACE

Flag	Description
-c, --config-home	Specify the path for the configuration files
-d,--debug	Directs output to screen, not file.
-f,--file-list <file list>	Specify the path for a file containing a list of file paths for PDS3 Labels
-h,--help	Display usage.
-o,--output-file <output file>	Specify an output filename. Default is PDS3 label name with _pds4 suffix.
-p,--pds3-label <pds3 label>	Specify the file path for the PDS3 Label to be converted to PDS4
-t,--template <velocity template>	Specify the file path for the Velocity template for PDS3 -> PDS4 conversion
-V,--version	Display application version.

COMMAND-LINE INTERFACE

- Download tool from PDS IN Wiki
- Untar generation-tool-x.x.x-bin.tar.gz
- To test conversion from PDS3 to PDS4 using examples that come with tool:

```
cd generation-tool-x.x.x/bin
./PDS4Generate -p ../examples/pds3_example.lbl \
        -t ../examples/template_example.vm
```

- The PDS4 output will be at:

```
../examples/pds3_example.xml
```

QUESTIONS?