Navy Product Data Initiative (NPDI)
Ship Common Information Model (SCIM)

Merge SCIM Context Schema and SCIM Document Procedures

NSRP ILE Phase 2

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1 Overview

The Navy Product Data Initiative (NPDI) Ship Common Information Model (SCIM) is encoded in XML context schemas. This document describes the process of merging context schemas and generating HTML documentation describing the NPDI SCIM.

2 NPDI_SCIM

The management of SCIM context schemas, ArgoUML models of those schemas and StyleVision document generation is supported by the directory structure shown in Figure 1. This folder structure supports delivery of the ILE 2 NPDI SCIM project files to ISE Tools by archiving the NPDI_SCIM folder and its contents. The HTML documentation generator, Altova StyleVision, saves certain file locations in its

project files as absolute paths. Thus the NPDI_SCIM folder is deployed to “C:\Documents and Settings\All Users\Documents”.

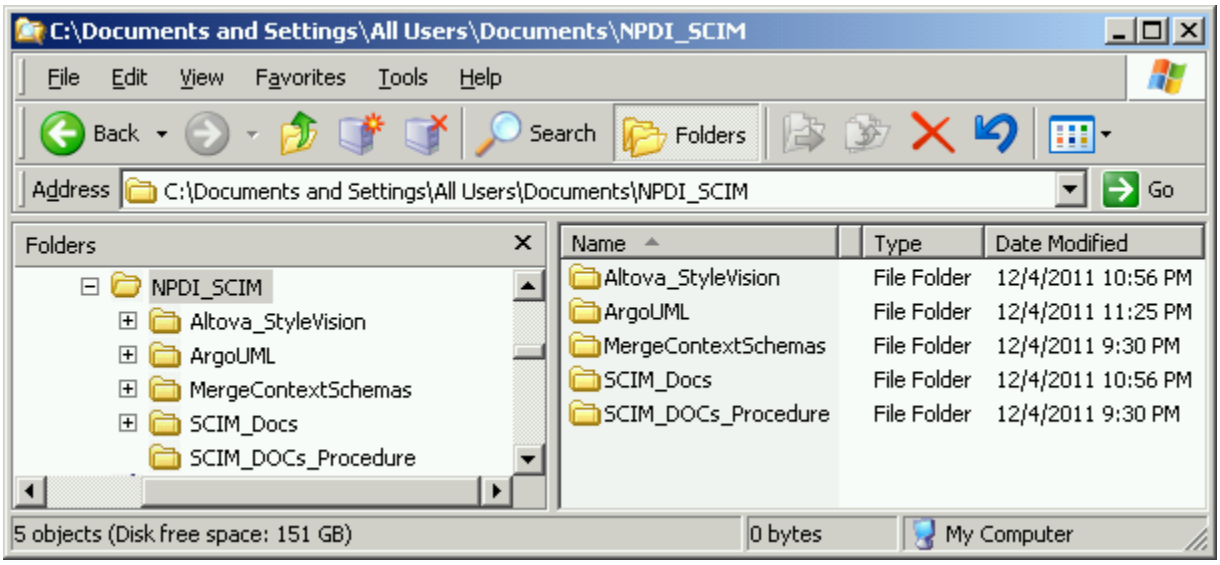


Figure 1 NPDI_SCIM Folder

The major subfolders are described below in the following functional order:

- SCIM_DOCs_Procedure
- MergeContextSchemas
- ArgoUML
- Altova_StyleVision
- SCIM_Docs

3 SCIM_DOCs_Procedure folder

The SCIM_DOCs_Procedure folder contains the latest version of this document. Locating this document under the NPDI_SCIM folder permits delivery of these procedures as part of the NPDI_SCIM folder archive.

4 Merge Context Schemas

SCIM Context Schemas are merged from atomic context schemas as specified in a merge specification (mergeSpec) using an XSLT stylesheet and a list of file locations.

4.1 Directory Structure

The translation is performed in the context of the directory structure shown in Figure 2.

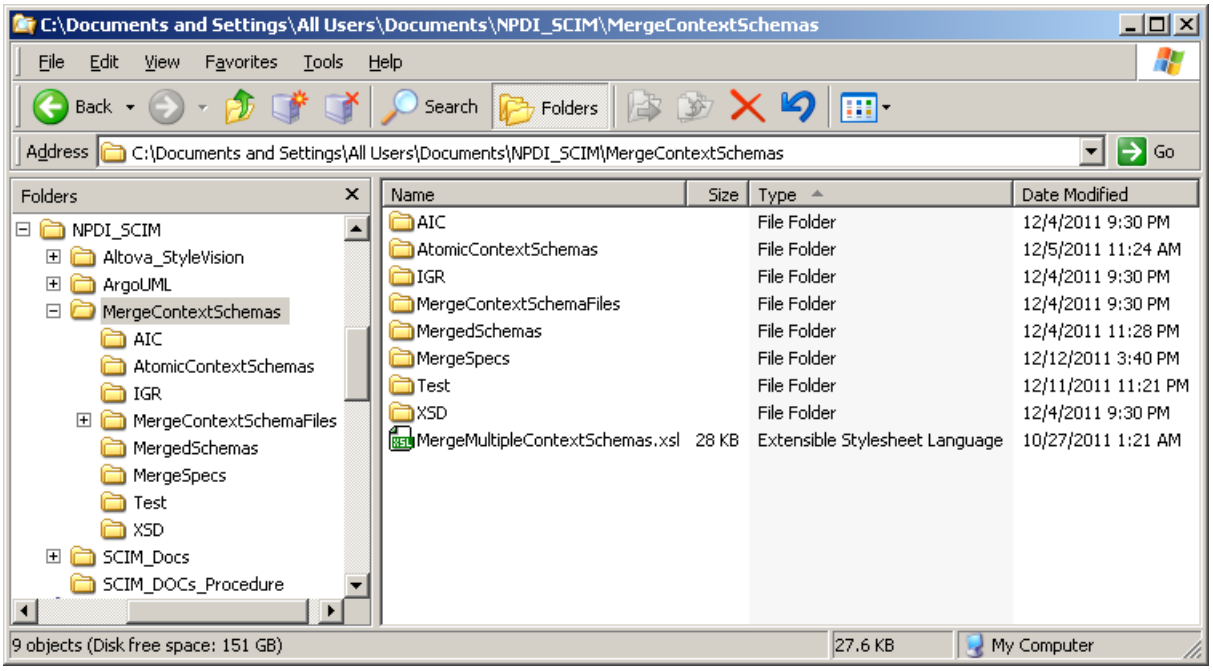


Figure 2 MergeContextSchemas Directory Structure

The XSLT stylesheet, MergeMultipleContextSchemas.xsl, reads in the xml files identified by

\MergeContextSchemaFiles\MergeContextSchemaFiles_XXXX.xml

where XXXX = the SCIM Chapter to be merged (Figure 3).

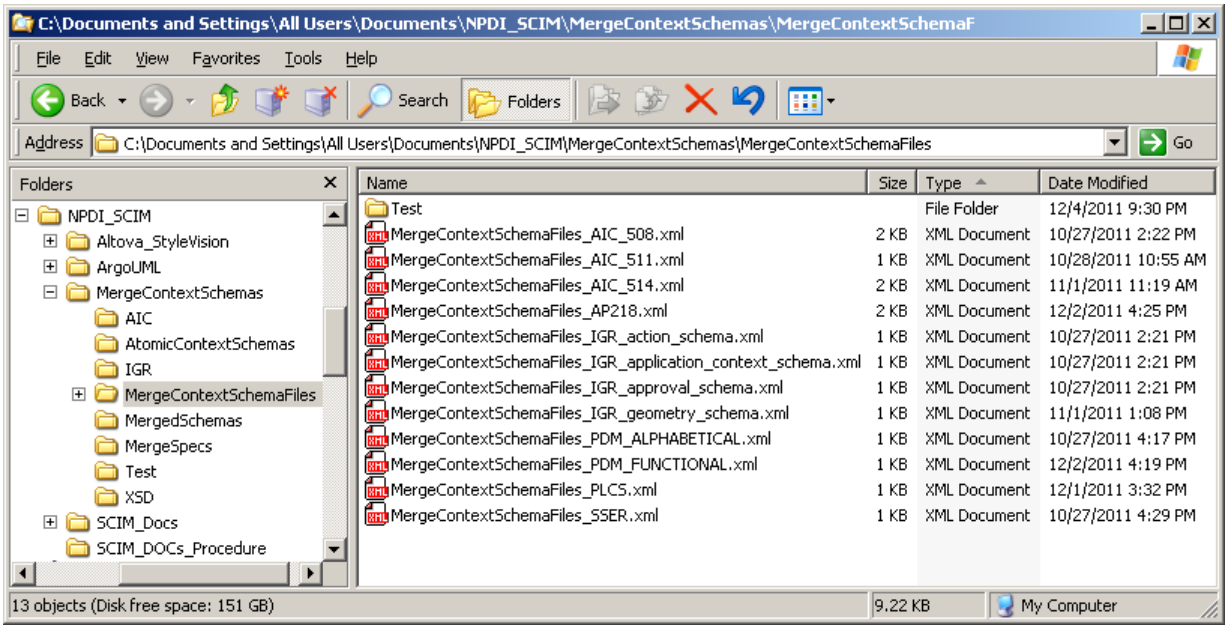


Figure 3 \MergeContextSchemaFiles folder

The MergeContextSchemaFiles_XXXX.xml file identifies a mergeSpec xml file (Specification File) and a list of atomic context schema xml files (dataFiles) that source the entities, associations, and simple types to be merged as shown in Figure 4.

```
<?xml version="1.0" encoding="UTF-8"?>
<mergeData xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="../XSD/MergeContextSchemaFiles.xsd">
   <SpecificationFile>..\MergeSpecs\PDM_Specification_FUNCTIONAL_2011_1101.xml</SpecificationFile>
   <dataFiles>
      <ContextSchemaFile>..\AtomicContextSchemas\npdi_scim_PDM_Context_Schema_2011_1030_Atomic.xml</ContextSchemaFile>
      <ContextSchemaFile>..\IGR\geometry_schema.xml</ContextSchemaFile>
      <ContextSchemaFile>..\IGR\representation_schema.xml</ContextSchemaFile>
      <ContextSchemaFile>..\IGR\support_resource_schema.xml</ContextSchemaFile>
   </dataFiles>
</mergeData>
```

Figure 4 MergeContextSchemaFiles_XXXX.xml file example

Relative pathnames are used to specify the files to be used. The mergeSpecs reside in folder **\MergeContextSchemaFiles\MergeSpecs**: (Figure 5).

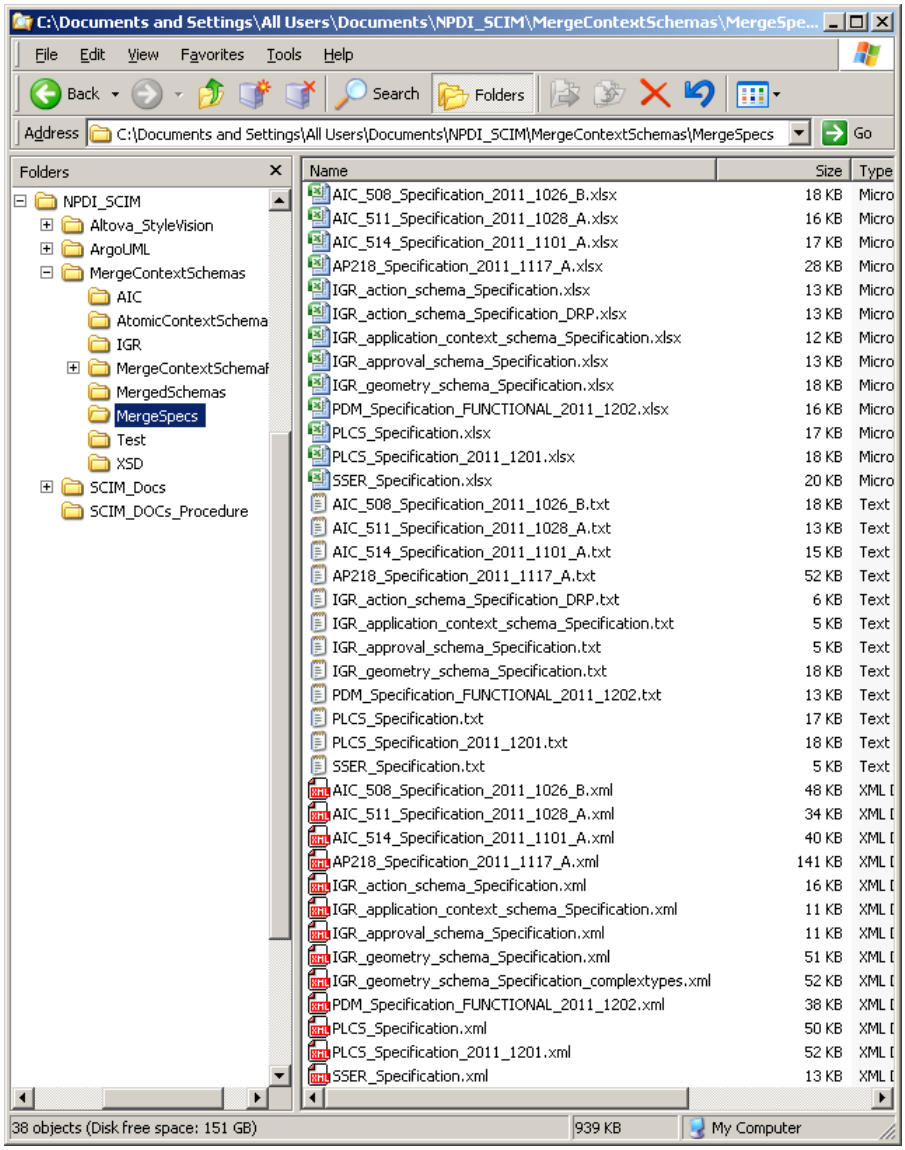


Figure 5 \MergeSpecs folder

The atomic context schemas reside in three folders:

- **\AIC**, atomic **A**pplication **I**nterpreted **C**onstruct files (Figure 6),
- **\AtomicContextSchemas**, SCIM atomic context schemas (Figure 7) ,
- **\IGR**, atomic **I**ntegrated Generic **R**esource files (Figure 8).

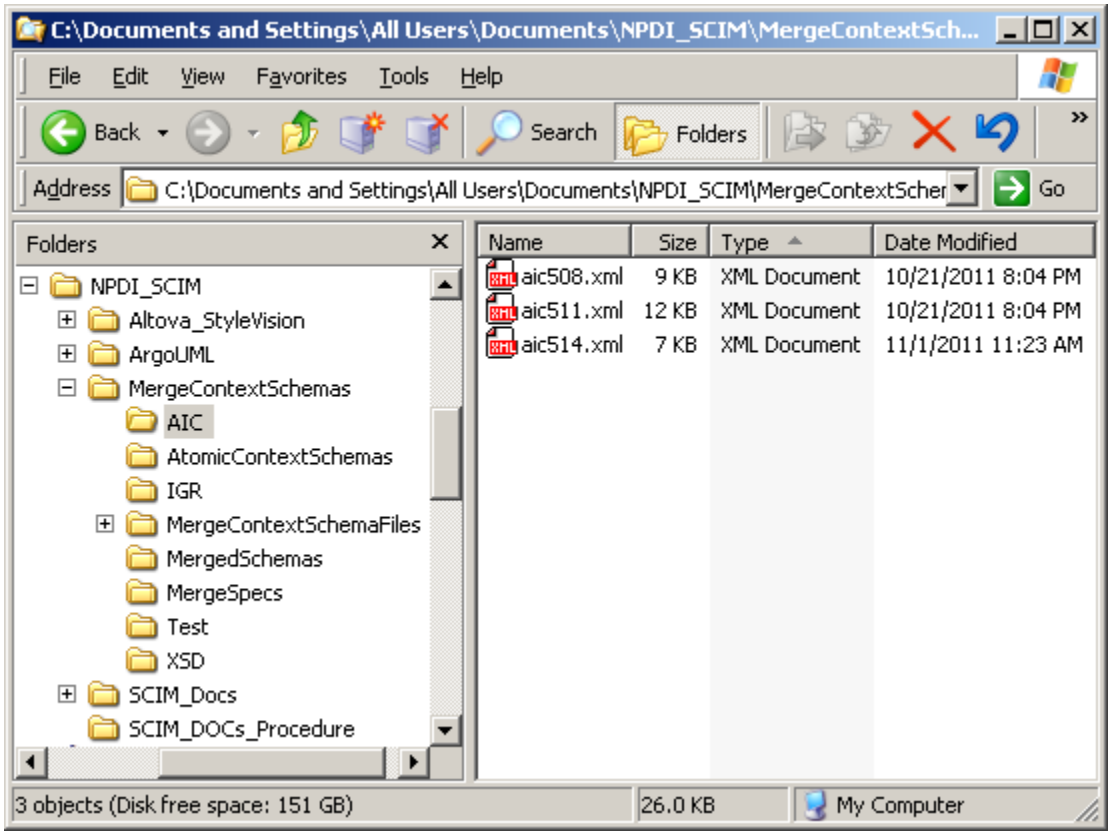


Figure 6 \AIC, atomic Application Interpreted Construct atomic context schema files

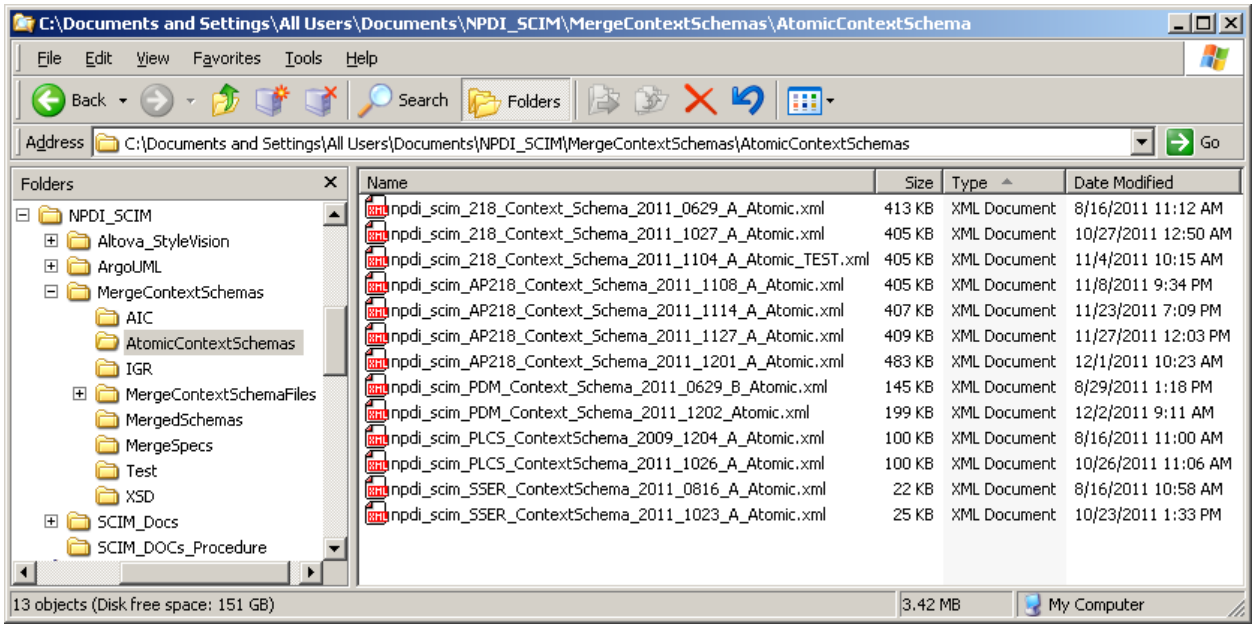


Figure 7 \AtomicContextSchemas, SCIM atomic context schema files

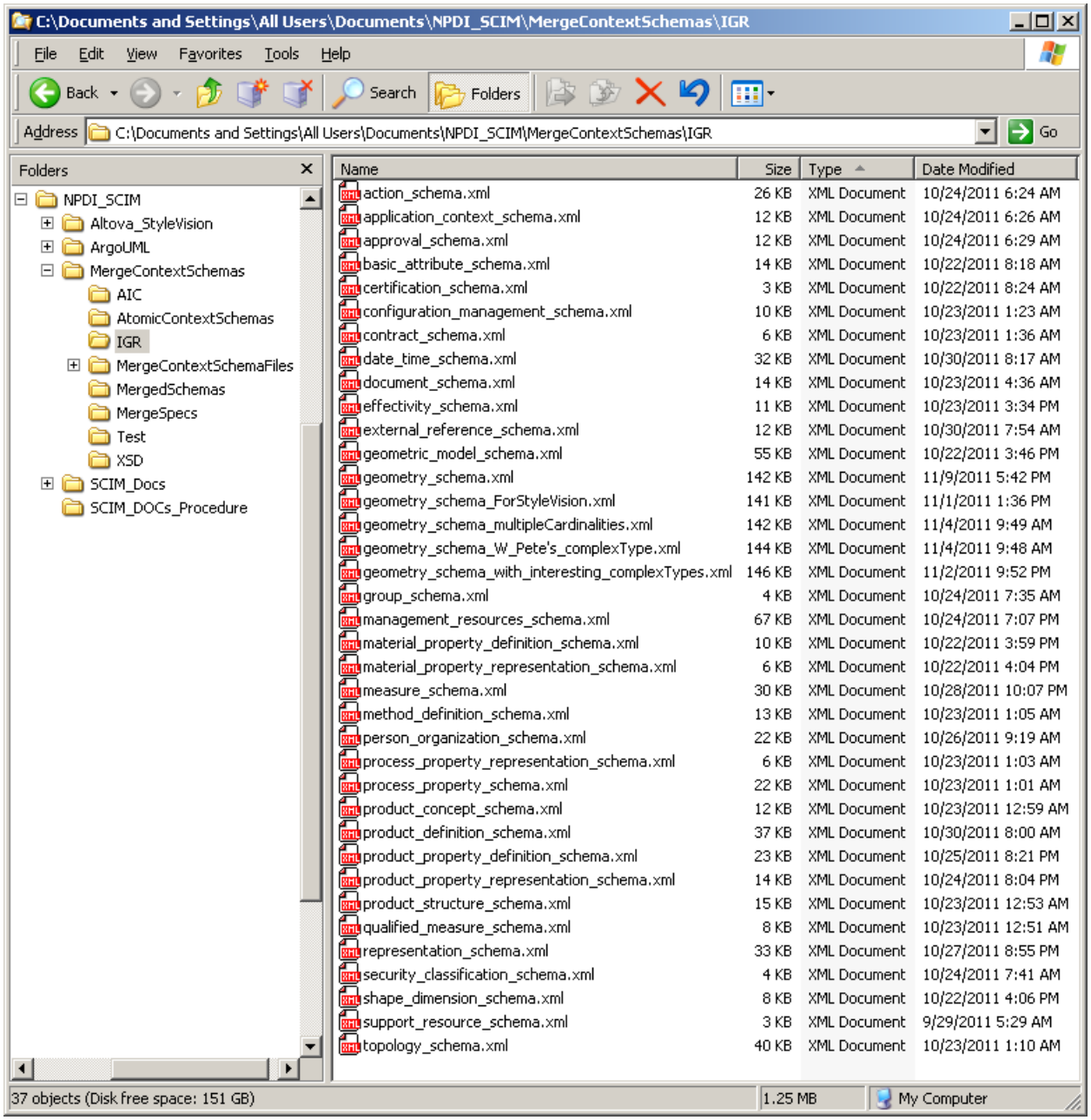


Figure 8 \IGR, Integrated Generic Resource atomic context schema files

The **\MergeContextSchemaFiles\XSD** folder (Figure 9) contains

- XML schemas that specify the structure of a SCIM context schema
  - xtc_mapping.xsd (defines xtc:Context_schema and subordinate elements and attributes.)
  - datatypes.dtd
  - XMLSchema.dtd

  - XMLSchema.xml
  - xquery.xsd
  - xsl.xsd
- XML schema files for the merge context schema xml input files
  - MergeContextSchemaFiles.xsd
  - MergeSpec.xsd

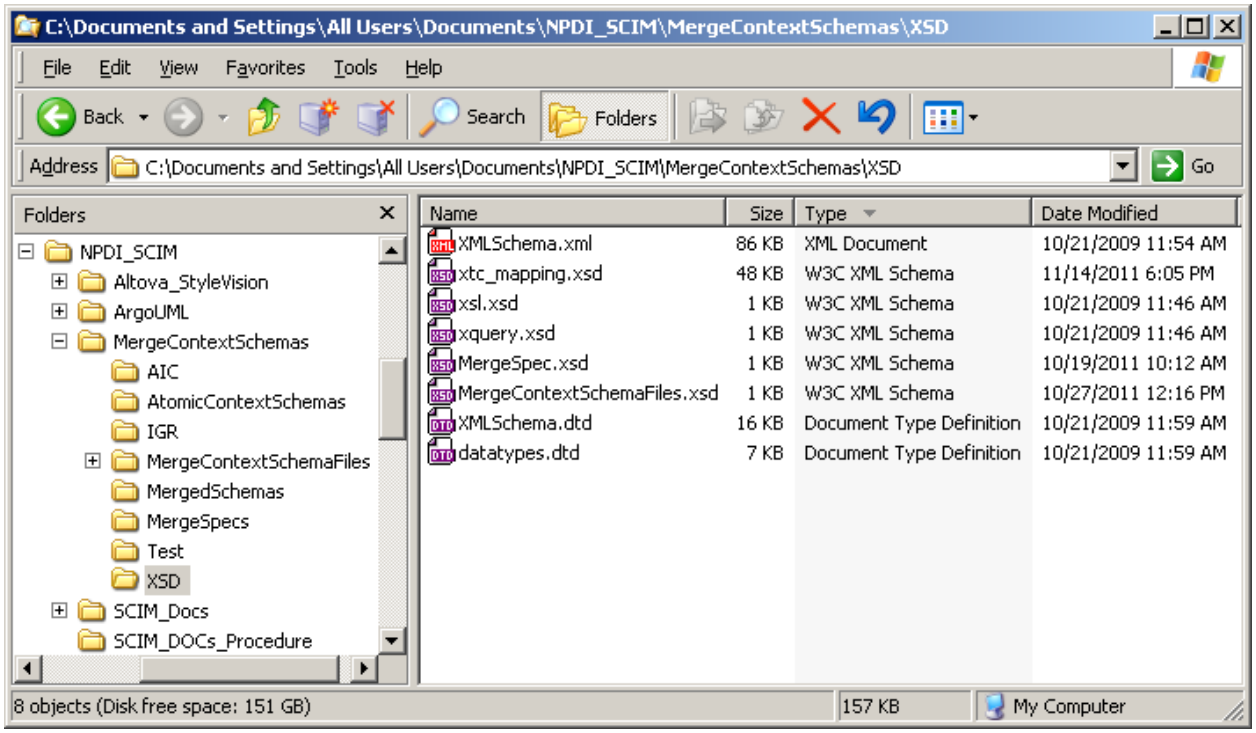


Figure 9 \MergeContextSchemaFiles\XSD files

Merged context schemas are written to the **\MergeContextSchemaFiles\MergedSchemas** folder (Figure 10).

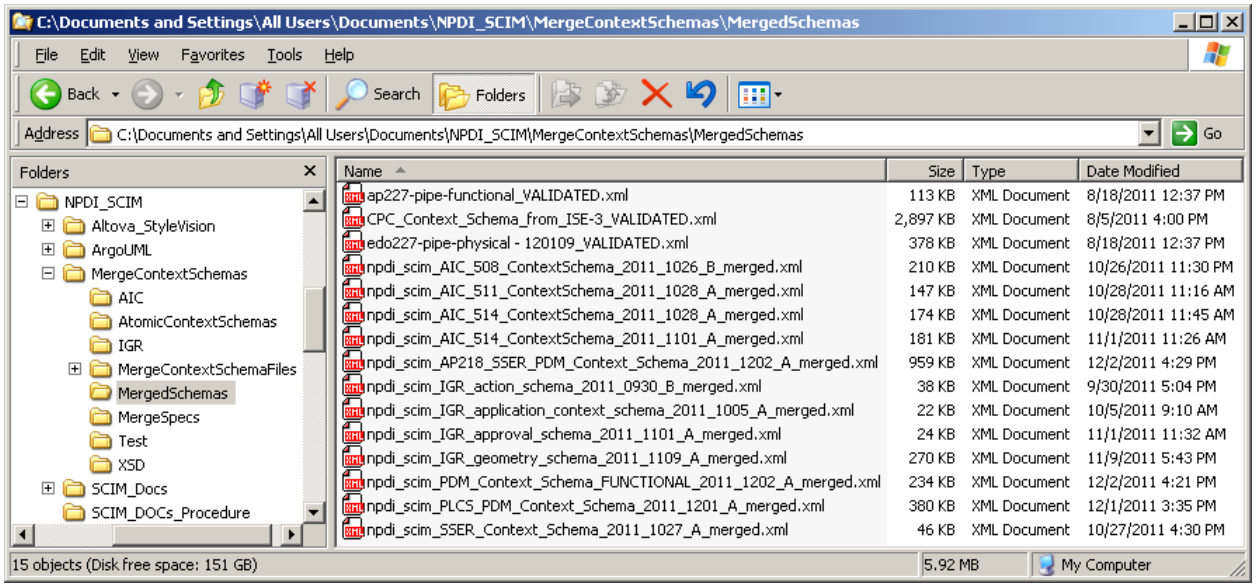


Figure 10 \MergeContextSchemaFiles\MergedSchemas files

The **\MergeContextSchemaFiles\Test** folder (Figure 11) contains XSLT stylesheets derived from Altova StyleVision. This provides a test jig to debug StyleVision issues. StyleVision does not have a built in debugger. When a translation to HTML fails, one may or may not obtain enough information from the errors presented by StyleVision. When insufficient error information is provided, one can copy the offending XSLT code from the XML-HTML page then paste the code into XMLSpy for debugging.

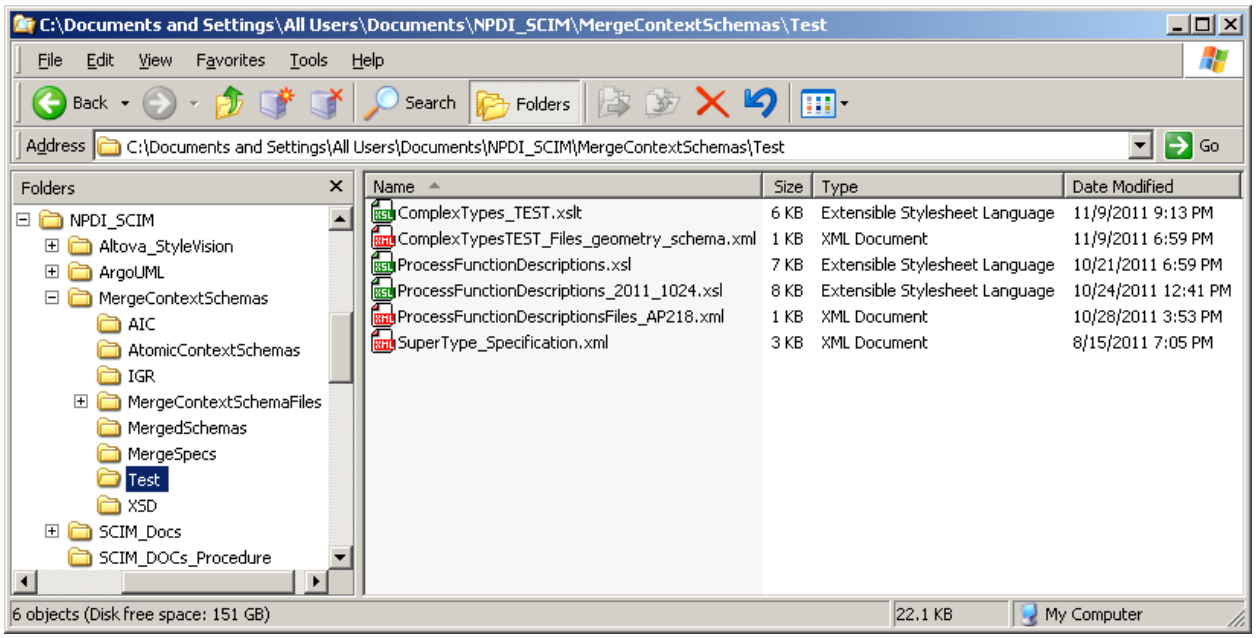


Figure 11 \Test folder

4.2 File Naming Conventions

Atomic context schema:

npdi_scim_XXXX_Context_Schema_YYYY_MMDD_V_atomic.xml

where XXXX = chapter name, such as PDM, AP218

YYYY_MMDD = year (YYYY), month (MM), day (DD) to support alphabetical file sorting

V = version letter (A, B, etc.) if more than one version is created on the same day

Example:

npdi_scim_PDM_Context_Schema_2011_0629_B_Atomic.xml

Merged context schema:

npdi_scim_XXXX_BBBB_ZZZZ_Context_Schema_YYYY_MMDD_V_merged.xml

where ZZZZ is required and = chapter name, such as PDM, AP218

XXXX and BBBB are optional = supertype schemas, XXXX is supertype of BBBB, which is supertype of ZZZZ (do not include AIC or IGR schemas in name)

YYYY_MMDD = year (YYYY), month (MM), day (DD) to support alphabetical file sorting

V = version letter (A, B, etc.) if more than one version is created on the same day

Example for chapter AP218:

npdi_scim_PDM_SSER_AP218_Context_Schema_2011_0816_A_merged.xml

4.3 Development Responsibilities

SCIM context schema development responsibilities are split between SCIM chapter authors and NGTS as described below.

4.3.1 Chapter Authors

Chapter authors develop the context schemas for their chapters. In the process, AIC and IGR entities, associations, and simpletypes become identified as necessary to support the chapter context schema. The result of this process is captured in the mergeSpec for the chapter. Three artifacts are produced:

- Hand built SCIM chapter context schema (optional)
- SCIM Chapter mergeSpec (required)
- SCIM Chapter atomic context schema (required)

The **Hand built SCIM chapter context schema** is produced as any SCIM chapter context schema has been accomplished in the past. This schema will include base schemas such as PDM or SSER as required. AICs and IGR entities, simpletypes, and associations can either be explicitly included or listed. This is optional since the atomic context schema and mergeSpec is sufficient.

One approach to creating the Hand built SCIM chapter context schema is to inspect the chapter STEP standard as follows. Each STEP application object is a candidate SCIM entity. Once an application object has been determined it needs to be in the SCIM, the author makes the entity name = npd:Application_object_name. Some application objects have "data associated" with it. The data is either an xtc:Property or an xtc:Association. If the definition of the data has the phrase "See 4.3.206 for the application assertion" in it, the data is an association. The number in the phrase is the STEP standard section containing the assertion, which can be copied into a search box to locate. The assertion specifies the entities at each association end and their cardinality.

If the assertion phrase is missing, the data is probably an xtc:Property instance, but not always. Only experience with the standard permits the author to tell the difference. All xtc:Property instances have data types. The author must determine the correct data type. Typically the XML schema (**xs** namespace) datatypes are used (see Table 1). If the STEP standard has the following phrase in the data item definition, "The value of the [data_name] is one of the following", and a list of items, the data type is an enumeration implemented as an xs:simpleType. The values are the enumeration values and the descriptions become part of the xs:simpleType implemented in the atomic or hand built context schema.

Table 1 XML Schema data type examples

Data Type	Example	Reference
String	xs:string	http://www.w3schools.com/schema/schema_dtypes_string.asp
Date	xs:date	http://www.w3schools.com/schema/schema_dtypes_date.asp
Numeric	xs:double	http://www.w3schools.com/schema/schema_dtypes_numeric.asp
Miscellaneous	Xs:boolean	http://www.w3schools.com/schema/schema_dtypes_misc.asp

Definitions and descriptions for the SCIM entities, associations, and simpleTypes can be derived from the STEP application object information. The traceability matrix can be built from the application object and corresponding SCIM XML implementation since the traceability matrix is a mapping from SCIM to STEP on per entity basis. SCIM properties and association ends can be mapped to the application object data and assertions.

There are concepts for context schema development derived from the STEP standard that are not covered in this document. Consult SCIM context schema authors who have completed chapters for advice.

4.3.1.1 Merge Specification (MergeSpec)

The **SCIM Chapter mergeSpec** is an Excel spreadsheet filled out by the chapter author. NGTS will convert the worksheet to an XML file suitable for the merge. The file format is presented in section 10, SCIM Chapter mergeSpec Excel spreadsheet. This spreadsheet supports the following features

1. Alphabetical ordering of entities, associations, and simple types.

2. Functional ordering of entities, associations, and simple types. Within a functional group, the order can be alphabetical if the spreadsheet author ensures the names of the entities, associations, or simple types are in alphabetical row sequence.
3. Merged context schema output is in the following order:
   a) xtc:Entity, xs:simpleType**,** xtc:Association (controlled by the XSLT stylesheet)
   b) Within each of the above groups (see section 10.1, "Column Headers"):
      i) **SCIM_modules**, then **Function_or_Alphabetical**

         NOTE: This is under the control of the spreadsheet author based on the row order in the spreadsheet. Thus for a given set of entities, associations, or simpletypes, the author controls the order of atomic context schemas and within each schema the functional or alphabetical order of the individual constructs.

The recommended process to create a mergeSpec is to

1. Select a mergeSpec Excel file of either
   a. PDM mergeSpec
   b. A mergeSpec of a base context schema of the chapter schema. For example, AP218 uses both PDM and SSER context schemas.
2. Make a copy of the mergeSpec selected in step 1 and rename it with the chapter changed to the new chapter module name (see section 4.2, File Naming Conventions).
3. Change the prefix to the module name of the chapter
4. Perform a search for all entities in the chapter atomic context schema in a text editor. UltraEdit will create a summary all such lines that can be copied to another textfile for further editing so only namespace qualified entity names remain. These can be copied to an Excel spreadsheet for eventual copy to the mergeSpec.
5. Repeat step 4 for Associations and simpleTypes.
6. Create rows in the mergeSpec for the Entities, Associations, and simpleTypes identified in steps 4 and 5. Ensure the **SCIM_Modules** cell is set to the module name (same as the prefix in step 3). Ensure the **Type** is xtc:Entity, xtc:Association, or xs:simpleType and is correct for the context schema object identified in the **Name** cell.
7. Adjust the **Function_or_Alphabetical** cells to the function of each Entity, Association, and simpleType or ensure "Alphabetical" is assigned to the cell if alphabetical sorting is desired.
8. In the chapter atomic context schema, perform a text search for 'xtc:Entity_ref eref="'. This will list all supertypes and association references (assuming the editor can output such a list; otherwise the list must be manually built from the search). Ensure these entities are included in the mergeSpec with the correct module names in the **SCIM_Modules** cell. Update the namespace rows to include any namespaces added by these entities.
9. Step 8 should pick up AIC and IGR entities. The author may want to review these atomic context schemas and their mergeSpecs to ensure all needed AIC and IGR entities, associations, and simpleTypes are included in the chapter mergeSpec.

10. Sort the rows alphabetically by **SCIM_Modules**, **Function_or_Alphabetical**, **Type**, and **Name** using Excel Data sorts. Sorts can be adjusted if **Name** is not alphabetical.
11. Hand off the Excel mergeSpec to NGTS for processing and merging. The author and NGTS will iterate on this process until the desire merged context schema is achieved.

4.3.1.2 Atomic Context Schema

The **SCIM Chapter atomic context schema** is derived from the Hand built SCIM chapter context schema as follows.

a. Retain all namespace attributes associated with the xtc:Context_schema element tag needed to validate the context schema.

   NOTE: if there are namespaces used in the Hand built SCIM chapter context schema that do not currently exist as an AIC, IGR, or SCIM atomic context schema, let NGTS know. Please provide the requisite missing context schema. For example, the Common Parts Procurement (CPR) chapter contains namespaces such as xmlns:edo, xmlns:cpd, xmlns:cpc, and xmlns:pdm, which would need to be provided to permit the CPR chapter to be merged from its atomic components.

b. Ensure the prefix attribute is present and set to the short name of the atomic context schema:

   prefix="PLCS"

   The XSLT stylesheet, MergeMultipleContextSchemas.xsl, matches the SCIM_module in the mergeSpec with the prefix in the atomic context schema to perform certain context schema level lookups.

c. Retain all revision history in the header (comments between the xtc:Context_schema and xtc:Entities element tags).
d. Delete all base context schema entities, associations, and simpletypes.
e. Ensure all entities, associations have module attribute that matches SCIM_module and prefix:

   module="AP218"

f. Delete all AIC and IGR context schema entities, associations, and simpletypes.
g. If non-AIC/IGR context schemas are used, delete the entities, associations, and simpletypes supplied by these external supporting context schemas.
h. Delete all properties (xtc:Property) inherited from supertypes.
i. Truncate the xtc:supertype_map to just the immediate supertype. If the supertype is the ultimate supertype, ex:Entity, ensure it is not “npd:Entity”, which is an error that has showed up in some context schemas. For example,

   Immediate supertype:

```
<xtc:supertype_map>
        <xtc:Entity_ref eref="npd:Generic_part"/>
</xtc:supertype_map>
```

Ultimate supertype:

```
<xtc:supertype_map>
        <xtc:Entity_ref eref="ex:Entity"/>
</xtc:supertype_map>
```

Multiple supertypes indicating multiple inheritance is permitted:

```
<xtc:supertype_map>
        <xtc:Entity_ref eref="npd:Structural_system"/>
        <xtc:Entity_ref eref="npd:Profile"/>
</xtc:supertype_map>
```

4.3.1.3 Entity, Property, Association, and simpleType definitions and descriptions

There are options for definitions and descriptions:

- xtc:Definition – element tag subordinate to xtc:Entity, xtc:Property, and xtc:Association. The content of this tag results in unformatted text in the StyleVision HTML output. Double quote not allowed unless escaped ("), but single quote is allowed.
- xtc:Property attribute "definition" - The content of this attribute results in unformatted text in the StyleVision HTML output. Double quote not allowed unless escaped ("), but single quote is allowed.
- xs:annotation/xs:documentation – Pair of element tags subordinate to xtc:Entity, xs:simpleType, and xtc:Association and supports unformatted and formatted definitions. This element pair is also subordinate to the trio of tags, xs:simpleType/xs:restriction/xs:enumeration, which supports descriptions of enumeration values. The content of the xs:documentation can be text or any element tag. If text, the content of this tag results in unformatted text in the StyleVision HTML output. Double quote not allowed unless escaped ("), but single quote is allowed. Formatted text is supported when the Word-Document elements are used per section 6.4, Word-Document Formatting.

Examples:

Entity and Property:

In the following example, xtc:Entity has a definition in both xtc:Definition (unformatted) and xs:annotation/xs:documentation (formatted). The xtc:Property uses the definition attribute for unformatted text.

```
<xtc:Entity name="npd:Structural_feature" module="AP218">
    <xtc:Definition>Parent class for defining instances of structural features for structural
```

```
        elements. Types of features can include interior and exterior cutouts to plates and
        profile parts (see npd:Structural_cutout) and positional features used to locate
        structural elements (see npd:Position_feature).</xtc:Definition>
    <xs:annotation>
        <xs:documentation>
            <Normal>
                <para>Parent class for defining instances of structural features for structural elements.</para>
                <para>Types of features can include</para>
            </Normal>
            <ListParagraph>
                <li>interior and exterior cutouts to plates and profile parts (see pd:Structural_cutout)</li>
                <li>positional features used to locate structural elements (see npd:Position_feature)</li>
            </ListParagraph>
        </xs:documentation>
    </xs:annotation>
    <xtc:Properties>
        <xtc:Property datatype="xs:anyURI" name="Owner" key="true" definition="Designates the organization and
repository that owns the information item. The value should be a URI that uniquely names the repository as well as the
organization that owns the repository in which the information item is managed."/>
        <xtc:Property datatype="xs:normalizedString" name="Id" key="true" definition="Designates the primary identifier of
the informatin item. The information item is uniquely identified by the concatenation of all its properties."/>
        <xtc:Property datatype="xs:normalizedString" name="Version" key="true" definition="Designates the version of the
information item."/>
    </xtc:Properties>
    <xtc:supertype_map>
        <xtc:Entity_ref eref="ex:Entity"/>
    </xtc:supertype_map>
</xtc:Entity>
```

As shown below, the result is unformatted entity definition text (from xtc:Definition) followed by formatted text (from xs:annotation/xs:documentation) in the StyleVision HTML output. Property definitions are unformatted:

4.2.1.1 npd:Structural_feature

4.2.1.1.1 Definition

Parent class for defining instances of structural features for structural elements. Types of features can include interior and exterior cutouts to plates and profile parts (see npd:Structural_cutout) and positional features used to locate structural elements (see npd:Position_feature).

Parent class for defining instances of structural features for structural elements.

Types of features can include

- interior and exterior cutouts to plates and profile parts (see npd:Structural_cutout)
- positional features used to locate structural elements (see npd:Position_feature)

4.2.1.1.3 Properties

name	definition	datatype	use	key
Owner	Designates the organization and repository that owns the information item. The value should be a URI that uniquely names the repository as well as the organization that owns the repository in which the information item is managed.	xs:anyURI	required	true
Id	Designates the primary identifier of the informatin item. The information item is uniquely identified by the concatenation of all its properties.	xs:normalizedString	required	true
Version	Designates the version of the information item.	xs:normalizedString	required	true

Association:

In the following example, xtc:Association has a definition in both xtc:Definition (unformatted) and xs:annotation/xs:documentation (formatted). The xtc:Property uses the definition attribute for unformatted text.

```
<xtc:Association name="npd:Composite_feature.composed_of" module="AP218">
    <xtc:Definition>The composed_of specifies the Feature objects which this Feature is built
      up of. There may be more than one composed_of for a Composite_feature.

      Each Composite_feature has composed_of defined by two (since composite needs at least two) or many Feature objects.
      Each Feature defines composed_of for zero, one, or many Composite_feature objects. </xtc:Definition>
```

As shown below, the result is unformatted xs:simpleType definition text (from xtc:Definition) in the StyleVision HTML output.

4.4.69 npd:Composite_feature.composed_of

4.4.69.1 Definition

The composed_of specifies the Feature objects which this Feature is built up of. There may be more than one composed_of for a Composite_feature. Each Composite_feature has composed_of defined by two (since composite needs at least two) or many Feature objects. Each Feature defines composed_of for zero, one, or many Composite_feature objects.

Use of formatted xtc:Association definitions using xs:annotation/xs:documentation and the Word-Document format is currently in test. Context schema authors can go ahead and use this construct.

xs:simpleType:

In the following example, xs:simpleType has a formatted definition in xs:annotation/xs:documentation. Enumeration descriptions use unformatted xs:annotation/xs:documentation.

```
<xs:simpleType xmlns:xs="http://www.w3.org/2001/XMLSchema" name="Assembly_class">
    <xs:annotation>
      <xs:documentation>
        <Normal>
          <para>The Assembly_class specifies the class of an Assembly based on the where the Assembly is located in the range
of the overall assembly tree.</para>
          <para>The value of Assembly_class is either a human-interpretable name or is one of the following:</para>
        </Normal>
        <ListParagraph>
          <li>preconstructed_group:   Erection unit that can consist of Assembly objects and potentially unit Assembly objects and
individual Part objects, which when completed is erected onto the ship.</li>
          <li>preconstructed_section: An Assembly that may consist of Part, unit Assembly objects or production panels, which
when completed is assembled into an erection unit.</li>
          <li>production_panel:       A panel that may consist of Part objects or unit Assembly objects which is defined within a
production stage.</li>
          <li>unit_assembly:          An assembly consisting only of Part objects and no other Assembly objects.</li>
        </ListParagraph>
        <Normal>
          <para>EXAMPLE Built profile.</para>
        </Normal>
      </xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:normalizedString">
      <xs:enumeration value="preconstructed_group">
        <xs:annotation>
          <xs:documentation>Erection unit that can consist of Assembly objects and potentially unit Assembly objects and
individual Part objects, which when completed is erected onto the ship.</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="preconstructed_section">
        <xs:annotation>
          <xs:documentation>An Assembly that may consist of Part, unit Assembly objects or production panels, which when
completed is assembled into an erection unit.</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="production_panel">
        <xs:annotation>
          <xs:documentation>A panel that may consist of Part objects or unit Assembly objects which is defined within a
production stage.</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
      <xs:enumeration value="unit_assembly">
        <xs:annotation>
          <xs:documentation>An assembly consisting only of Part objects and no other Assembly objects.</xs:documentation>
        </xs:annotation>
      </xs:enumeration>
    </xs:restriction>
</xs:simpleType>
```

As shown below, the result is formatted xs:simpleType definition text (from xs:annotation/xs:documentation) in the StyleVision HTML output. Enumeration descriptions are unformatted:

4.3.23 Assembly_class

Definition:

The Assembly_class specifies the class of an Assembly based on the where the Assembly is located in the range of the overall assembly tree.

The value of Assembly_class is either a human-interpretable name or is one of the following:

- preconstructed_group: Erection unit that can consist of Assembly objects and potentially unit Assembly objects and individual Part objects, which when completed is erected onto the ship.
- preconstructed_section: An Assembly that may consist of Part, unit Assembly objects or production panels, which when completed is assembled into an erection unit.
- production_panel: A panel that may consist of Part objects or unit Assembly objects which is defined within a production stage.
- unit_assembly: An assembly consisting only of Part objects and no other Assembly objects.

EXAMPLE Built profile.

Module: AP218

Restriction: xs:normalizedString

4.3.23.1 Enumeration

value	annotation
preconstructed_group	Erection unit that can consist of Assembly objects and potentially unit Assembly objects and individual Part objects, which when completed is erected onto the ship.
preconstructed_section	An Assembly that may consist of Part, unit Assembly objects or production panels, which when completed is assembled into an erection unit.
production_panel	A panel that may consist of Part objects or unit Assembly objects which is defined within a production stage.
unit_assembly	An assembly consisting only of Part objects and no other Assembly objects.

4.3.2 NGTS

NGTS will provide merge context schema services to the team as follows:

1. Review mergeSpec spreadsheets and atomic context schemas for errors. Any errors will be corrected in coordination with the author, either by the author or NGTS as appropriate.
1. Convert mergeSpecs to XML files via XMLSpy and place in the folder, \MergeContextSchemas\MergeSpecs
2. Place atomic context schemas in the appropriate folder: \AIC, \IGR, or \AtomicContextSchemas
3. Create the **MergeContextSchemaFiles_XXXX.xml** file based on the contents of the mergeSpec and place in the \MergeContextSchemas\MergeContextSchemaFiles folder
4. Execute the XSLT translator against the **MergeContextSchemaFiles_XXXX.xml** file and work any runtime data errors with the author or correct the XSLT translator code as needed. Data errors can occur in the mergeSpec or the atomic context schemas. If a base, AIC, or IGR context schema is implicated, the appropriate author will be requested to help fix the problem.
5. Provide the merged context schema to the author to ensure the result is what was expected. If not, work with the author to correct the mergeSpec or appropriate atomic context schema.
6. Run the merged context schema through Altova StyleVision to produce preliminary versions of the SCIM Documentation for that chapter.
7. Post the results on ISE Tools as a zipped NPDI_SCIM folder for access by the ILE team.

4.4 Atomic Application Interpreted Construct (AIC) Context Schemas

The atomic AIC context schemas identify the major geometry shape representations supported by the SCIM as entities. The AICs implemented in the SCIM are shown in Table 2. These will be included in SCIM chapter mergeSpecs that require such geometry shape representations. In addition, associations

- identify the IGR entities needed to support the representation
- identify the major EXPRESS where clauses implemented by the SCIM AIC

The AIC mergeSpecs identify the IGR entities required by the merged AIC context schemas.

Table 2 AICs implemented in the SCIM

AIC	namespace	Shape Representation (Entity)
508	aic_non_manifold_surface	non_manifold_surface_shape_representation
511	aic_topologically_bounded_surface	advanced_face
514	aic_advanced_brep	advanced_brep_shape_representation

4.5 Atomic Integrated Generic Resource (IGR) Context Schemas

As part of the restructuring that we are doing to use the new Merge Context Schema code, we are re-working the original ISE “ir” set of schemas from EB. The revised files will each have XML content matching the corresponding STEP Integrated Generic Resource Schemas (Part 40’s). Moving forward,

these schemas will be termed atomic integrated generic resource (IGR) files. IGR Entities and Associations can then be pulled into the AIC and main SCIM chapters as needed using the Merge Specifications. Manual copying of inherited properties (xtc:Property) and the extensive supertype trees in the "ir" files are being replaced with the Merge Context Schema code to walk the Entity supertype_map paths for property inheritance and the Entity's supertypes to capture them in the SCIM "Merged" schemas. This should reduce redundancy and errors across files.

Most of the above will be transparent to SCIM Chapter developers since the finished atomic AIC and IGR files will be available to the developer, with the exceptions noted in the subsections below.

4.5.1 npd_measure_schema

The SCIM measure_schema from Part41 will match what is in Part41, including just the pre-defined ISO measures and units. In each of our APs we also defined ship-specific measures and units that are not included in the ISO standards. In the structural APs (215/216/218) these measures and units and their mappings to STEP Context_dependent_measure and Derived_Unit were documented in the AP Annexes and in their definitions where they appeared in the APs. Examples are Speed_measure for the Ship characteristics and Weight_per_length_measure for structural profiles. As part of the file restructuring, we will be creating a new schema called npd_measure_schema to capture these measures and units for calling from the various SCIM chapters. Please keep this in mind when working on the non-structural SCIM chapters; there may be AP-defined measures and derived units from other disciplines such as Piping, Electrical, Ventilation, or CPC that will need to be added to the npd_measure_schema. Please send them to Pet Lazo as they are identified and he will add them to the npd_measure_schema.

4.5.2 basic_attribute_schema

A new IGR schema, basic_attribute_schema, was created to define the basic attribute entities (like name_attribute) and make each of the four Select types into one Association each with the targets being the list of entities in the Select. Chapter authors would then just have to be careful to "Merge" the appropriate Associations whenever any of these resource entities are used in an AIC or in the SCIM chapters.

5 ArgoUML

The ArgoUML folder contains the ArgoUML models and exported UML diagram images as shown in Figure 12.

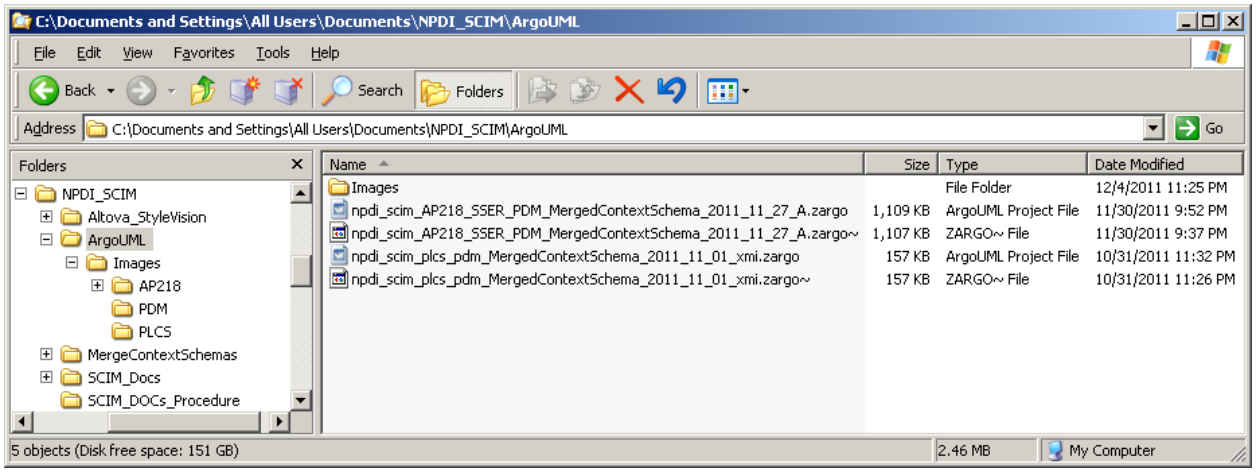


Figure 12 ArgoUML Folder

Individual ArgoUML project files (*.zargo) files reside in the ArgoUML folder. Images exported from the zargo file reside in SCIM chapter specific folders under the Images folder. These images are used in the StyleVision documentation generation process. Some ArgoUML modelers will start with an XMI file derived from the context schema. Since XMI files are an intermediate file and the XMI data imported into ArgoUML is subject to extensive revision via the ArgoUML GUI, the XMI files will not be managed in this folder. Instead, only the ArgoUML zargo files and exported image files are managed here.

ArgoUML diagram names (Figure 13) drive the image file names (Figure 14). Hence the following Image file naming conventions need to be applies to ArgoUML diagram names:

- Context Diagrams: ***ContextDiagram_EntityName.png*** without namespace. For Example: ContextDiagram_Panel_system.png
- Class Diagrams: ***ClassDiagram_DiagramName.png***. For Example: ClassDiagram_AP218ClassDiagram.png

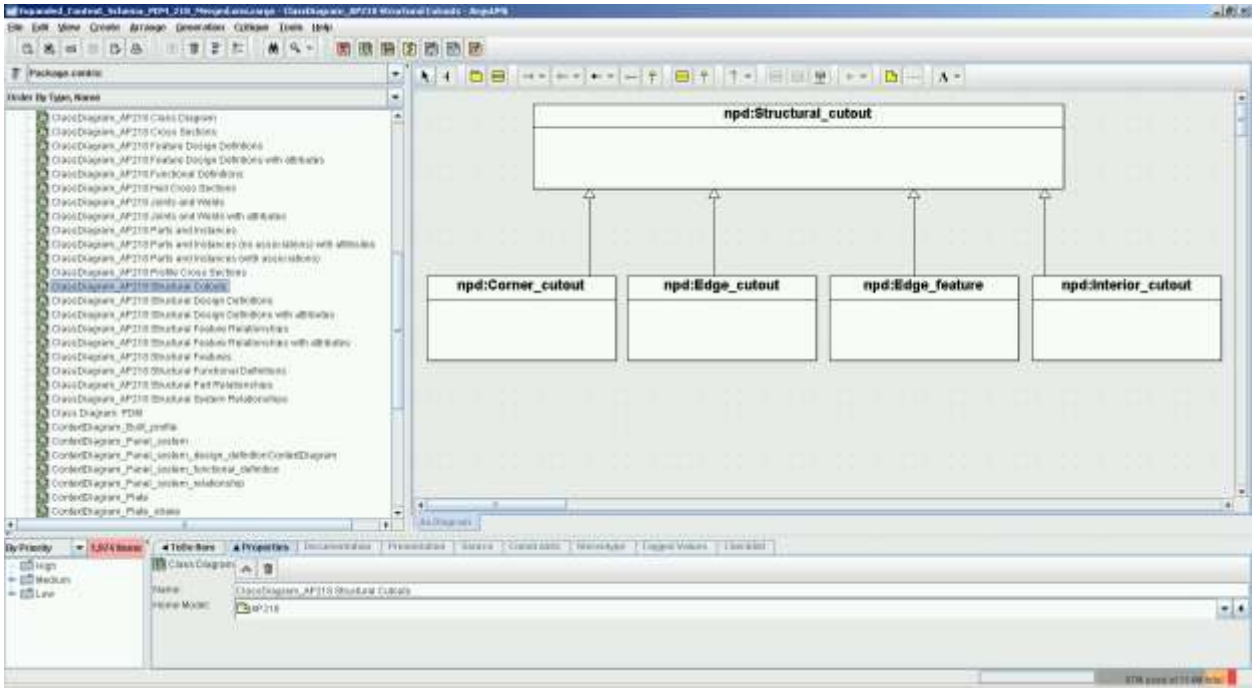


Figure 13 ArgoUML Diagram / Image naming conventions

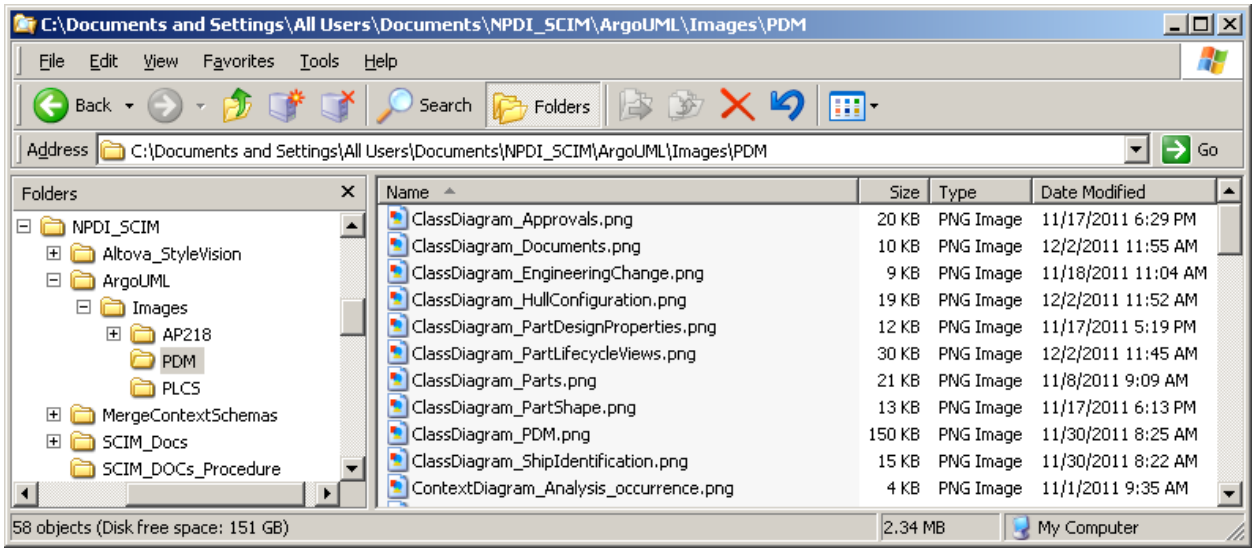


Figure 14 Images Exported from ArgoUML

5.1 Diagram creation

ArgoUML is used to model each SCIM chapter in Unified Modeling Language (UML) version 1.4 diagrams. There are three types of diagrams used: Class Diagrams, Entity-Relationship (ER) Diagrams,

and Context Diagrams. All three diagrams are created from a class diagram: Create - > New Class Diagram (figure Figure 15).

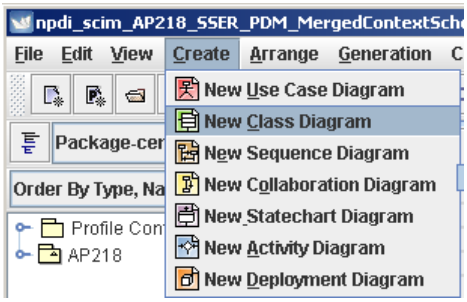


Figure 15 Create - > New Class Diagram

Class diagrams focus on entity inheritance (Figure 16). Important associations can be shown. Properties can be shown if space permits. ER diagrams present the important relationships among a select group of entities (Figure 17). Properties can be shown if space permits. Context Diagrams are ER diagrams focused on one entity (Figure 18). It presents every association the entity of focus participates in. The entire supertype map is presented as a set of generalizations that ends with the supertype that has only ex:Entity as a supertype. However, ex:Entity is not presented in the ArgoUML model. Properties of the entity of focus and its supertypes must be present. No other properties should be shown.

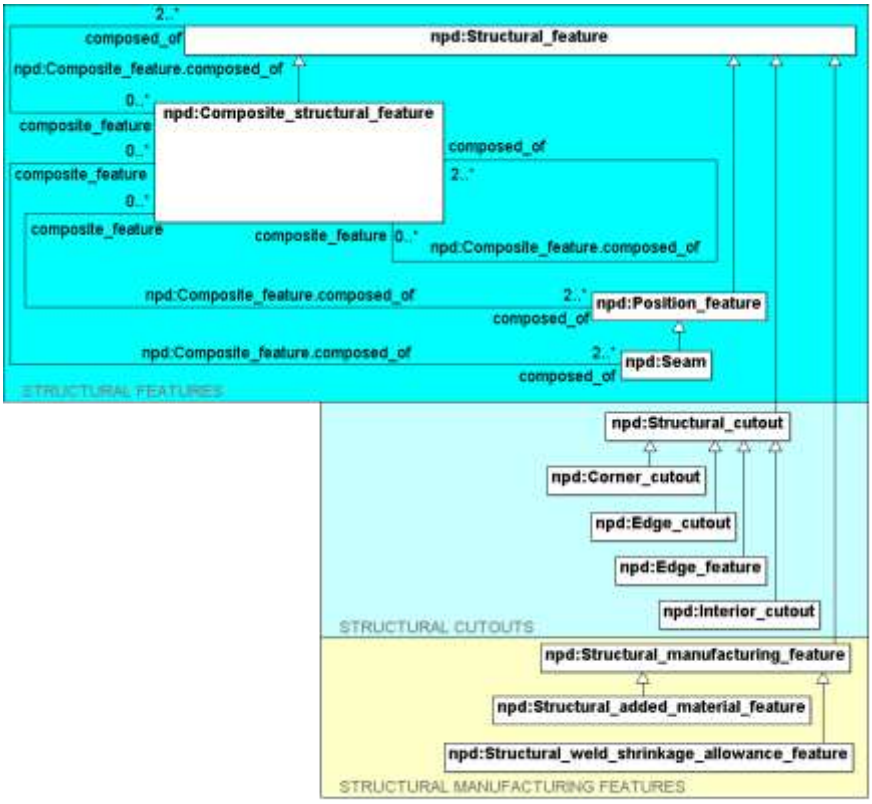


Figure 16 Class Diagram example

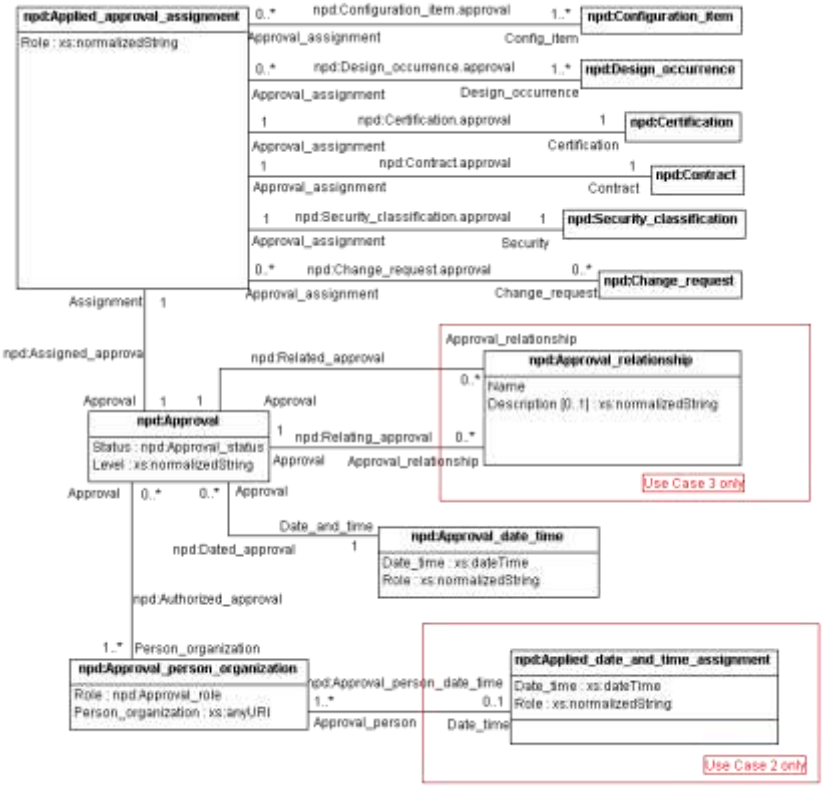


Figure 17 Entity-Relationship (ER) Diagram example

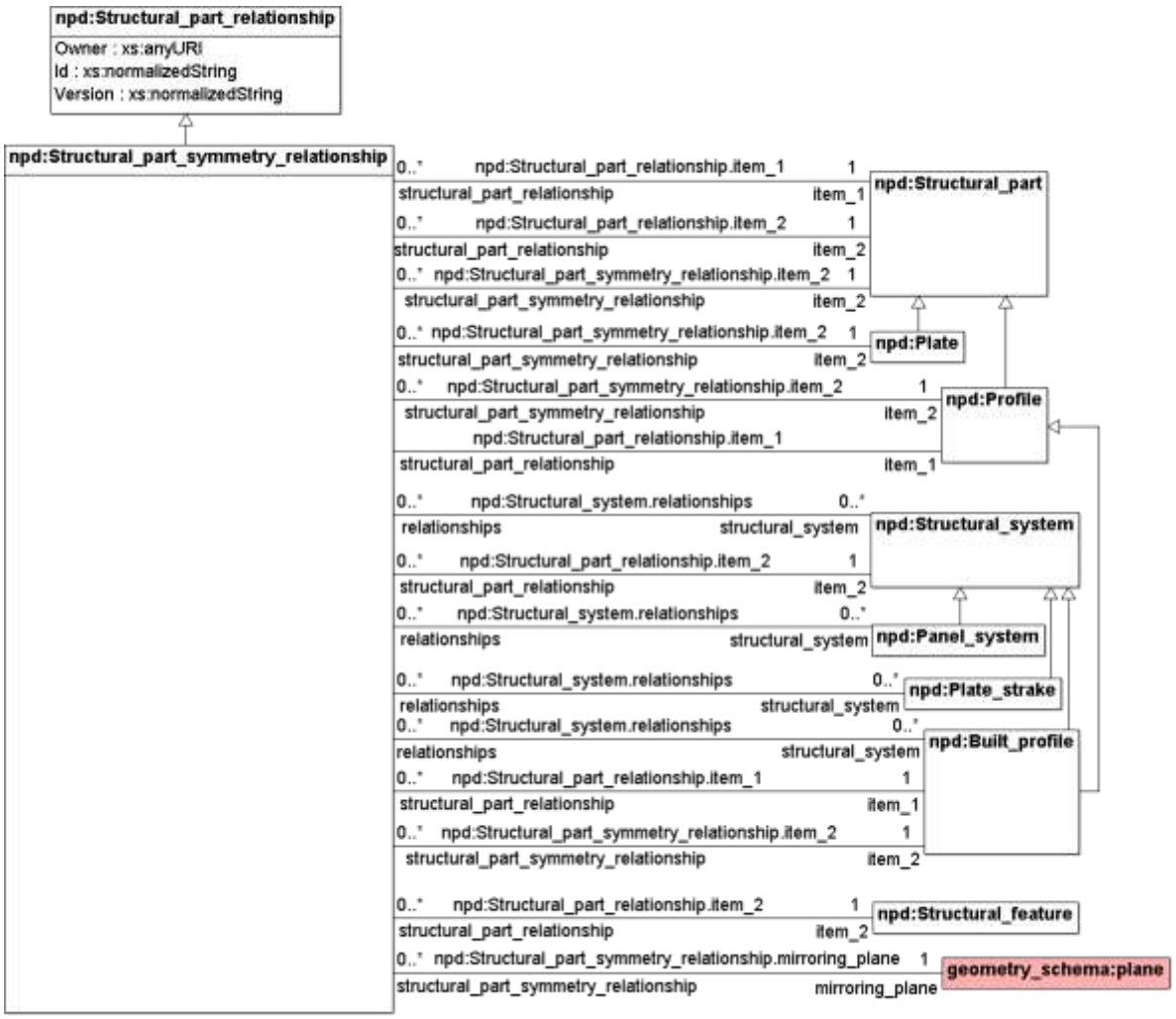


Figure 18 Context Diagram example (focus on npd: Structural_part_symmetry_relationship)

Class diagrams and ER diagrams are typically used to help describe functional groupings of entities. If possible the entire chapter should have an ER diagram presenting all entities and important associations (See Overview section of Chapter 1, PDM or Chapter 4, AP218, Structures in the SCIM_Docs). Smaller chapters such as Product Data Model can present most associations. Larger chapters such as AP218, Structures, will be very selective presenting associations. If all AP218 associations were shown, the diagram would be black with association lines. Each entity is described using a context diagram in the Data Model Context section under each entity in a SCIM chapter.

5.2 ArgoUML Guidance

Details of diagram development in ArgoUML are out of scope of this document. However, the following guidance on model and diagram development is provided:

1. Context schema entities are modeled as UML classes
2. Context schema properties are modeled as UML class attributes
3. Context schema associations are modeled as UML bidirectional associations
4. Entity supertypes are modeled as a generalization from the subtype class to the supertype class (also termed specialization when navigating from supertype to subtype)
5. Context schema xs:simpleType is modeled as a datatype in ArgoUML
6. UML class operations are not used and should be turned off in diagrams.

Ensure the project properties (per Figure 19, select File -> Project Properties…) are established as shown in Figure 20 and Figure 21.

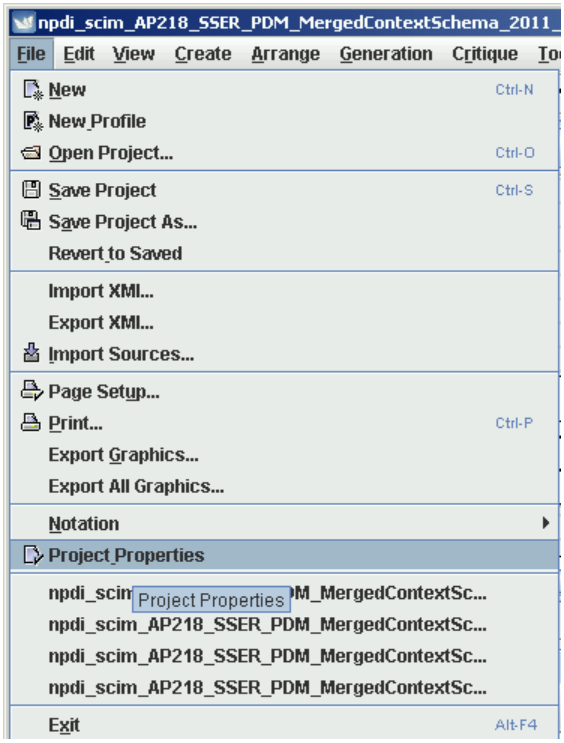


Figure 19 Select File -> Project Properties...

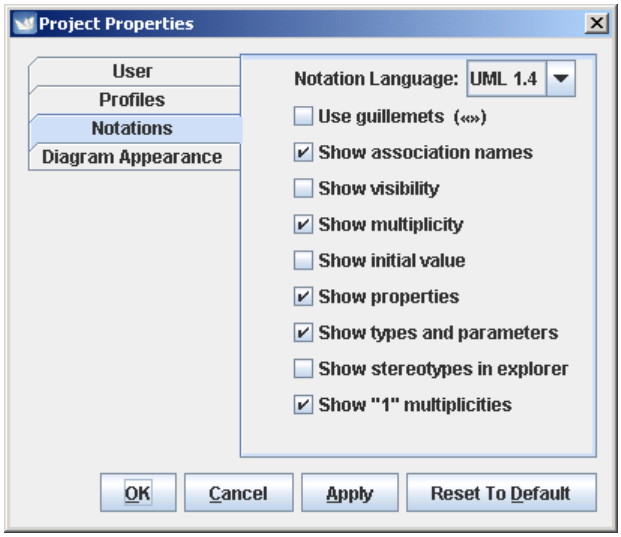


Figure 20 Notation properties for SCIM

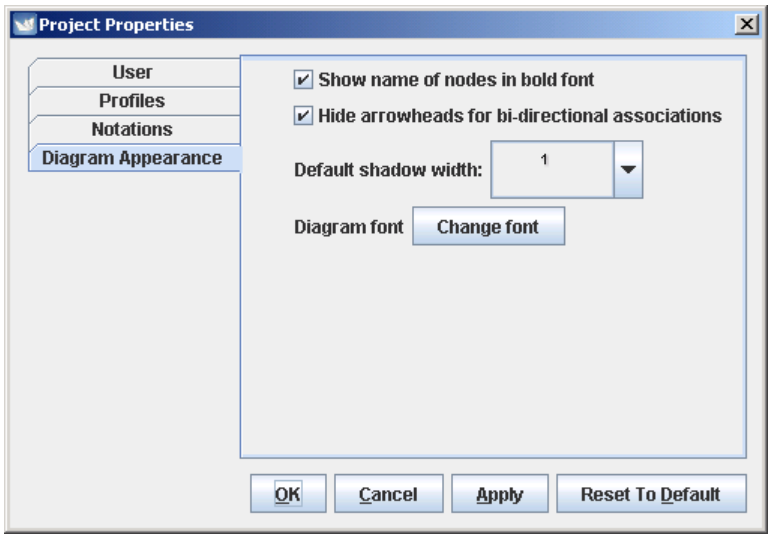


Figure 21 Diagram Appearance properties for SCIM

5.3 UML diagram export

Once the diagrams have been created, they are exported to folder

\NPDI_SCIM\ArgoUML\Images\[chapter prefix]

where chapter prefix is the same as described in section TBD.

There are two ways to export images in ArgoUML:

- Export Graphics…
- Export All Graphics…

5.3.1 Export Graphics…

Export Graphics… exports the current diagram. Click on File -> Export Graphics… (Figure 22)

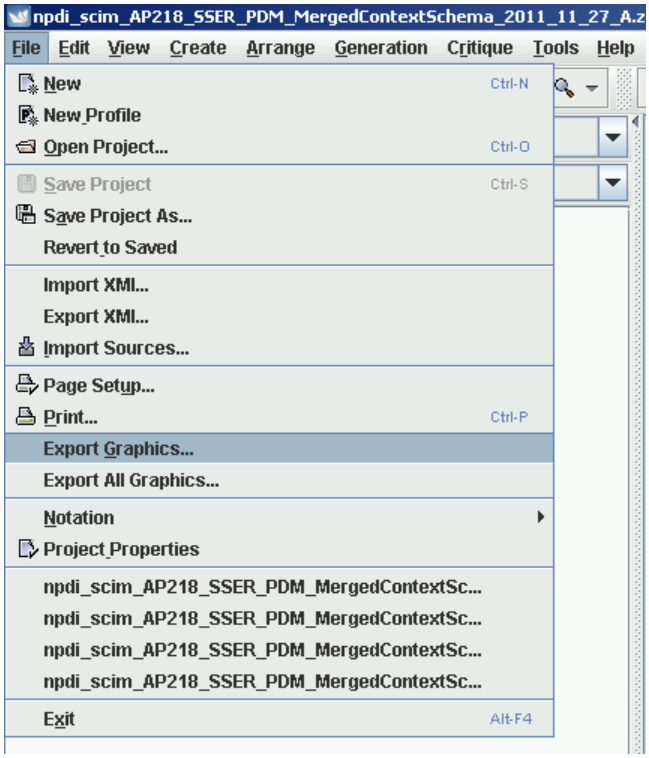


Figure 22 Export Graphics... menu item

The Save File dialog appears with the filename of the last filename exported. Ensure “Files of Type:” is set to “PNG Image (.png)”. It is critical to ensure the current diagram name be copied to the “File Name” textbox since ArgoUML does not supply this as shown in Figure 23.

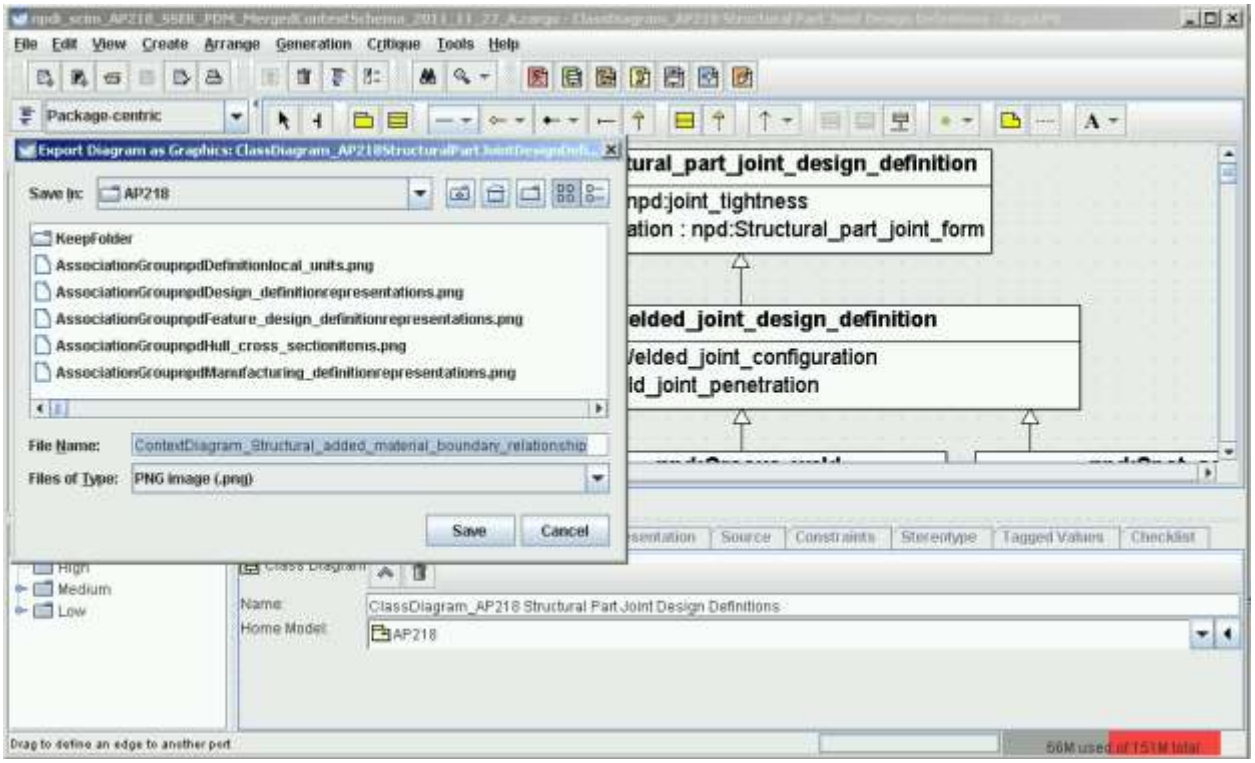


Figure 23 Mismatch between ArgoUML supplied filename and the user supplied diagram name.

Navigate to the desired folder and click “Save”.

5.3.2 Export All Graphics…

Export All Graphics… exports all diagrams. Click on File -> Export All Graphics… (Figure 24)

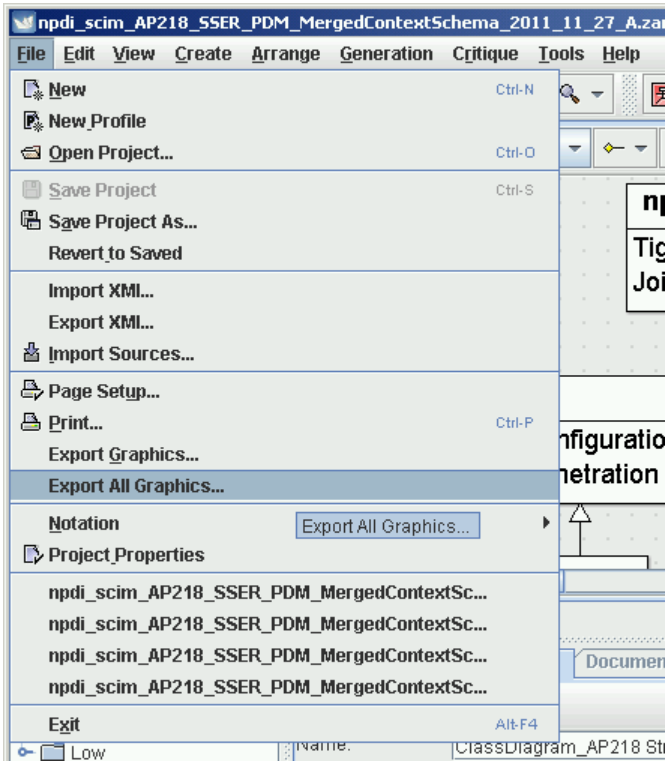


Figure 24 File -> Export All Graphics…

The Save File dialog appears with the pathName to the folder last exported. Ensure “Files of Type:” is set to “PNG Image (.png)”. It is critical to ensure the desired folder is selected then click “Save”. ArgoUML exports all diagrams. This could take some time if there are many diagrams. One can monitor progress via a Windows Explorer window set to the target folder. Large models may run out of Java heap memory. If so, dismiss or kill ArgoUML. Saving the model file often is a good defense against corrupting the model file if one must kill ArgoUML. If necessary, one can rename the *zargo.bak file to *.zargo to roll back to the last version before saving.

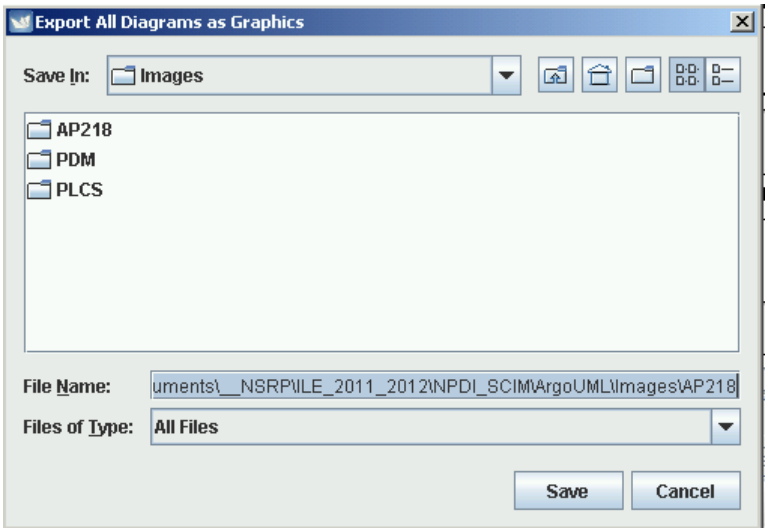


Figure 25 Export All Diagrams as Graphics Save dialog

If ArgoUML runs out of Java heap memory a lot as evidenced by very slow model file saves and memory usage in the lower right corner shows “455M of 495M total” (Figure 26), one can increase the heap memory by editing the shortcut.

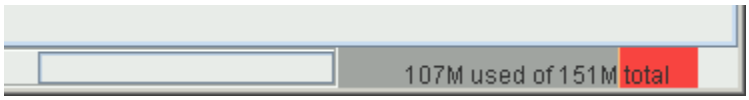


Figure 26 ArgoUML Java heap memory usage

Default target (see Figure 27):

> "C:\Program Files\Java\jre6\bin\javaw.exe" -Xms64m -Xmx512m -jar "C:\Program Files\ArgoUML\argouml.jar"

Change “-Xmx512m” to “-Xmx1024m” and save the shortcut to double heap memory.

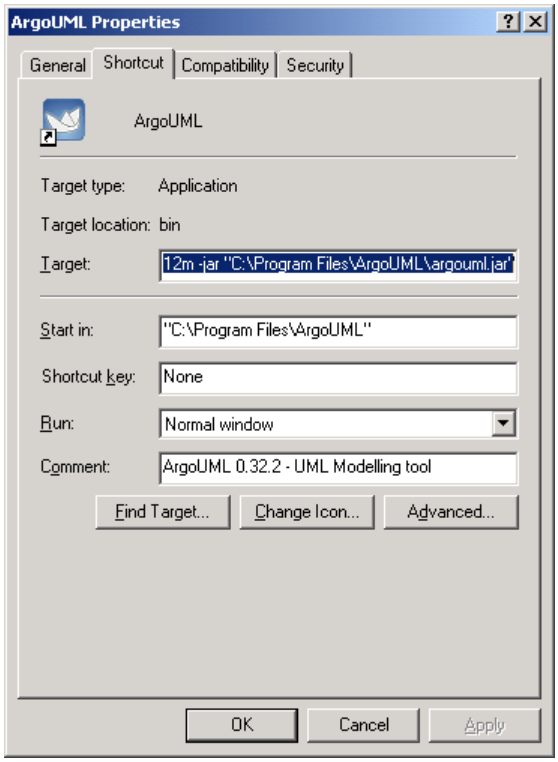


Figure 27 ArgoUML shortcut properties. "Target" textbox highlighted.

Once all of the images have been exported, the images needed for StyleVision they need to be copied to the corresponding chapter folder under the following locations:

- \NPDI_SCIM\Altova_StyleVision\Images\
- \NPDI_SCIM\SCIM_Docs*ChapterFolder*\Images\

6 SCIM Documentation via Altova StyleVision:

The SCIM documentation is generated as Altova StyleVision HTML output translated from XML documents and images including

- A merged context schema (XML)
- Authored text (XML derived from Excel or Word)
- Diagrams/Images (derived from ArgoUML or other sources).

The goal is to develop the SCIM documentation in an XML editor (context schemas), Microsoft Office (Excel and Word), ArgoUML (UML diagrams exported as image files), and other image sources (overview and functional description non-UML diagrams).

The HTML output has three variants: SCIM chapter, support schemas, and an annex. The SCIM chapters include

- Chapter 1: Product Data Management
- Chapter 2: Moulded Forms (AP216)
- Chapter 3: Ship Arrangements (AP215)
- Chapter 4: Structural (AP218)
- Chapter 5: Piping Functional (AP227)
- Chapter 6: Piping Physical (AP227)
- Chapter 7: Product Life Cycle Support (AP239)
- Chapter 8: Common Parts Procurement (CPP)
- Chapter 9: HVAC Functional Design (AP227)
- Chapter 10: HVAC Physical Design (AP227)
- Chapter 11: Structural Computer Aided Manufacturing (CAM) (AP218)
- Chapter 12: Pipe Stress Analysis
- Chapter 13: Engineering Analysis (AP209)
- Chapter 14: Electrotechnical Functional Design (AP212)
- Chapter 15: Electrotechnical Physical Design (AP212)

The support schemas include selected Application Interpreted Constructs (AIC) and Integrated Generic Resources (IGR) schemas. Currently, there is one Annex. The outlines for these variants are presented in Table 3.

Table 3 SCIM Documentation variant outlines

SCIM chapter	AIC/IGR Sections	Annex
x.1 Overview x.2 Entities x.2.n Function (optional) x.2.n.m Entity name x.2.n.m.1 Additional Information x.2.n.m.2 Data Model Context x.2.n.m.3 Properties x.3 Simple Types "None" or x.3.n SimpleType name subordinate information x.4 Complex Types "None" or x.4.n ComplexType name subordinate information x.5 Associations "None" or x.5.n Association name x.5.n.1 Definition x.5.n.2 Association Ends x.6 Traceability Matrix Traceability Matrix table Where x = chapter number; n and m are running numbers in the outline NOTE: if Function is not provided, the outline from "Entity Name" and below is promoted on level.	x.1 Overview x.2 Entities x.2.n Entity name x.2.n.1 Additional Information x.2.n.2 Properties x.3 Simple Types "None" or x.3.n SimpleType name subordinate information x.4 Complex Types "None" or x.4.n ComplexType name subordinate information x.5 Associations "None" or x.5.n Association name x.5.n.1 Definition x.5.n.2 Association Ends Where x = TBD number; n and m are running numbers in the outline	A.1 Topic 1 A.1.n subsection A.2 Topic 2 A.2.n subsection … Where A = annex letter ; n is running number in the outline

The goal is to maintain one master StyleVision template for each variant and derive the remaining chapters/sections/annexes from that template by

1. Changing template "parameters"
2. Changing the source XML documents to the chapter specific instance XML documents.
3. Directory structure conventions
4. Image files naming conventions.

StyleVision supplies the chapter, figure, and table numbers. Each template has an XPATH function that supplies the Chapter number where needed. The Chapter number XPATH function is changed in one

place in each chapter template. The XPATH function is applied as a StyleVision "AutoCalc" prepended to section outline numbers, figures, and tables.

Other StyleVision XPATH functions supply the Chapter title and module acronym (e.g., PDM) where needed. Again, change the function value in one place in each chapter template.

Currently, the AP218 Structures chapter is the master template for the SCIM chapters.

The AIC/IGR sections have a separate template as the outline is different from a chapter outline (see Table 3). The goal here is to maintain a master AIC/IGR template and derive the others as outlined above.

The Annex has a different template to support the outline shown in Table 3.

6.1 Directory structure

The directory structure supporting document generation using StyleVision is shown in Figure 28 and is discussed in the subsections below.

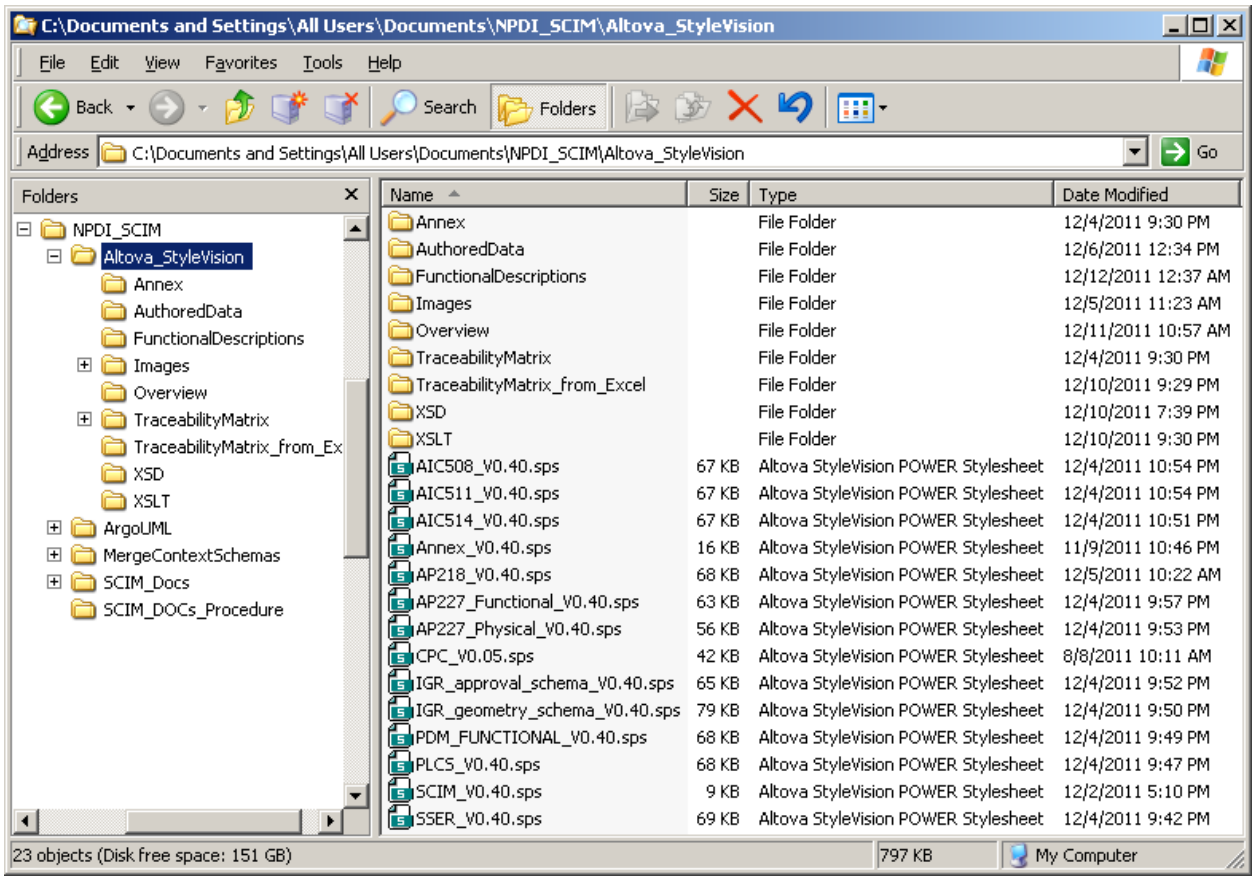


Figure 28 Altova StyleVision directory structure

The Altova_StyleVision folder contains the StyleVision projects files (*.sps extension) and HTML output files (*.html extension). There is at least one project file per chapter. Multiple project files per chapter represent different versions of the same project file. The HTML output files typically exist as long as the project file that generated them is open in StyleVision. StyleVision usually removes the HTML files when the project is closed. Thus, a generated HTML file needs to be copied to the SCIM_docs folder to persist it.

The folders in the **Altova_StyleVision** directory include the following, which are described in detail in the subsections below:

- **Annex** – contains Annex Word documents and the XML files derived from them. The XML files are used as the information source for the Annex. There is one set of these files for each annex implemented. Currently there is one annex.
- **AuthoredData** – contains Excel spreadsheets containing "Additional Information" per entity and the XML files derived from them. The XML files are used as the information source for the "Additional Information" section under section x.2.n.m, Entity name (see Table 3).
- **FunctionalDescriptions** – contains Excel spreadsheets containing "Functional Descriptions" per functional entity group and the XML files derived from them.
- **Images** – Contains one folder of images per chapter. HTML image relative paths point to ./Images/*chapterName*. These images support the StyleVision output viewer.
- **Overview** – contains SCIM chapter and AIC/IGR section Overview Word documents and the XML files derived from them. The XML files are used as the information source for the Overview section. There is one set of files per SCIM chapter and AIC/IGR section.
- **SCIM_Docs** – This is the repository of the current set of SCIM HTML and image files. This folder will be zipped for deployment.
- **XSD** – contains XML schema files for the XML source documents used by StyleVision (except the context schema as described below). These files are required by StyleVision for each XML input file used in the StyleVision project file.
- **TraceabilityMatrix** – contains "packaged" Traceability Matrix XML files derived from the XML table files in the folder **TraceabilityMatrix_from_Excel**. "Packaging" converts the spreadsheet derived XML table to entity centric XML constructs required by the Traceability Matrix.
- **TraceabilityMatrix_from_Excel** – contains Traceability Matrix Excel spreadsheets. These spreadsheets are copied from the Traceability Matrix table in the HTML output. StyleVision knows how to create the SCIM column from the atomic context schema, but needs user input to generate the STEP column. The user edits the STEP column to create the SCIM to STEP mappings of entities, properties, and associations. The result is saved first as an updated Excel file, then as a tab delimited text file, which is converted to an XML table via XMLSpy.
- **XSLT** – contains XSLT stylesheets used to provide XPATH and XSLT functionality not available directly in StyleVision. These show up as "XSLT files" in StyleVision.

6.1.1 "Annex" Folder

Annex – contains Annex Word documents and the XML files derived from them. The XML files are used as the information source for the Annex. There is one set of these files for each annex implemented. Currently there is one annex.

An annex author should develop the annex in Microsoft Word including any figures and tables. The Word document is converted to a **Word-Document** based XML file using XMLSpy and the procedure outlined in section 6.3, Microsoft Word to XML conversion. Note that figures and tables require restoration as outlined in section 6.3.

6.1.2 "AuthoredData" Folder

AuthoredData – contains Excel spreadsheets containing "**Additional Information**" per entity and the XML files derived from them as shown in Figure 29[1]. The XML files are used as the information source for the "Additional Information" section under section x.2.n.m, Entity name (see Table 3). Authors supply this data as a spreadsheet (Figure 30). Each row represents the data for one entity. The columns are **ENTITY** and **AdditionalInformation**. For existing chapters much of this information can be gleaned from the InfoPath document in the **Intent**, **Motivation**, **Also Known As** (AKA), and **Implementation Consequences** sections.

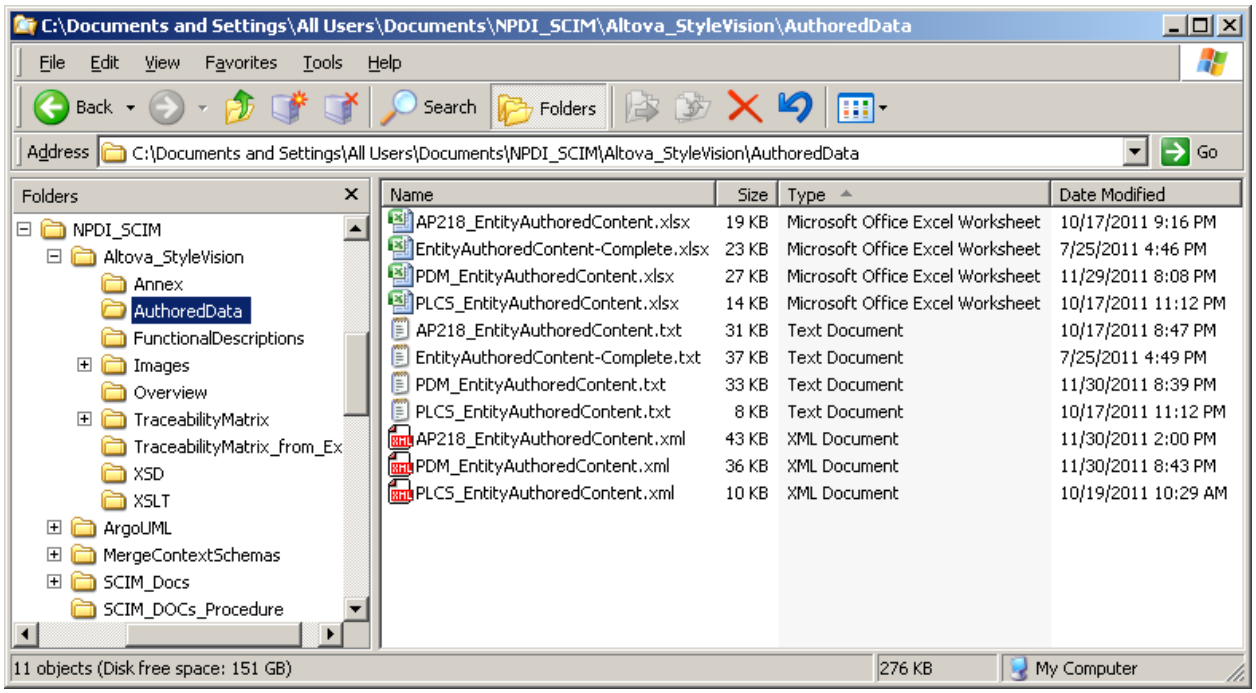
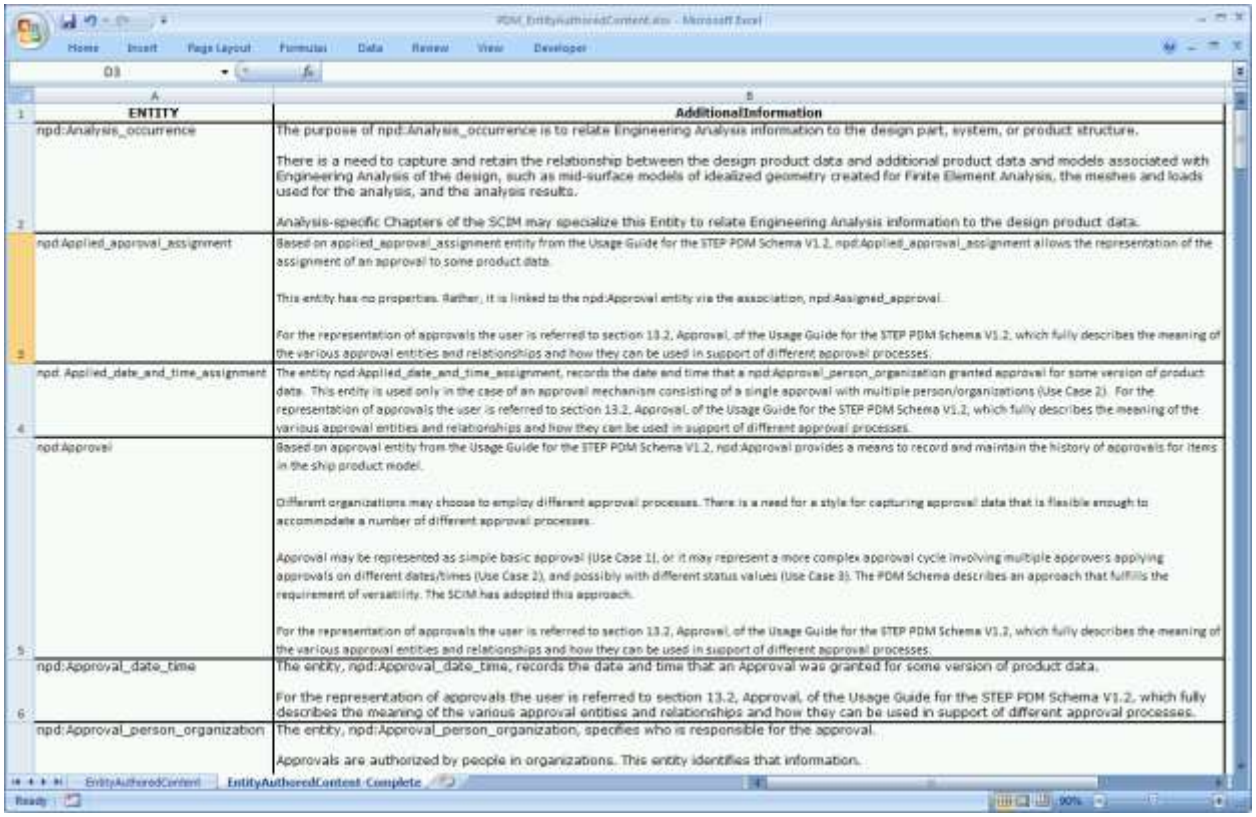


Figure 29 Altova StyleVision "AuthoredData" folder

[1] Entity level authored data used to be comprised of **Intent**, **Motivation**, **Also Known As** (AKA), and **Implementation Consequences** when the SCIM was published via Microsoft InfoPath. This was condensed to "**Additional Information**" in the StyleVision HTML version.

The **ENTITY** column must be the namespace (npd) qualified name. StyleVision matches that string to the corresponding entity name from the context schema to know where to place the Additional Information. The **Additional Information** column contains the desired text. The text shown in Figure 30 will be output unformatted by StyleVision. To format the text, authors need to apply the **Word-Document** formatting (see section 6.4, Word-Document Formatting). This is best done in the resulting XML table generated by XMLSpy per the procedure described in section 6.2, Microsoft Excel to XML conversion. Excel limits cells to 255 characters, which is a severe limit on documentation.



	ENTITY	AdditionalInformation
2	npd:Analysis_occurrence	The purpose of npd:Analysis_occurrence is to relate Engineering Analysis information to the design part, system, or product structure. There is a need to capture and retain the relationship between the design product data and additional product data and models associated with Engineering Analysis of the design, such as mid-surface models of idealized geometry created for Finite Element Analysis, the meshes and loads used for the analysis, and the analysis results. Analysis-specific Chapters of the SCIM may specialize this Entity to relate Engineering Analysis information to the design product data.
3	npd:Applied_approval_assignment	Based on applied_approval_assignment entity from the Usage Guide for the STEP PDM Schema V1.2, npd:Applied_approval_assignment allows the representation of the assignment of an approval to some product data. This entity has no properties. Rather, it is linked to the npd:Approval entity via the association, npd:Assigned_approval. For the representation of approvals the user is referred to section 13.2, Approval, of the Usage Guide for the STEP PDM Schema V1.2, which fully describes the meaning of the various approval entities and relationships and how they can be used in support of different approval processes.
4	npd:Applied_date_and_time_assignment	The entity npd:Applied_date_and_time_assignment, records the date and time that a npd:Approval_person_organization granted approval for some version of product data. This entity is used only in the case of an approval mechanism consisting of a single approval with multiple person/organizations (Use Case 2). For the representation of approvals the user is referred to section 13.2, Approval, of the Usage Guide for the STEP PDM Schema V1.2, which fully describes the meaning of the various approval entities and relationships and how they can be used in support of different approval processes.
5	npd:Approval	Based on approval entity from the Usage Guide for the STEP PDM Schema V1.2, npd:Approval provides a means to record and maintain the history of approvals for items in the ship product model. Different organizations may choose to employ different approval processes. There is a need for a style for capturing approval data that is flexible enough to accommodate a number of different approval processes. Approval may be represented as simple basic approval (Use Case 1), or it may represent a more complex approval cycle involving multiple approvers applying approvals on different dates/times (Use Case 2), and possibly with different status values (Use Case 3). The PDM Schema describes an approach that fulfills the requirement of versatility. The SCIM has adopted this approach. For the representation of approvals the user is referred to section 13.2, Approval, of the Usage Guide for the STEP PDM Schema V1.2, which fully describes the meaning of the various approval entities and relationships and how they can be used in support of different approval processes.
6	npd:Approval_date_time	The entity, npd:Approval_date_time, records the date and time that an Approval was granted for some version of product data. For the representation of approvals the user is referred to section 13.2, Approval, of the Usage Guide for the STEP PDM Schema V1.2, which fully describes the meaning of the various approval entities and relationships and how they can be used in support of different approval processes.
	npd:Approval_person_organization	The entity, npd:Approval_person_organization, specifies who is responsible for the approval. Approvals are authorized by people in organizations. This entity identifies that information.

Figure 30 Authored Data Spreadsheet (PDM)

6.1.3 "FunctionalDescriptions" Folder

FunctionalDescriptions – contains Excel spreadsheets containing "Functional Descriptions" per functional entity group and the XML files derived from them. The XML files are used as the information source for the section, x.2.n Function (optional), section under section x.2 Entities (see Table 3). Authors supply this data as a spreadsheet (Figure 31). Each row represents the data for one Functional Description. The columns are **Function** and **Description**.

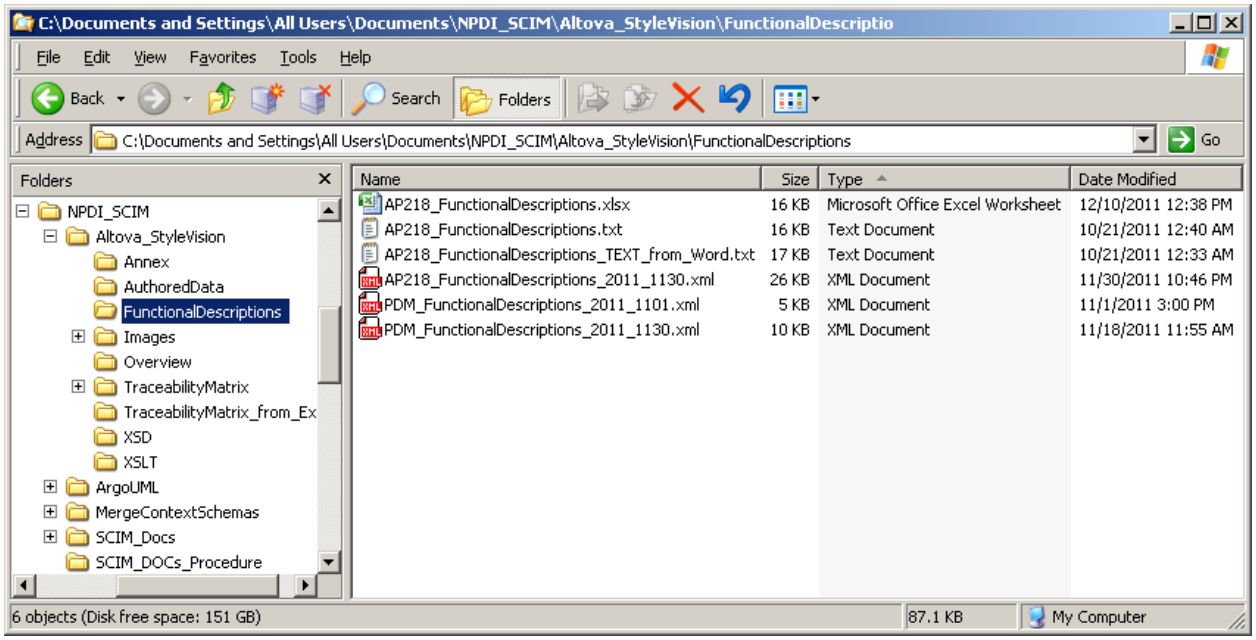
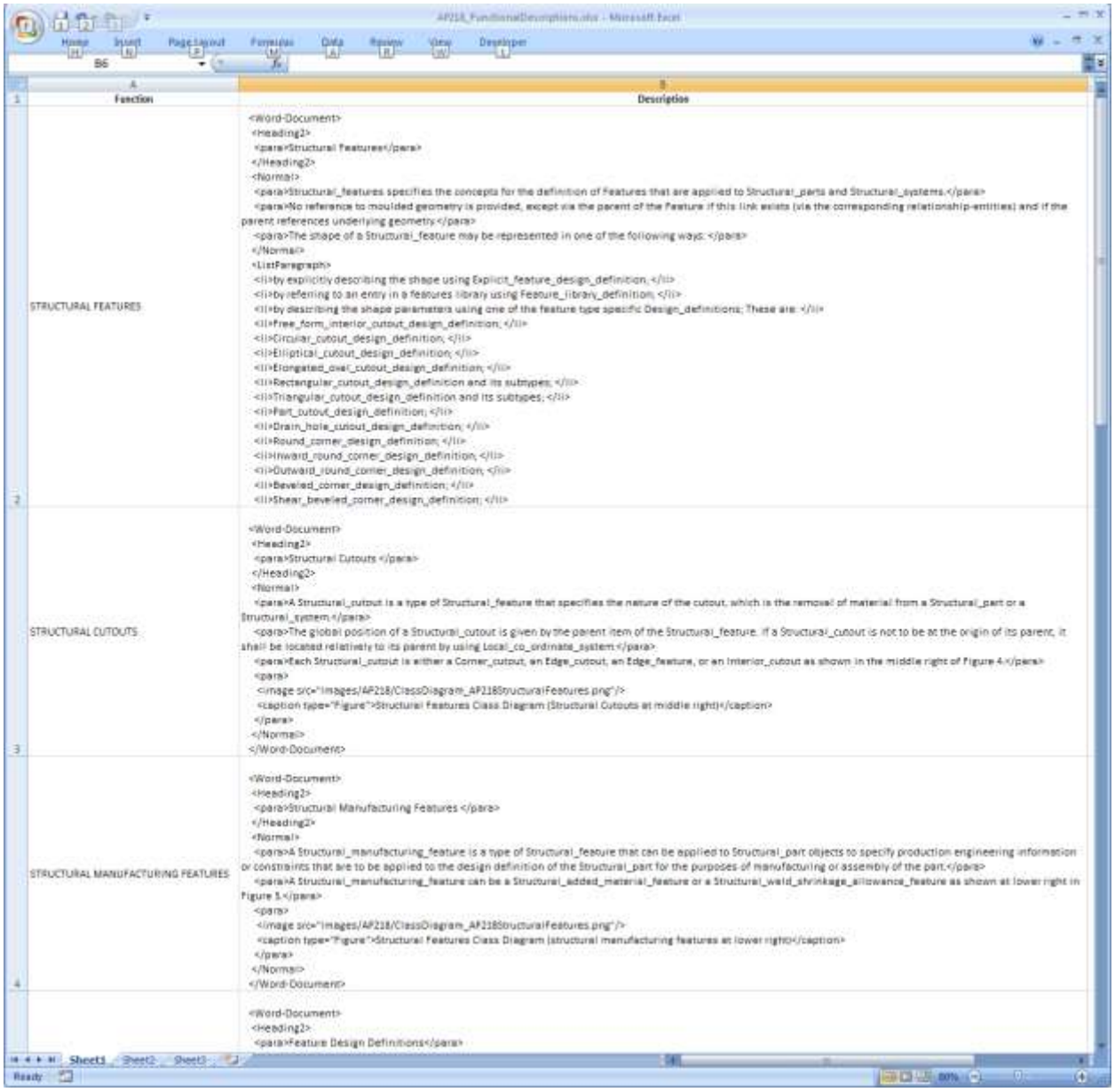


Figure 31 Altova StyleVision "FunctionalDescriptions" folder

The **Function** column must contain the same strings found in the **Function_or_Alphabetical** column of the MergeSpec (see section 4.3.1.1, Merge Specification (MergeSpec)). StyleVision performs a string match between the **Function** column in the functional description XML file and the **Function_or_Alphabetical** column of the MergeSpec to know where to insert the functional description text in the HTML output.

The **Description** column contains the desired text to be inserted in the StyleVision HTML output. The text shown in Figure 32 has had the **Word-Document** formatting applied (see section 6.4, Word-Document Formatting). This is best done in the resulting XML table generated by XMLSpy per the procedure described in section 6.2, Microsoft Excel to XML conversion. Excel limits cells to 255 characters, which is a severe limit on documentation.



	Function	Description
2	STRUCTURAL FEATURES	<Word-Document> <Heading2> <para>Structural Features</para> </Heading2> <Normal> <para>Structural_features specifies the concepts for the definition of Features that are applied to Structural_parts and Structural_systems.</para> <para>No reference to moulded geometry is provided, except via the parent of the Feature if this link exists (via the corresponding relationship-entities) and if the parent references underlying geometry.</para> <para>The shape of a Structural_feature may be represented in one of the following ways: </para> </Normal> <ListParagraph> - by explicitly describing the shape using Explicit_feature_design_definition; - by referring to an entry in a features library using Feature_library_definition; - by describing the shape parameters using one of the feature type specific Design_definitions; These are: - Free_form_interior_cutout_design_definition; - Circular_cutout_design_definition; - Elliptical_cutout_design_definition; - Elongated_oval_cutout_design_definition; - Rectangular_cutout_design_definition and its subtypes; - Triangular_cutout_design_definition and its subtypes; - Part_cutout_design_definition; - Drain_hole_cutout_design_definition; - Round_corner_design_definition; - Inward_round_corner_design_definition; - Outward_round_corner_design_definition; - Beveled_corner_design_definition; - Shear_beveled_corner_design_definition;
3	STRUCTURAL CUTOUTS	<Word-Document> <Heading2> <para>Structural Cutouts </para> </Heading2> <Normal> <para>A Structural_cutout is a type of Structural_feature that specifies the nature of the cutout, which is the removal of material from a Structural_part or a Structural_system.</para> <para>The global position of a Structural_cutout is given by the parent item of the Structural_feature. If a Structural_cutout is not to be at the origin of its parent, it shall be located relatively to its parent by using Local_co_ordinate_system.</para> <para>Each Structural_cutout is either a Corner_cutout, an Edge_cutout, an Edge_feature, or an Interior_cutout as shown in the middle right of Figure 4.</para> <para> <image src="images/AP218/ClassDiagram_AP218StructuralFeatures.png"/> <caption type="Figure">Structural Features Class Diagram (Structural Cutouts at middle right)</caption> </para> </Normal> </Word-Document>
4	STRUCTURAL MANUFACTURING FEATURES	<Word-Document> <Heading2> <para>Structural Manufacturing Features </para> </Heading2> <Normal> <para>A Structural_manufacturing_feature is a type of Structural_feature that can be applied to Structural_part objects to specify production engineering information or constraints that are to be applied to the design definition of the Structural_part for the purposes of manufacturing or assembly of the part.</para> <para>A Structural_manufacturing_feature can be a Structural_added_material_feature or a Structural_weld_shrinkage_allowance_feature as shown at lower right in Figure 5.</para> <para> <image src="images/AP218/ClassDiagram_AP218StructuralFeatures.png"/> <caption type="Figure">Structural Features Class Diagram (structural manufacturing features at lower right)</caption> </para> </Normal> </Word-Document>
		<Word-Document> <Heading2> <para>Feature Design Definitions</para>

Figure 32 Functional Descriptions Spreadsheet (AP218)

6.1.4 "Images" Folder

Images – Contains one folder of images per chapter. HTML image relative paths point to ./Images/*chapterName*. These images support the StyleVision output viewer.

Currently StyleVision outputs the translated document in the folder, \NPDI_SCIM\Altova_StyleVision. Image locations are set up as relative paths to the output HTML file location, ***.\Images\chapterID*** (for example, ***.\Images\AP218***). Both **Word-Document** images and entity context diagram images are placed in this location as shown in Figure 36.

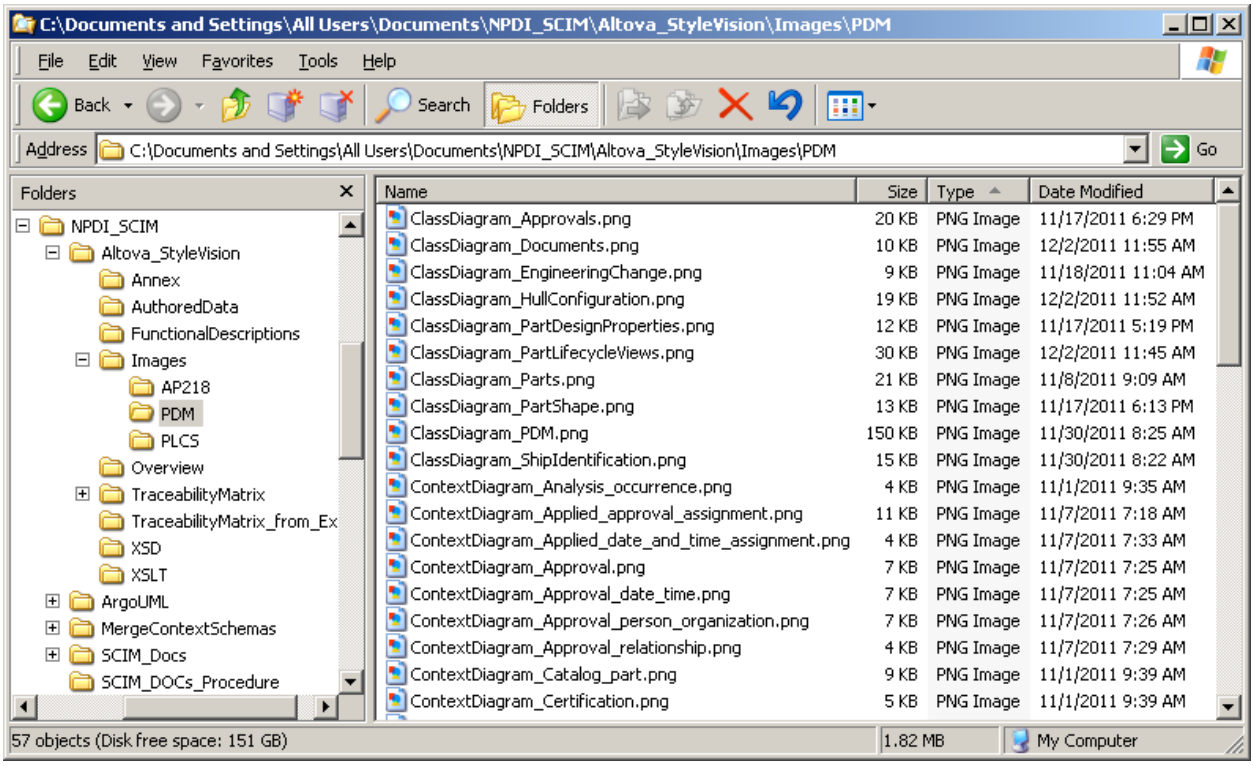


Figure 33 Altova StyleVision Images folder (PDM subfolder shown in right pane)

The **Word-Document** images are used in the XML construct:

```
<para>
        <image src="Images/AP218/ClassDiagram_AP218FeatureDesignDefintions.png"/>
        <caption type="Figure">Feature Design Definitions Class Diagram</caption>
</para>
```

This **Word-Document** images XML construct is used in the Overview and functional descriptions. It is also available to the annex.

The entity context diagram images are located by the StyleVision xtc:Entity global template shown in Figure 34 under **"=(AutoCalc).(num-lvl) Data Model Context**". Double click on the box with the "X",

, to open the Edit Image dialog shown in Figure 35. The static part of the URL is ".\Images\", a relative path to the Images folder. The dynamic part of the URL is "concat(concat(sps:moduleFolder(),'\ContextDiagram_'),substring(string(@name), 5))". This XPATH expression builds the string to the chapter folder concatenated with ContextDiagram_entityName. Hence the context diagram naming convention. The latter static part of the URL adds the extension, ".png". Thus if the entity name is npd:Approval form the PDM chapter, the URL is

".\Images\PDM\ContextDiagram_Approval.png". The substring function removes the namespace "npd:"

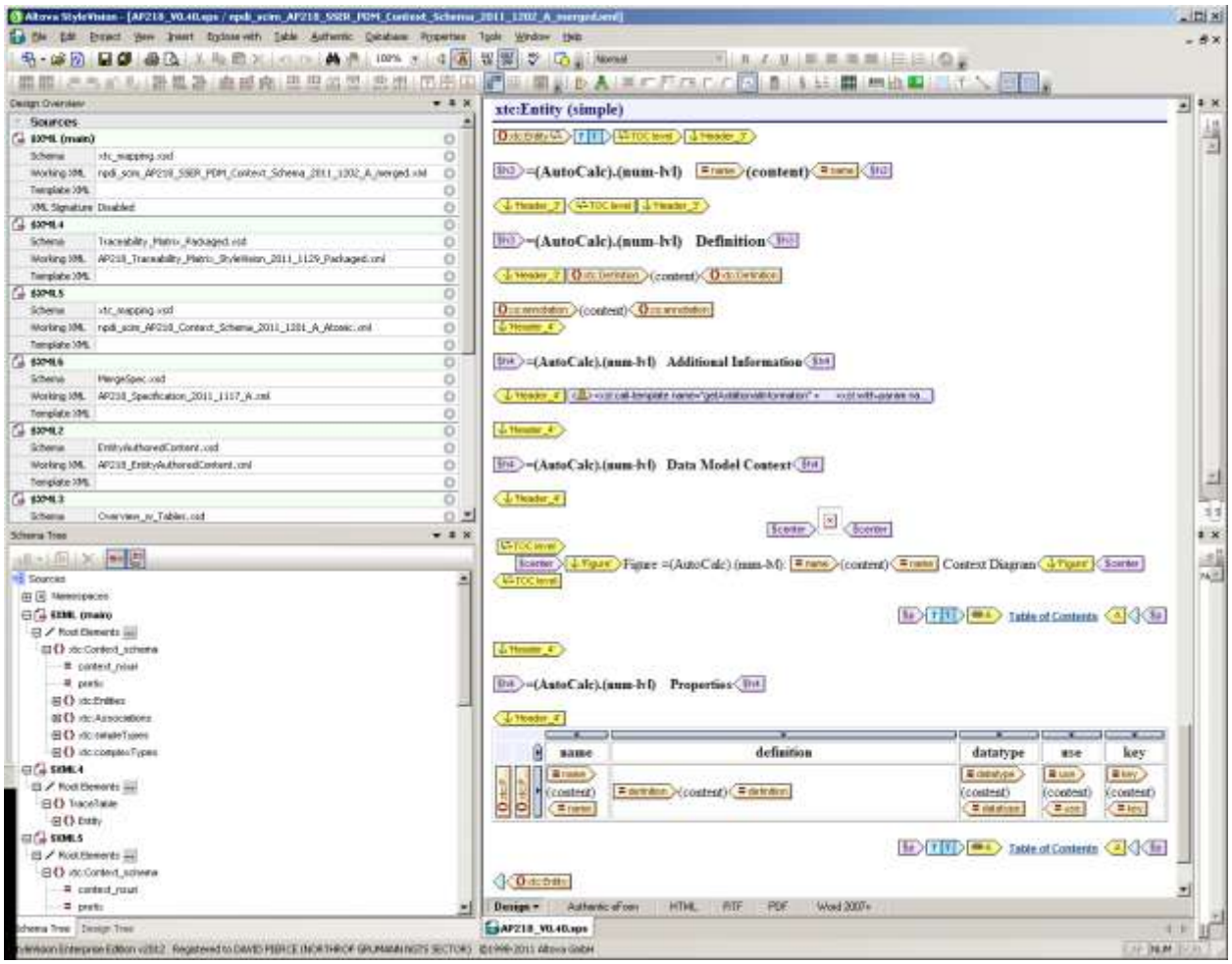


Figure 34 xtc:Entity StyleVision Global Template

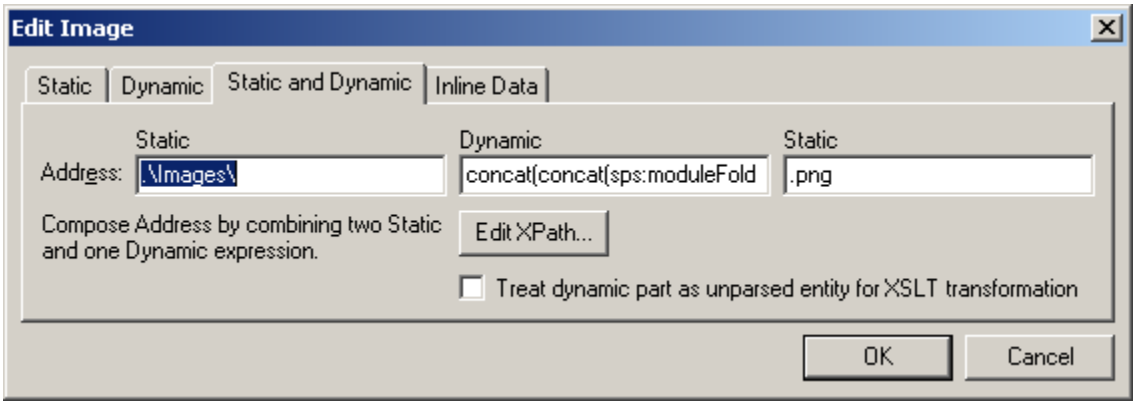


Figure 35 Edit Image dialog

6.1.5 "Overview" Folder

Overview – contains SCIM chapter and AIC/IGR section Overview Word documents and the XML files derived from them (Figure 36). The XML files are used as the information source for the Overview section. There is one set of files per SCIM chapter and AIC/IGR section. These are converted to XML files using XMLSpy via the procedure described in section 6.3, Microsoft Word to XML conversion. The resulting XML is then manually edited to restore figures and tables lost in the conversion (see section 6.4, Word-Document Formatting). The xml files also reside in this folder.

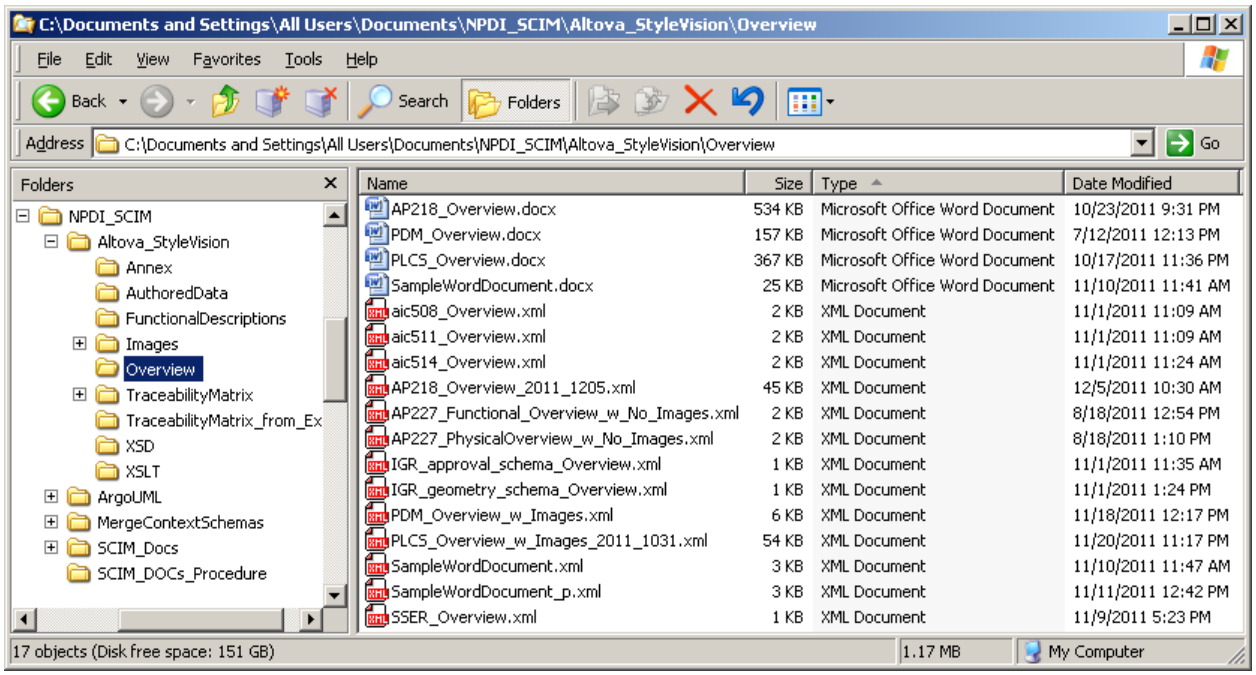


Figure 36 Altova StyleVision Overview folder

6.1.6 TraceabilityMatrix

The **TraceabilityMatrix** folder contains "packaged" or entity centric traceability matrix XML files for each chapter. These files are generated by a process discussed in section 6.1.7, TraceabilityMatrix_from_Excel.

The Traceability Matrix HTML output is generated by the StyleVision project file using an external XSLT stylesheet. However, this process can only generate the "SCIM" column from the context schema. Currently the atomic context schema is used so only properties defined by each entity are presented in the Traceability Matrix HTML output. Inherited properties are not output. The STEP column entries are provided by the "packaged" or entity centric traceability matrix XML files for each chapter. This is derived from an Excel spreadsheet updated by authors (process discussed in section 6.1.7, TraceabilityMatrix_from_Excel).

6.1.7 TraceabilityMatrix_from_Excel

The **TraceabilityMatrix_from_Excel** folder contains the authored updated Excel traceability matrix spreadsheets, tabbed delimited file versions of the spreadsheets, and XML table versions of the spreadsheets. The folder also contains the XLST file, Package_TraceabilityMatrix.xsl, which is used to "package" the traceability matrix from the XML table files.

The "Packaging" process is executed as follows:

1. Generate chapter HTML output using the appropriate StyleVision project file. Early HTML generation will have blank STEP column except for the property and association delimiters.
2. Copy the entire Traceability Matrix from the HTML output to an Excel spreadsheet. Save the spreadsheet with a suitable name such as PDM_Traceability_Matrix_2011_1202.xlsx.
3. Authors add/correct the STEP mapping to the Traceability Matrix by editing the Excel spreadsheet.
4. Save PDM_Traceability_Matrix_2011_1202.xlsx as a tab delimited file.
5. Open the tab delimited file in Excel. Change headers to SCIM (column A) and STEP (column B). Resave the tab delimited file as text.
6. Convert the tab delimited file to an XML table using XMLSpy (PDM_Traceability_Matrix_2011_1202.xml).
7. Change the <Import> tag to < TraceabilityMatrix> to avoid name clashes with other XML tables.
8. Transform the XML table to an entity centric construct (***packaging*** each entity) which includes the entity properties and associations under the <Entity> tag using Package_TraceabilityMatrix.xsl. This construct mimics the InfoPath Traceability Matrix xml schema permitting the InfoPath Traceability Matrix merge XSLT code to be reused. Name the output similar to **PDM_Traceability_Matrix_2011_1202_packaged.xml**.
9. Move the output file, PDM_Traceability_Matrix_2011_1202_packaged.xml, to the **TraceabilityMatrix** folder.
10. Update

For each entity, the reused InfoPath Traceability Matrix merge XSLT code does a string match on each SCIM cell (build the SCIM string from the context schema and match that to the SCIM string from PDM_Traceability_Matrix_2011_1202_packaged.xml) and writes the corresponding STEP cell from PDM_Traceability_Matrix_2011_1202_packaged.xml to the HTML output.

If no matching SCIM string is found in **[chapter]_Traceability_Matrix_[date]_packaged.xml** , a blank STEP cell is written. If no matching SCIM string is found in the context schema, the entire property or association row in PDM_Traceability_Matrix_2011_1202_packaged.xml is thrown away since it does not exist in the context schema. If the entity name is not found, the entire entity data is thrown away since the entity is not in the context schema.

As context schemas or Excel Traceability Matrix spreadsheets are updated the process is repeated to fill in the blanks.

6.1.8 "XSD" Folder

XSD – contains XML schema (*.xsd) files for the XML source documents used by StyleVision with certain exceptions described below. The XML schema files are required by StyleVision for each XML input file used in the StyleVision project file. StyleVision ensures each XML file is well formed and is valid against the corresponding XML schema file.

The XSD folder (Figure 37) contains XMLSpy generated schema files for non-context schema inputs to StyleVision. These files are used as shown in Table 4.

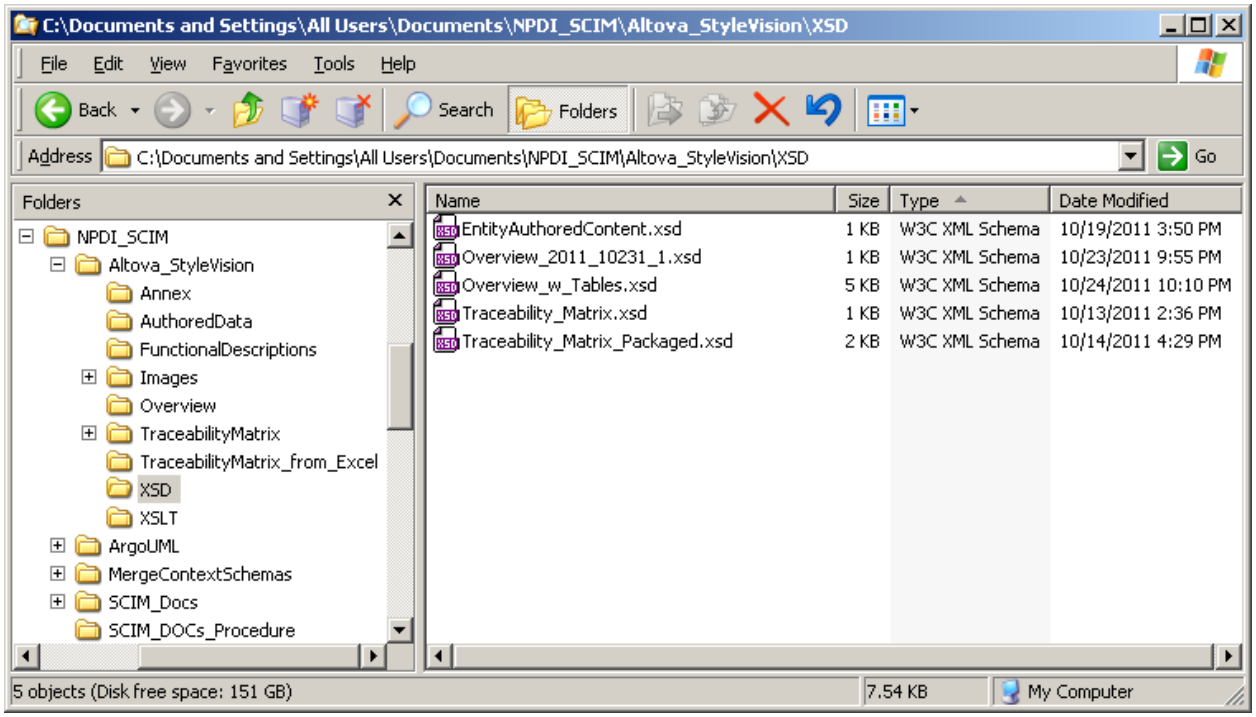


Figure 37 Schema files for non-context schema StyleVision input files.

Table 4 Non-context schema XML Schema files used by StyleVision

XML Schema File	XM files conforming to XML Schema
EntityAuthoredContent.xsd	XML files in **AuthoredData** folder, e.g., AP218_EntityAuthoredContent.xml
Overview_w_Tables.xsd[2] Overview_2011_10231_1.xsd	XML files in **Overview** folder, e.g., AP218_Overview_2011_1205.xml XML files in **FunctionalDescriptions** folder, e.g., AP218_FunctionalDescriptions_2011_1130.xml
Traceability_Matrix.xsd	XML table files in **TraceabilityMatrix_from_Excel** folder, e.g., AP218_Traceability_Matrix_StyleVision_2011_1129.xml
Traceability_Matrix_Packaged.xsd	XML files in **TraceabilityMatrix** folder, e.g., AP218_FunctionalDescriptions_2011_1130.xml

The excepted XML schema files are as follows. StyleVision also relies on certain XML schema files in the folder, **\NPDI_SCIM\MergeContextSchemas\XSD**, used by the Merge Context Schema process (see section 4, Merge Context Schemas). These files include the xtc_mapping.xsd file and related files to validate the input merged and atomic context schema XML files plus the MergeSpec.xsd file to validate the chapter MergeSpec XML file (see Figure 9 and Figure 38).

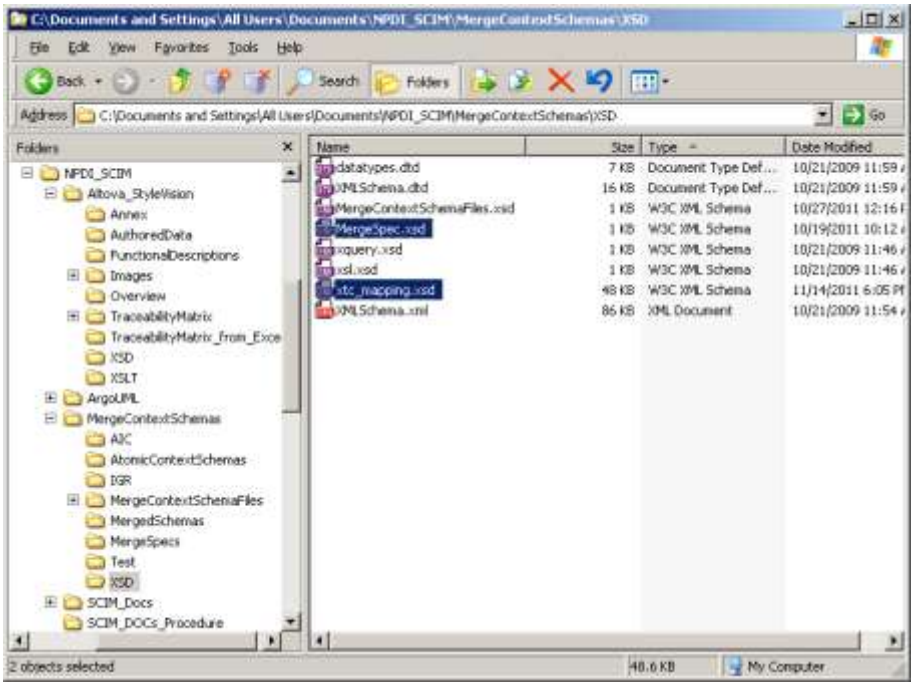


Figure 38 \MergeContextSchemas\XSD folder

[2] Overview_w_Tables.xsd and its subordinate XML schema, Overview_2011_10231_1.xsd, contain the Word-Document xml schema.

6.1.9 "XSLT" Folder

XSLT – contains XSLT stylesheets used to provide XPATH and XSLT functionality not available directly in StyleVision. These show up as "XSLT files" in StyleVision.

The XST folder (Figure 39) houses external StyleVision XSLT templates written to perform specific tasks not readily available within StyleVision. The TableLookUp.xsl file performs lookups in XML table files based on matching strings with entries in column 1 and returns values from other columns on the matching row. For example, column 1 in Authored Data is "ENTITY"; column 1 in functional descriptions is "Function".

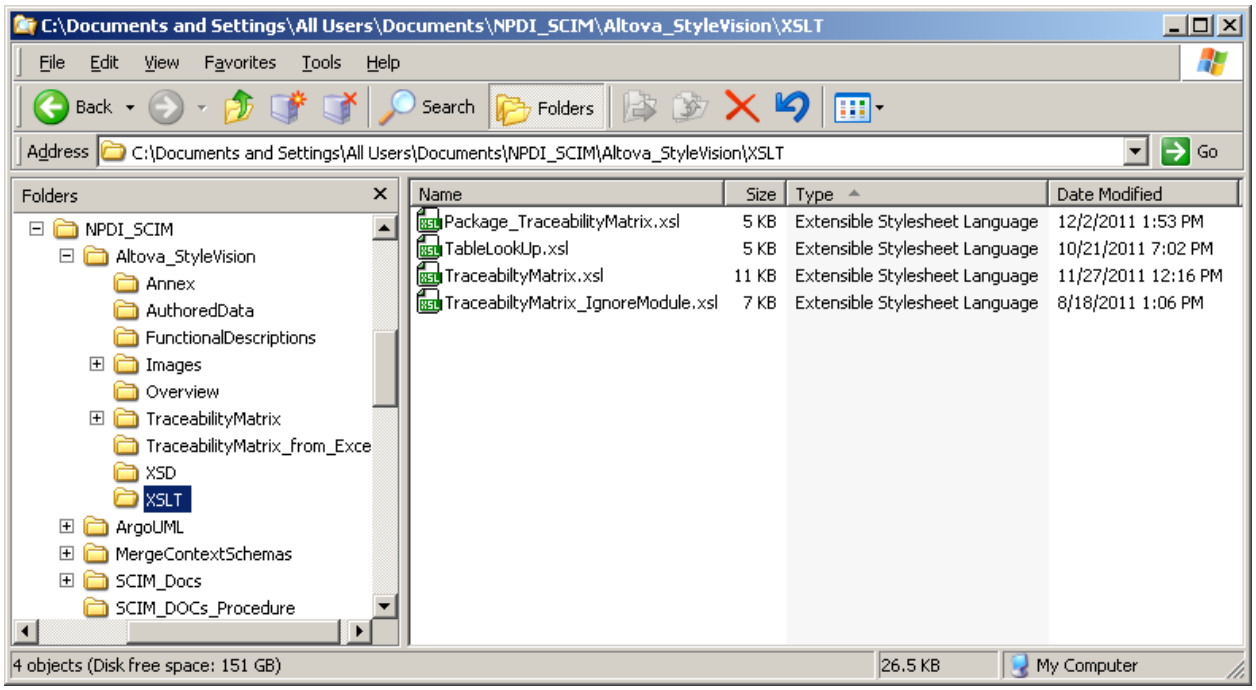


Figure 39 External StyleVision XSLT templates

The TraceabilityMatrix.xsl file generates the SCIM column of the traceability matrix from a context schema and merges the STEP column from a "packaged" traceability XML file (see section 6.1.6, TraceabilityMatrix, and section 6.1.7, TraceabilityMatrix_from_Excel). However, it is only outputs HTML. It does not work in RTF, PDF or Word2007+ output. The TraceabilityMatrix.xsl templates accept a filter based on SCIM chapter to output on that chapter.

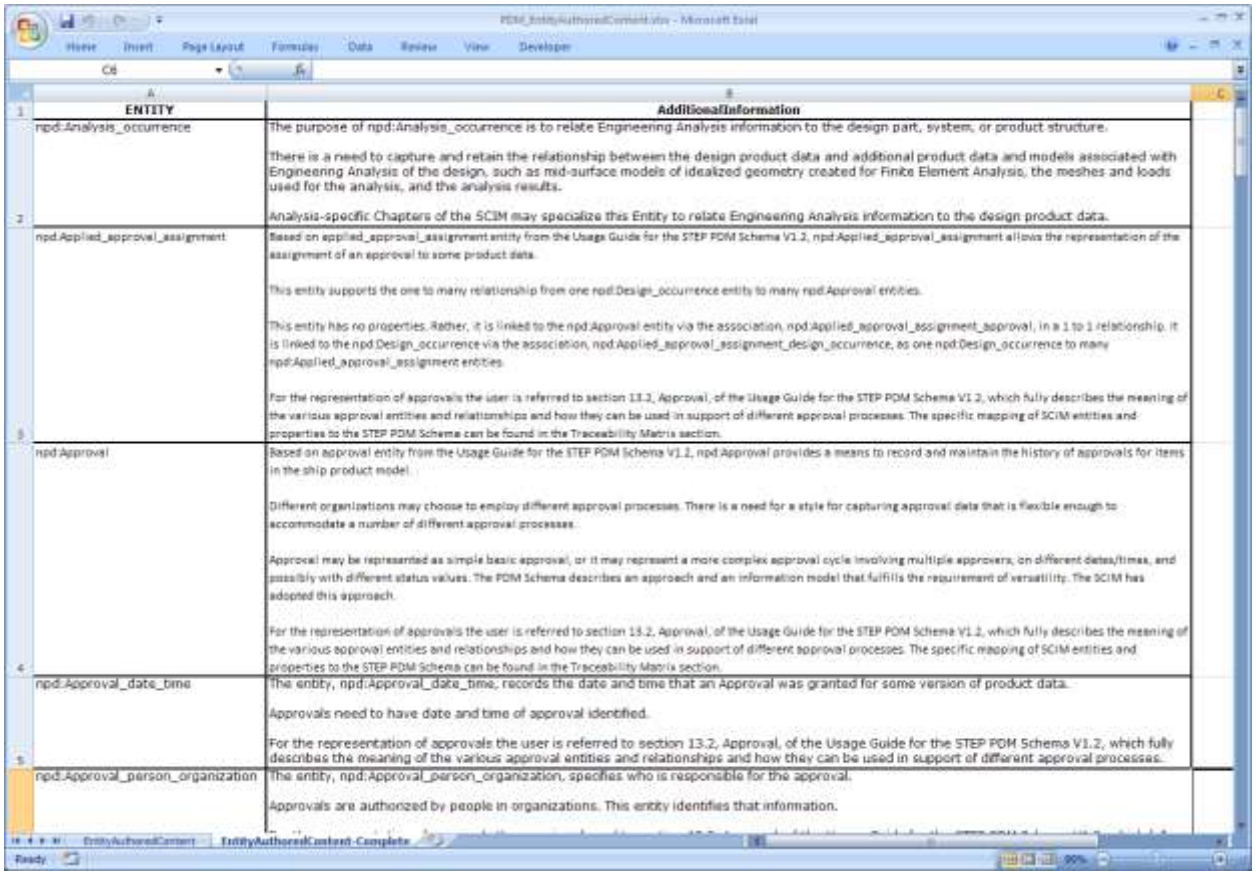
If no such filter is desired, use the TraceabiltyMatrix_IgnoreModule.xsl file. This does not accept the SCIM filter chapter (also termed module acronym), outputting all entities in the context schema. It has not been updated to perform the STEP merge. This file is currently used to process older SCIM context schemas that have not been updated to include the module attribute on xtc:Entity and xtc:Association.

Examples include context schema files **ap227-pipe-functional_VALIDATED.xml** and **edo227-pipe-physical - 120109_VALIDATED.xml**.

The Package_TraceabilityMatrix.xsl file transforms a traceability matrix XML table to a "packaged" entity centric traceability matrix XML file (see section 6.1.6, TraceabilityMatrix, and section 6.1.7, TraceabilityMatrix_from_Excel). This file is not used by StyleVision. Rather it is part of the process to prepare a "packaged" entity centric traceability matrix XML file.

6.2 Microsoft Excel to XML conversion

The following is the procedure to an Excel file to XML. This procedure assumes the Excel file contains a single worksheet with the first row containing column headings for a simple table such as Entity Authored Content, Additional Information by entity name (Figure 40).



	ENTITY	AdditionalInformation
2	npd:Analysis_occurrence	The purpose of npd:Analysis_occurrence is to relate Engineering Analysis information to the design part, system, or product structure. There is a need to capture and retain the relationship between the design product data and additional product data and models associated with Engineering Analysis of the design, such as mid-surface models of idealized geometry created for Finite Element Analysis, the meshes and loads used for the analysis, and the analysis results. Analysis-specific Chapters of the SCIM may specialize this Entity to relate Engineering Analysis information to the design product data.
3	npd:Applied_approval_assignment	Based on applied_approval_assignment entity from the Usage Guide for the STEP PDM Schema V1.2, npd:Applied_approval_assignment allows the representation of the assignment of an approval to some product data. This entity supports the one to many relationship from one npd:Design_occurrence entity to many npd:Approval entities. This entity has no properties. Rather, it is linked to the npd:Approval entity via the association, npd:Applied_approval_assignment_approval, in a 1 to 1 relationship. It is linked to the npd:Design_occurrence via the association, npd:Applied_approval_assignment_design_occurrence, as one npd:Design_occurrence to many npd:Applied_approval_assignment entities. For the representation of approvals the user is referred to section 13.2, Approval, of the Usage Guide for the STEP PDM Schema V1.2, which fully describes the meaning of the various approval entities and relationships and how they can be used in support of different approval processes. The specific mapping of SCIM entities and properties to the STEP PDM Schema can be found in the Traceability Matrix section.
4	npd:Approval	Based on approval entity from the Usage Guide for the STEP PDM Schema V1.2, npd:Approval provides a means to record and maintain the history of approvals for items in the ship product model. Different organizations may choose to employ different approval processes. There is a need for a style for capturing approval data that is flexible enough to accommodate a number of different approval processes. Approval may be represented as simple basic approval, or it may represent a more complex approval cycle involving multiple approvers, on different dates/times, and possibly with different status values. The PDM Schema describes an approach and an information model that fulfills the requirement of versatility. The SCIM has adopted this approach. For the representation of approvals the user is referred to section 13.2, Approval, of the Usage Guide for the STEP PDM Schema V1.2, which fully describes the meaning of the various approval entities and relationships and how they can be used in support of different approval processes. The specific mapping of SCIM entities and properties to the STEP PDM Schema can be found in the Traceability Matrix section.
5	npd:Approval_date_time	The entity, npd:Approval_date_time, records the date and time that an Approval was granted for some version of product data. Approvals need to have date and time of approval identified. For the representation of approvals the user is referred to section 13.2, Approval, of the Usage Guide for the STEP PDM Schema V1.2, which fully describes the meaning of the various approval entities and relationships and how they can be used in support of different approval processes.
	npd:Approval_person_organization	The entity, npd:Approval_person_organization, specifies who is responsible for the approval. Approvals are authorized by people in organizations. This entity identifies that information.

Figure 40 Entity Authored Content Excel file

Once the worksheet has been updated, save as a tab delimited text file:

Save as type: Text (Tab delimited) (*.txt)

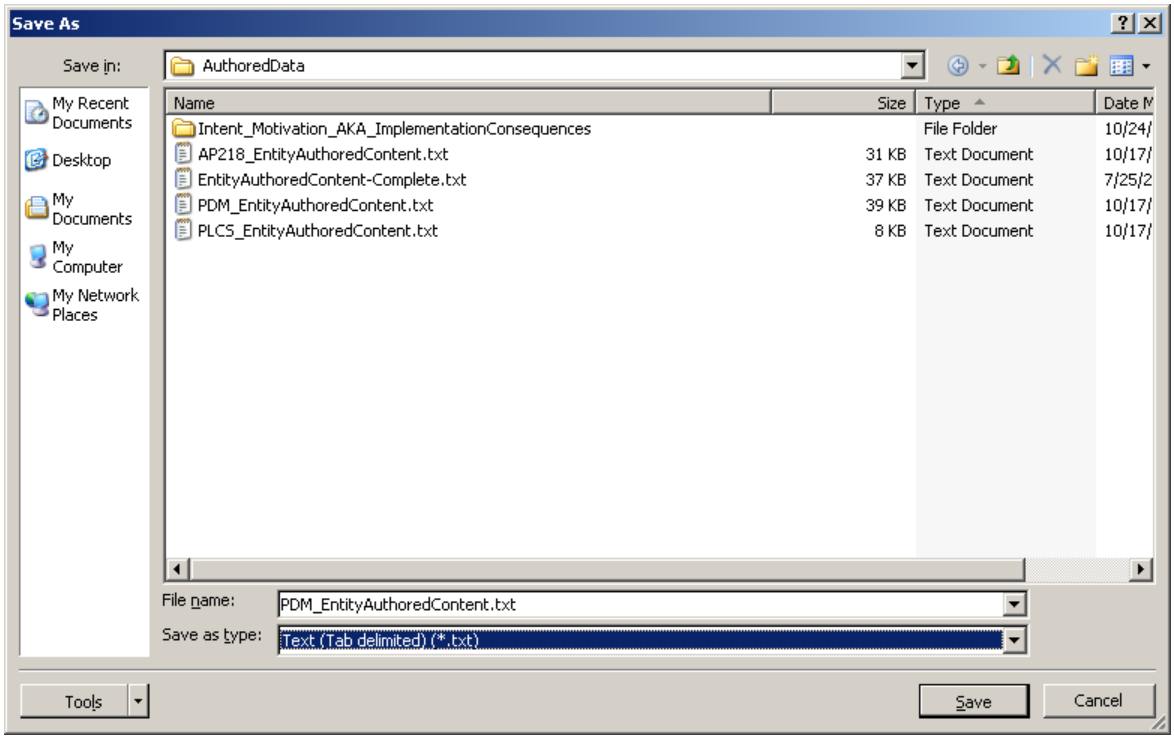


Figure 41 Selecting "Save as type" = "Text (Tab delimited)(*.txt)

. Convert the Tab delimited text file to XML via XMLSpy by

- Open XMLSpy
- Select on menu bar: Convert -> Import Text File...

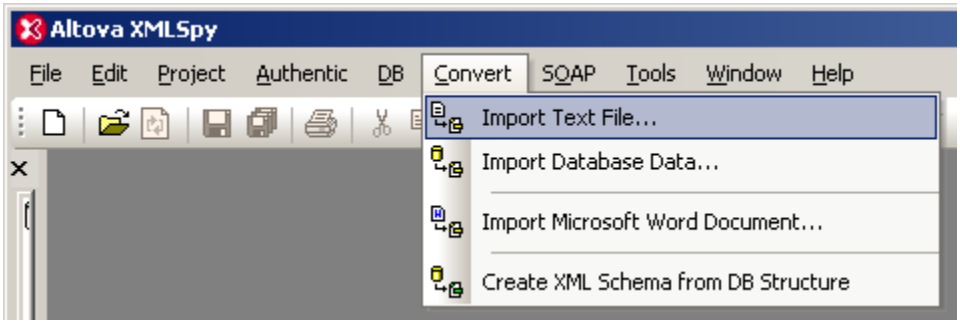


Figure 42 Import Text File...

On Import Text File dialog: select "Convert SCV text file into XML", click OK

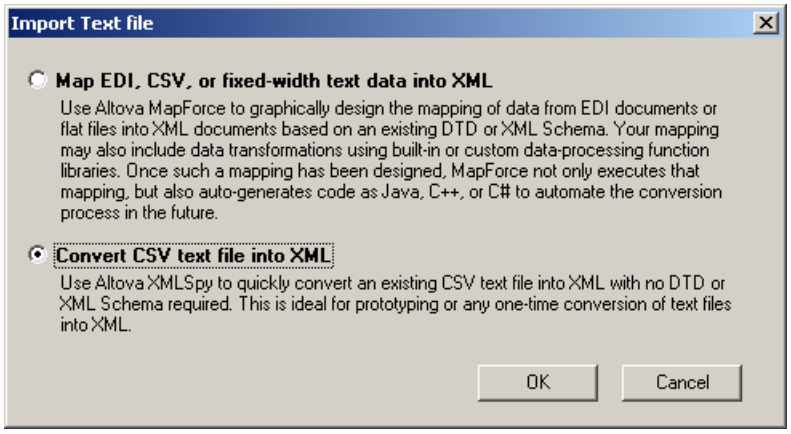


Figure 43 Import Text file dialog: Options

On Text Import dialog: click on the ellipsis (...) button to select txt file to import,

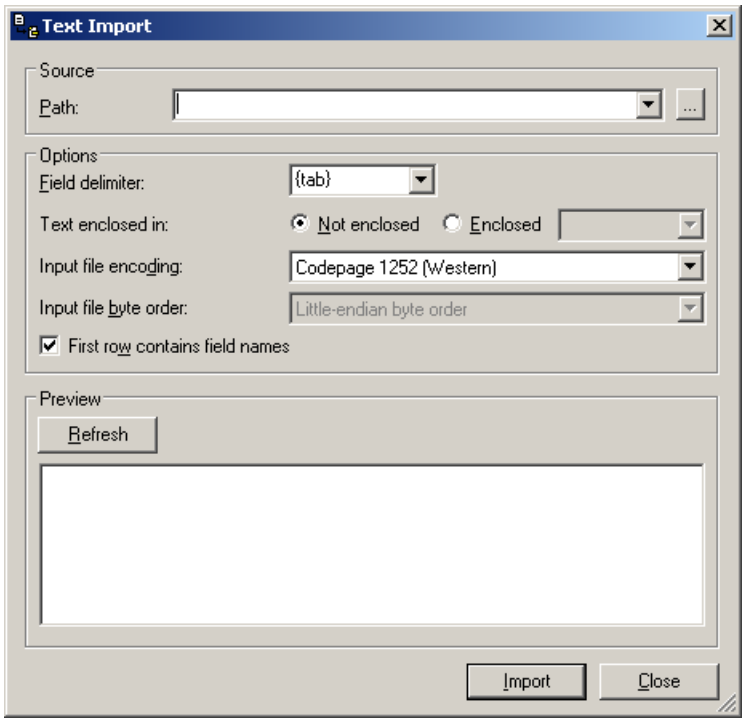


Figure 44 Text Import dialog

Use Open dialog, change "Files of type" from Comma Separated Value (*.csv) to Text file (*.txt). Navigate and Open the desired tab delimited text file.

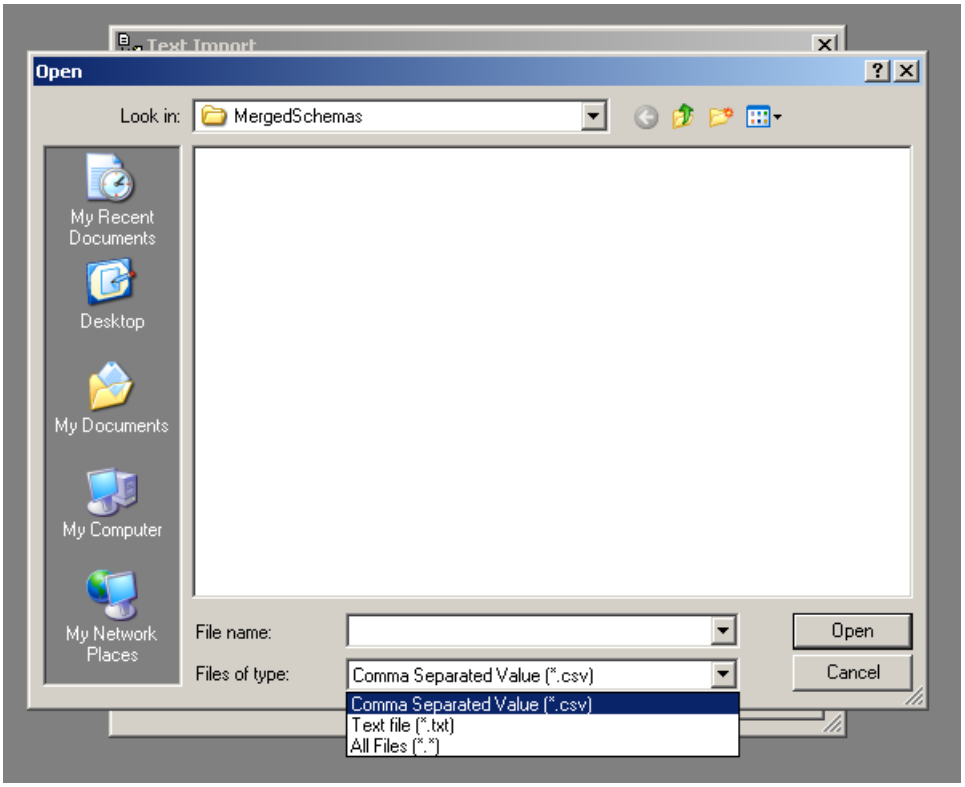


Figure 45 Open file option; Select "Files of type:" = "Text file (*.txt)"

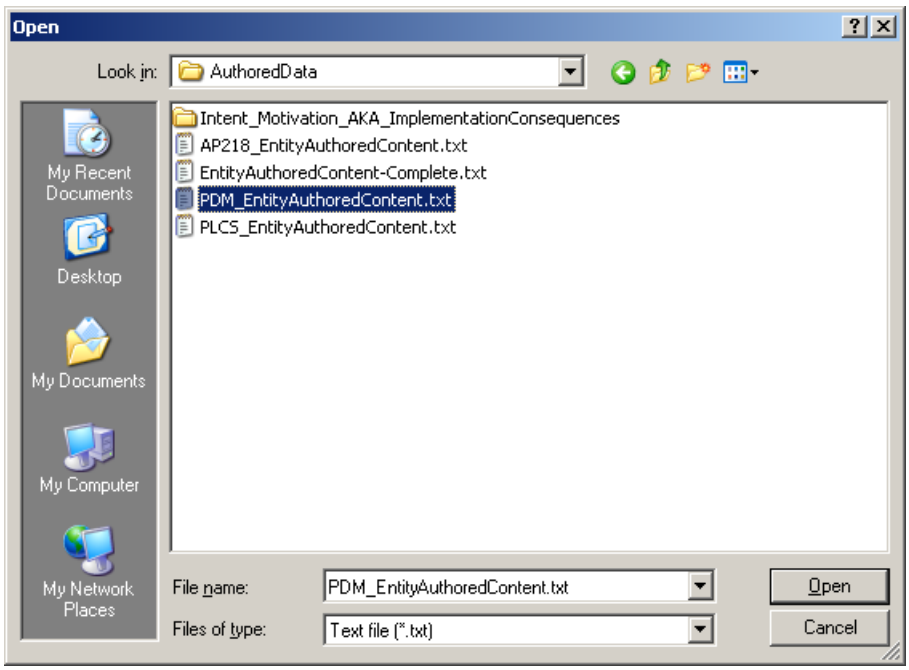


Figure 46 Navigate to and select desired tab delimited text file

PDM_EntityAuthoredContent.txt appears in textbox at bottom of "Text Import" dialog

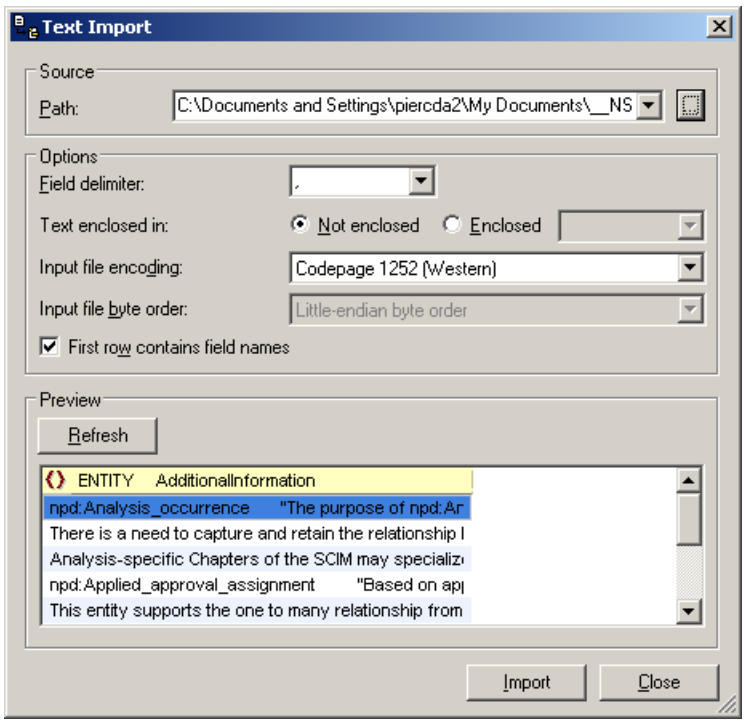


Figure 47 Text Import dialog: Options. NOTE: wrong Field delimiter is chosen

Ensure Options:

- Field Delimiter = {tab}
- Text enclosed in = Not enclosed
- Input file encoding = Codepage 1252 (Western)
- First row contains field names = CHECKED

Textbox previews import

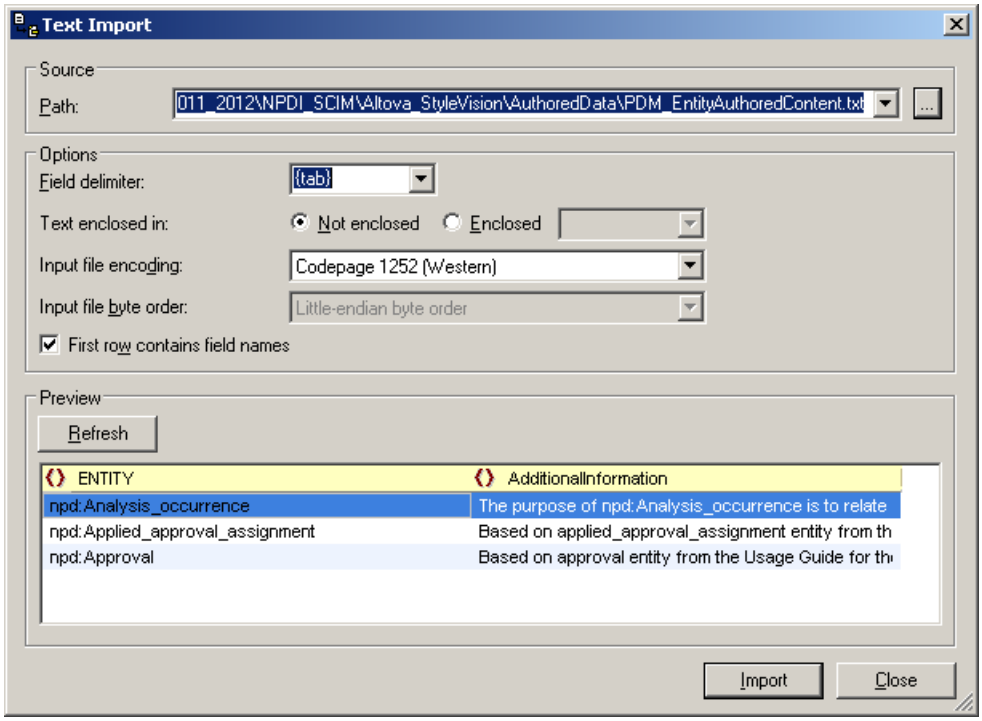


Figure 48 Preview of import when correct options chosen

Click Import button

Imported file appears as Untitledxx.xml where xx is a running number controlled by XMLSpy.

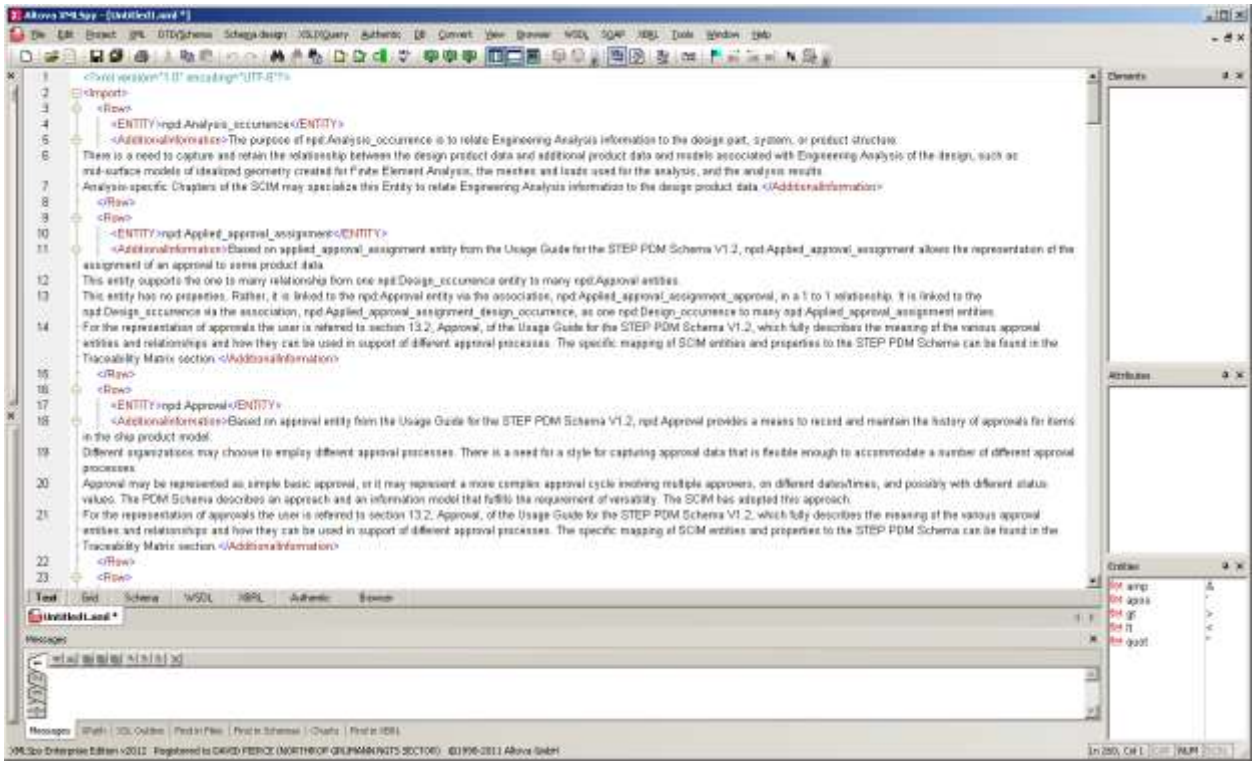


Figure 49 XML table imported from tab delimited textfile representation of an Excel worksheet

Change the <Import></Import>tag to the tag required by the XML schema (*.xsd) file that defines the XML table format in StyleVision (see Table 5 for new tag; see Table 4 for defining *.xsd file). This is needed to avoid name clashes on the <Import></Import> tag in StyleVision. Table 5 shows the only MergeSpec retains the <Import></Import>tag. The <FunctionalDescriptions></FunctionalDescriptions> tag has attributes because processing this file was debugged in XMLSpy, which required the XSD file location be embedded in the tag. StyleVision does not support debugging and tracks the XSD file in the GUI (see TBD figure).

Text intended for presentation within StyleVision (such as the text within the <AdditionalInformation></AdditionalInformation> tags in Figure 49) can be formatted using the **Word-Document** format per section 6.4, Word-Document Formatting.

Once the XML file exists, updates can be made on the XML directly.

Table 5 <Import></Import> tag update

XML Table (by folder)	Change <Import></Import> tag to
AuthoredData	<EntityInfo></EntityInfo>
FunctionalDescriptions	<FunctionalDescriptions xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="../XSD/FunctionalDescriptions.xsd"> </FunctionalDescriptions>
TraceabilityMatrix_from_Excel	<TraceabilityMatrix></TraceabilityMatrix>
\NPDI_SCIM \MergeContextSchemas \MergeSpecs	No change, leave as <Import></Import>

6.3 Microsoft Word to XML conversion

This section describes the conversion of a Microsoft Word 2007 (*.docx) file to xml via XMLSpy. The Word document to be converted should be limited in paragraph styles to those identified in section 6.4, Word-Document Formatting.

Open XMLSpy and select Convert -> Import Microsoft Word Document… (Figure 50).

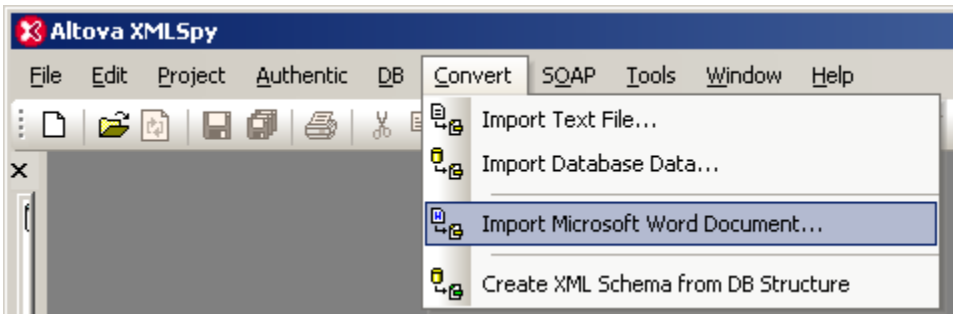


Figure 50 Import Microsoft Word Document...

This opens the Open file dialog (Figure 51). Change the “Files of type” to “MS Office Word Open XML (*.docx)”.

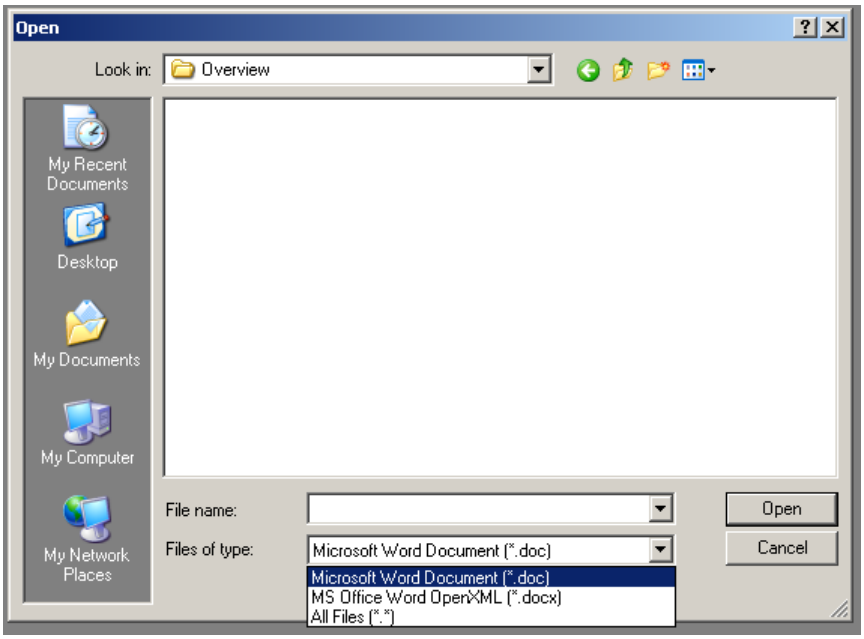


Figure 51 Open Dialog to locate Word document to convert

Navigate to the desired Microsoft Word 2007 (*.docx) file (Figure 52) and select “Open”. Progress converting the document is presented in a progress bar (Figure 53). If Word is open on the desktop, the Word document being converted may appear in Word until conversion is complete.

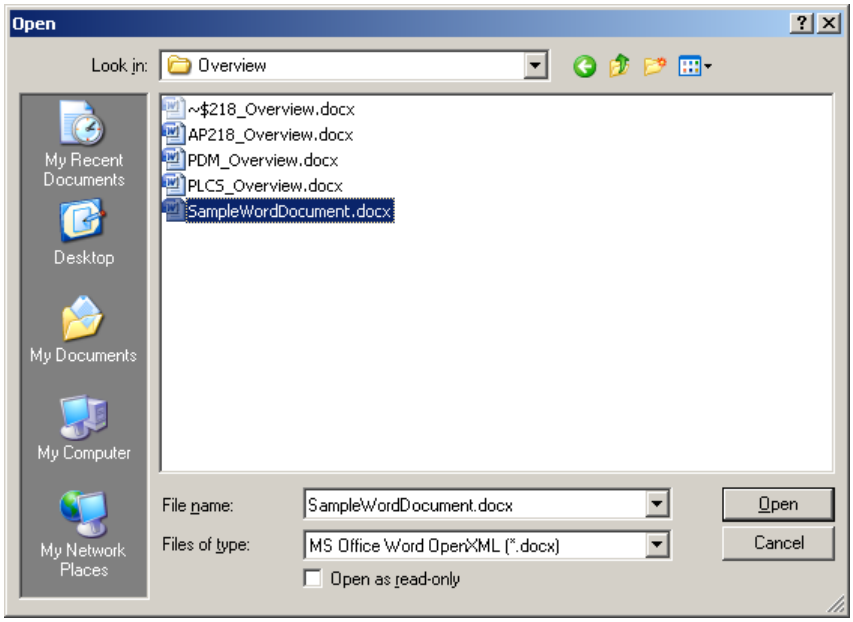


Figure 52 Located Word 2007 document

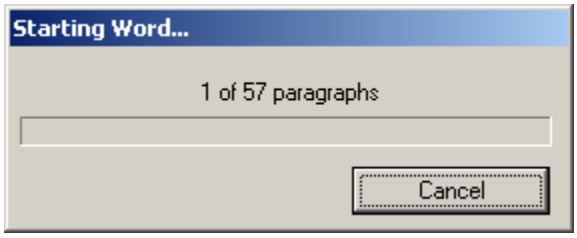


Figure 53 Conversion Progress Bar

The resulting XML file is presented in XMLSpy edit window as “UntitledX.xml” where “X” is supplied by XMLSpy (Figure 54). The information inside the <HTML:STYLE></HTML:STYLE> tag is cascading style sheet (CSS) formatting information. Save the file with a suitable filename in the appropriate folder.

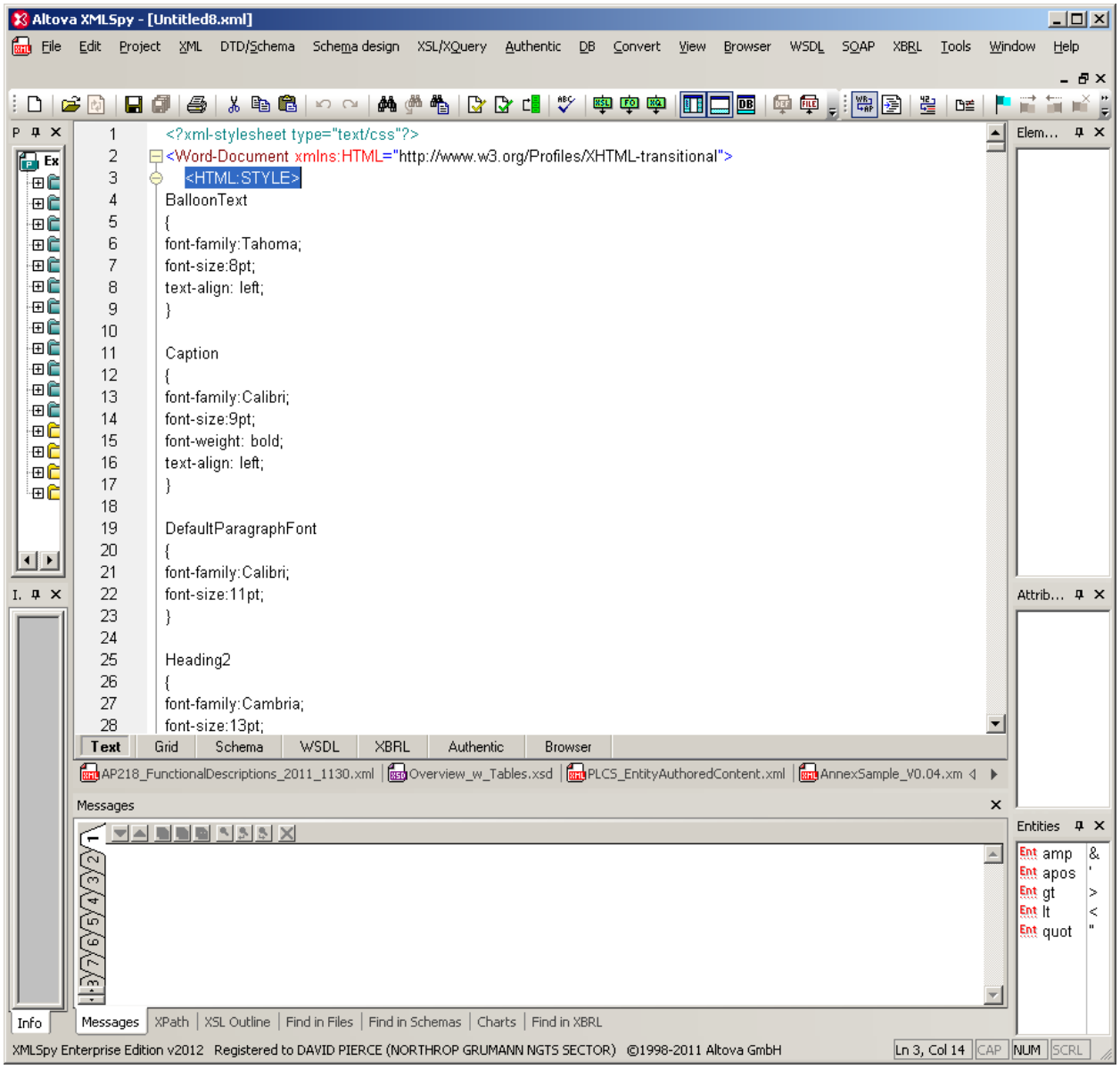


Figure 54 XML result of Word document conversion

6.4 Word-Document Formatting

The SCIM StyleVision project files support HTML formatted text that similar to the Word styles shown in Figure 55. The styles include Header 1, Header 2, and Header 3. Under Header 1 is a “Normal” paragraph. Under Header 2 are a “Normal” paragraph and a figure with figure caption. Under Header 3 is a “Normal” paragraph followed by a bulleted list. Currently nested bulleted lists are not supported. A table is also shown under Heading 3 in Figure 55.

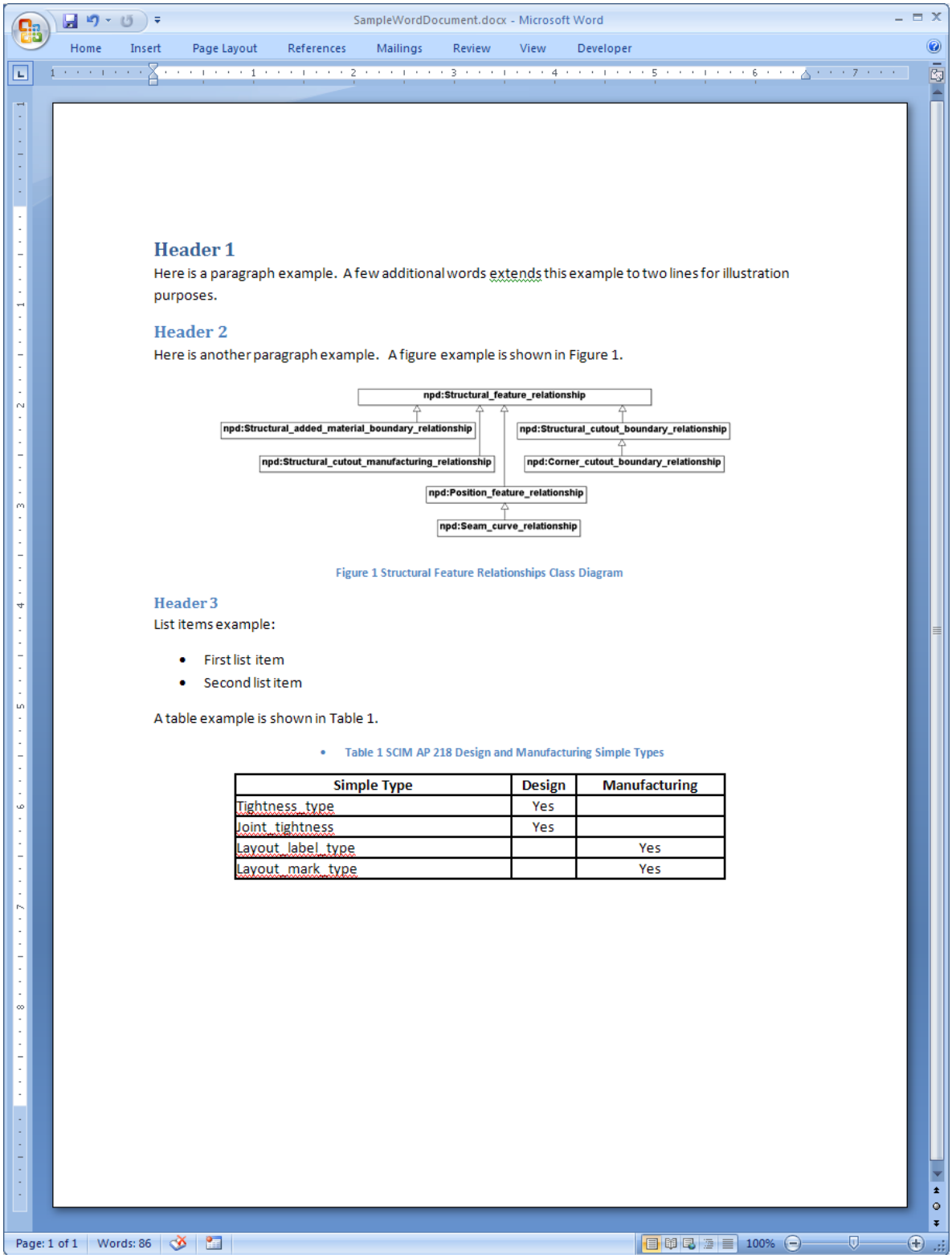


Figure 55 Sample Word 2007 Document showing implemented styles

The conversion from Word to XML results in XML as shown in Figure 56. It should be evident how the styles under each header style described above is represented in XML

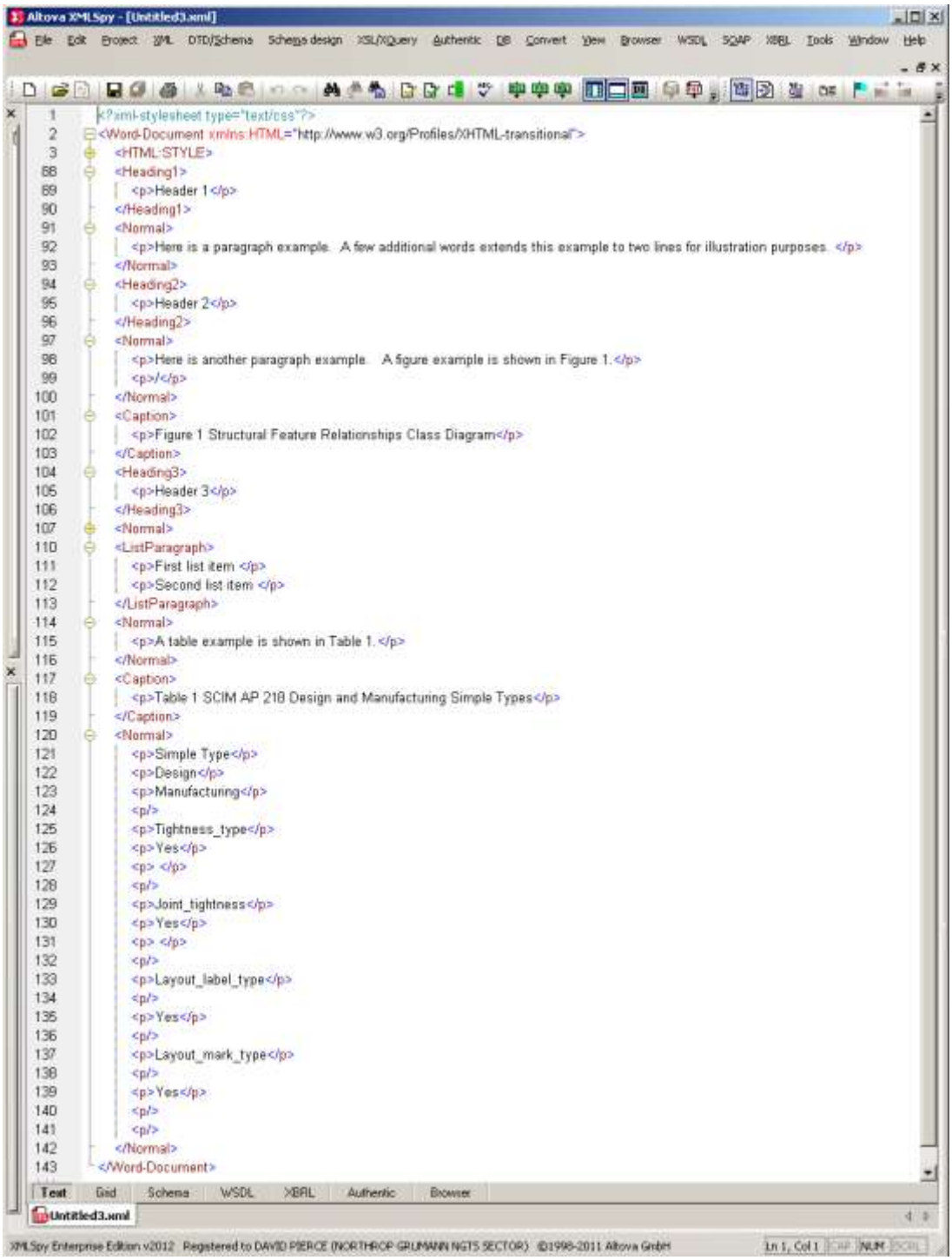


Figure 56 Word 2007 *.docx file converted to XML via XMLSpy.

The XML schema file, Overview_w_Tables.xsd, is partially presented in Figure 57.

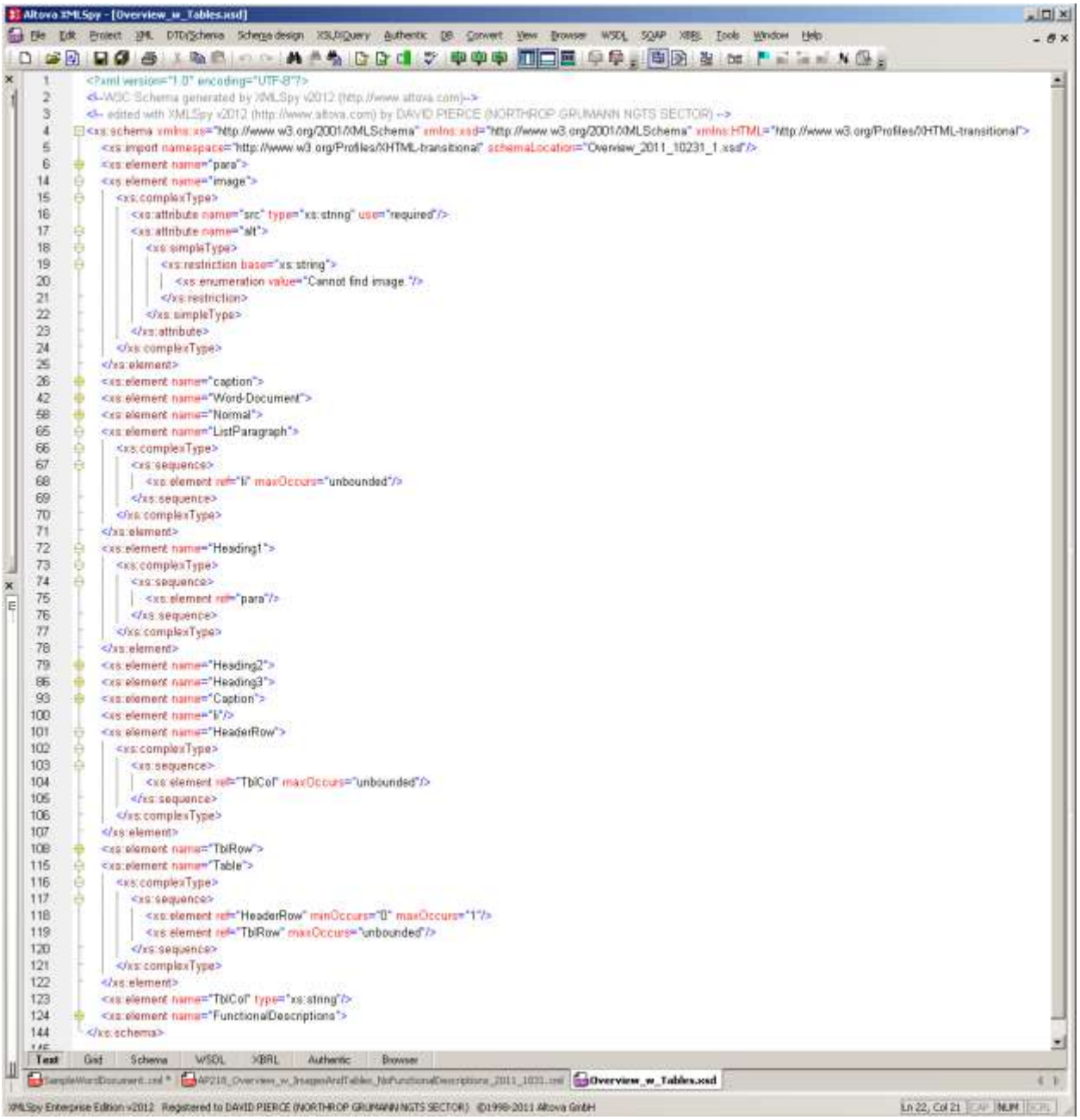


Figure 57 Word-Document **format XSD file (Overview_w_Tables.xsd)**

Use the following to make the XMLSpy converted Word document conform to the **Word-Document** format.

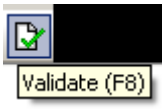
1. Change the / tags to <para></para>. Be sure to change instances of to <para/>. See Figure 58. This is needed to avoid name clashes with StyleVision built in XSLT templates.

2. The Microsoft Word document to XML conversion replaces images with / , resulting in loss of the image. Replace the / construct (<para>/</para> after step 1, highlighted in Figure 58) with

```
<para>
        <image src="Images/XXXX/ImageName.png"/>
        <caption type="Figure">Figure caption goes here</caption>
</para>
```

   Where XXXX is the folder name containing the images for this chapter. The StyleVision project file has a template that resolves the src relative pathname to load the file in the HTML web browser. See section 6.1.4, "Images" Folder for more details. Example after editing is shown in Figure 59.

3. Under <ListParagraph> tag, change <para></para> to (list item) as shown in Figure 60.
4. Edit tables as converted by XMLSpy
   a. Locate table information (highlighted in Figure 61)
   b. Change tag <Normal></Normal> to <Table></Table>
   c. Within the <Table></Table> tag, change <para></para> to <TblCol></TblCol> to denote columns.
   d. The <para/> tag separates each row. The first row just under <Table> gets "wrapped" with the <HeaderRow></HeaderRow> tag since the first row supplies the column headers based on the way XMLSpy converted the spreadsheet to an XML table. All other rows are data rows and get "wrapped" with the tag <TblRow></TblRow>. The result should look like the highlighted text in . The table caption is not changed (tag <Caption> </Caption>).

Now pretty print the document using the  button on the button bar. Then validate by saving the document to the appropriate folder or selecting the 

button on the button bar. Fix any validation errors. The document should be ready for StyleVision.

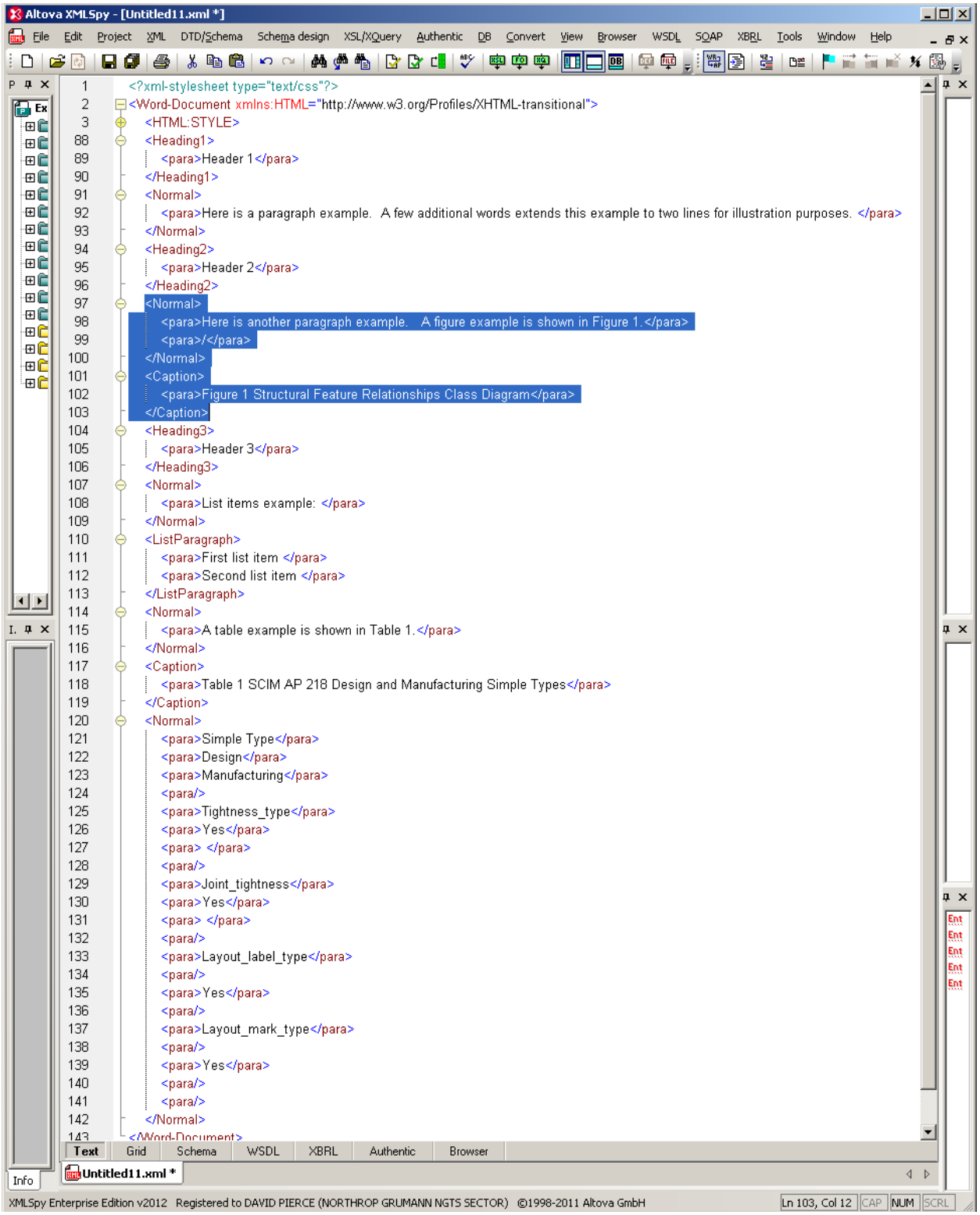


Figure 58 Change / tags to <para></para> and to <para/>. .

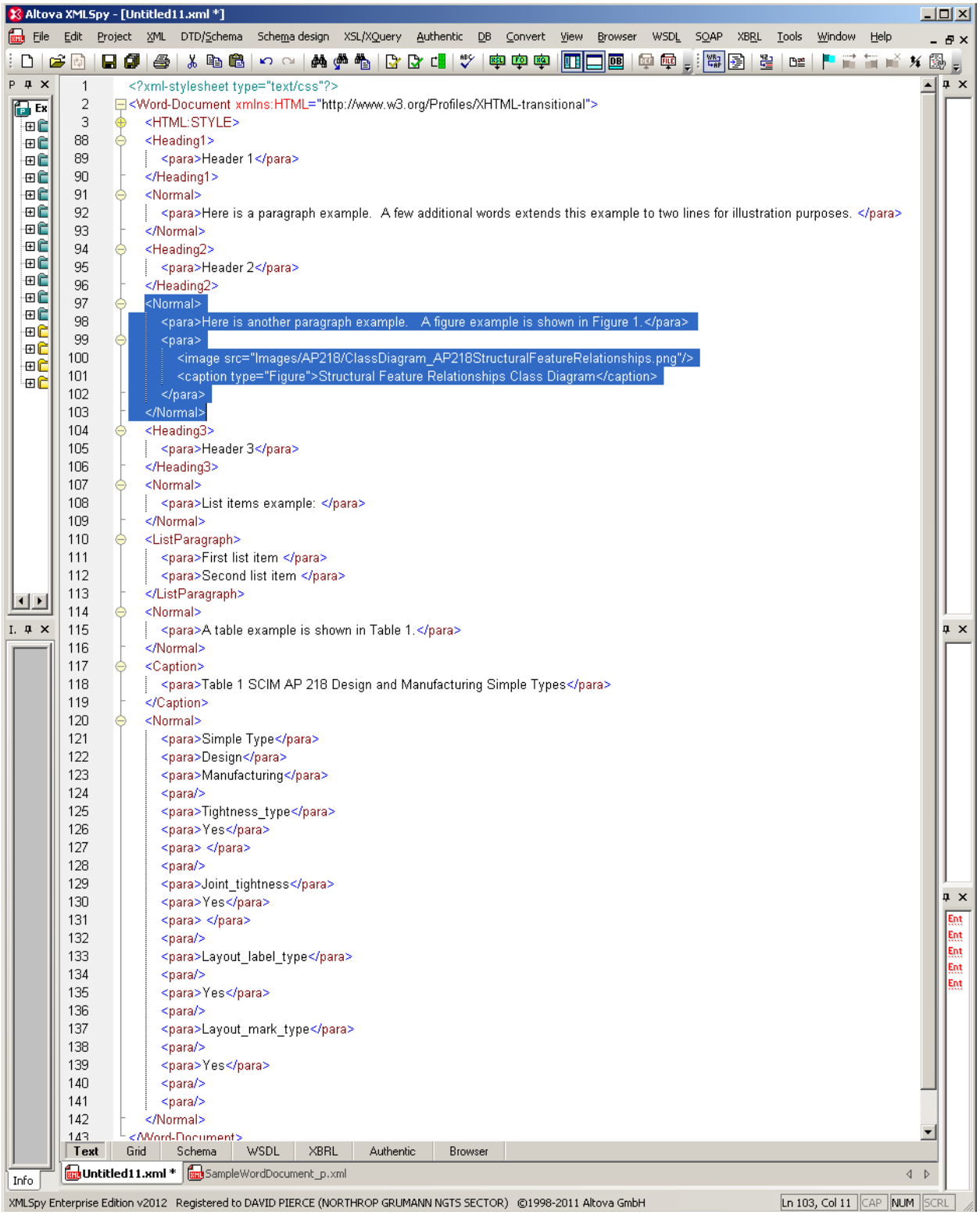


Figure 59 Image file and Figure caption edit example

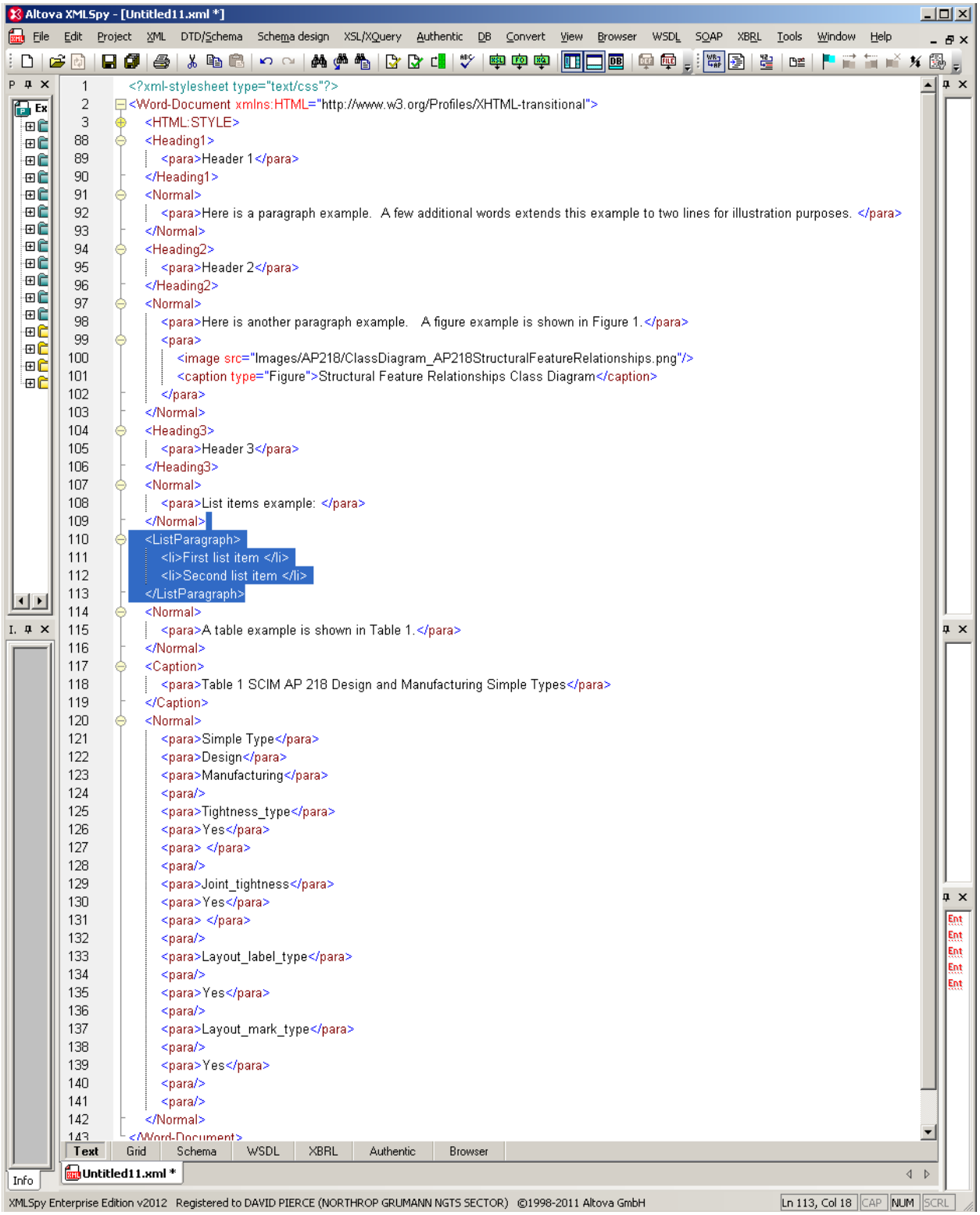


Figure 60 ListParagraph <li> edit

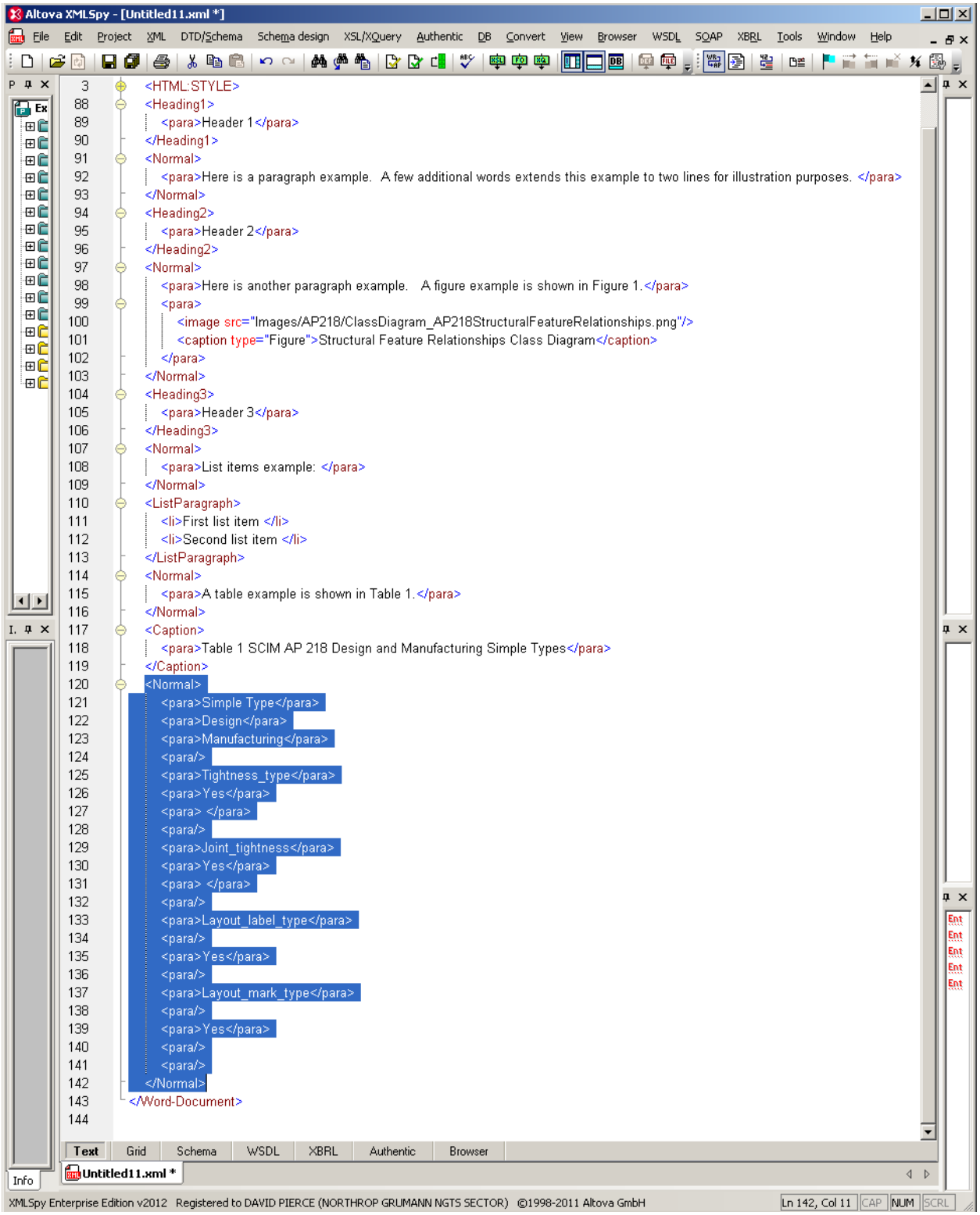


Figure 61 Table information highlighted

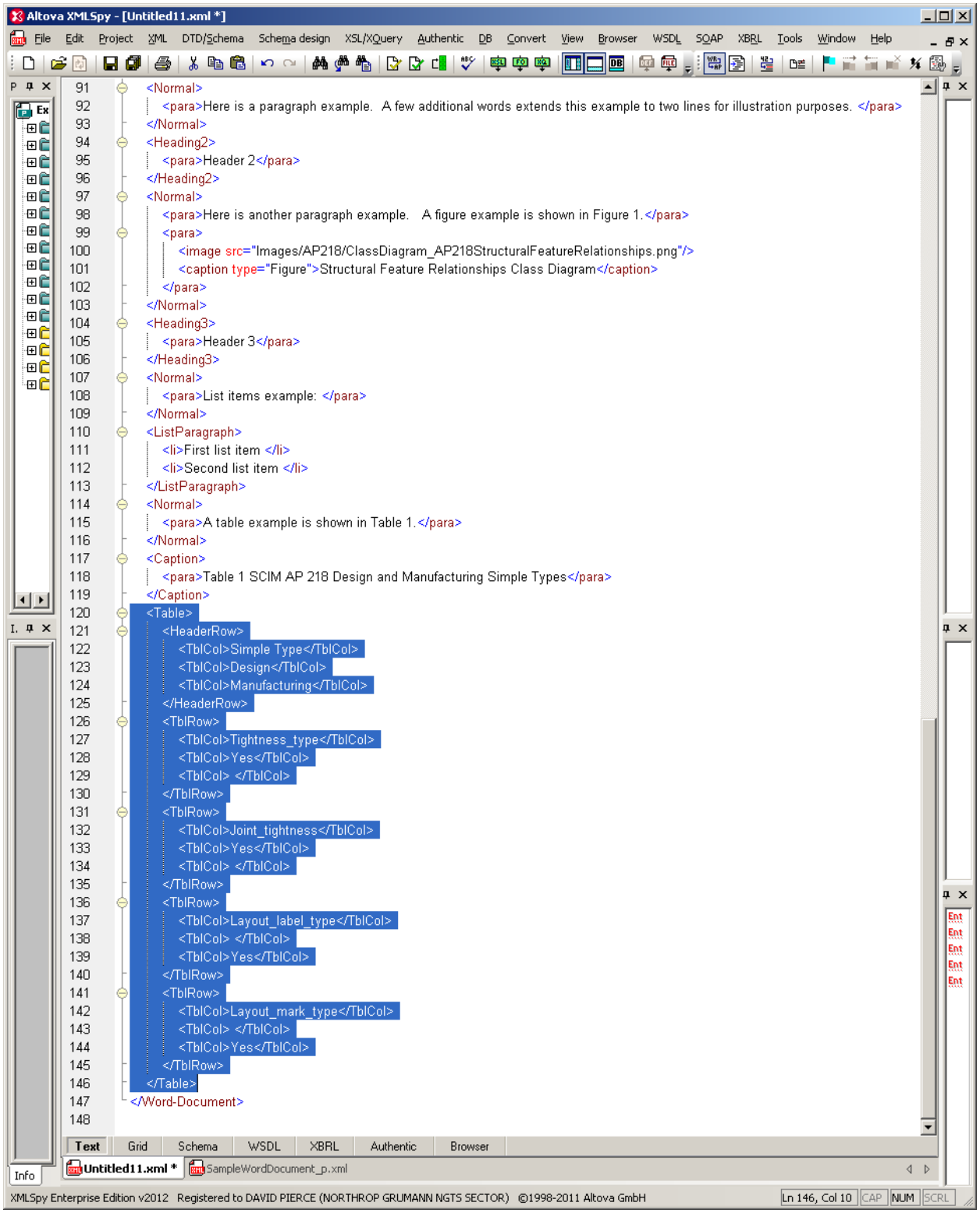


Figure 62 The Table XML construct

6.5 Development Responsibilities

SCIM documentation development responsibilities are split between SCIM chapter authors and NGTS as described below.

6.5.1 Chapter Authors

Chapter authors develop the merged context schemas for their chapters with the help of NGTS as outlined above. In addition, chapter authors provide "authored" text and diagrams:

1. SCIM chapter Atomic context schema.
2. Overview (currently Word 2007 format).
3. Overview image mapping: filename to figure number [subject to change as StyleVision design progresses].
4. Authored data Excel spreadsheet with Intent, Motivation, AKA, Implementation Consequences per entity name. PDM example provided in section **Error! Reference source not found.**, **Error! ference source not found.**.
5. ArgoUML context diagrams export in PNG image format. A context diagram includes the entity inheritance hierarchy and all associations that include the entity. In some cases such as npd:Approval in PDM, the context diagram is reused for tightly coupled entities (e.g., npd:Approval_person_organization) and shows all tightly coupled entities.
    - Filename format: ContextDiagram_EntityName.png. (Example: ContextDiagram_Change_request.png). Image size limitations to be provided.
    - We are staying with ArgoUML (freeware available at http://argouml.tigris.org/) to create UML diagrams. EB can create XMI V1.0 files from a context schema suitable for ArgoUML import as a service. Authors then create the diagrams from the imported entities and associations. ArgoUML Image Export can be found at File->Export All Graphics… (Complete images export) or File->Export Graphics… (Individual image export).
6. Traceability Matrix (mapping of xtc:Entity, xtc:simpleType, and xtc:Association entries to STEP constructs). Format similar to , 1.5 Traceability Matrix within section **Error! Reference source ot found.**, "**Error! Reference source not found.**". NGTS provides left column via StyleVision, chapter authors fill in right hand column. Exact details TBD.

6.5.2 NGTS

1. NGTS will provide merged context schema as outlined above.
2. NGTS will develop Altova Stylesheet templates for each chapter striving for uniformity in look and feel.
3. NGTS will execute the Altova Stylesheet templates against the merged context schema and authored data in xml format.
4. NGTS will provide configuration management services for context schemas and SCIM documentation in coordination with chapter authors.

6.6 Issues

1. Investigate ability of Altova StyleVision to generate an index at end of document to present an alphabetical sort of xtc:Entity, xtc:simpleType, and xtc:Association entries. An index is desirable.
2. Create an umbrella document that has URIs to the chapters.
    a. This document can include a SCIM overview and a few words about the AIC and IGR files and what ISO standards have the definitions for xtc:Entity, xtc:simpleType, and xtc:Association entries in those files.
    b. Link to ISO store to buy Application interpreted construct (AIC) and Integrated Resource (IGR). See NOTES below.

7 "SCIM_Docs" Folder

SCIM_Docs – This is the repository of the current set of SCIM HTML and image files. This folder will be zipped for deployment on a web site. The top level HTML file is **SCIM.html** located at **\NPDI_SCIM\SCIM_Docs\SCIM.html** (Figure 63). This file has links to the SCIM chapter, AIC, IGR, and Annex html files. Each chapter is housed in a separate subfolder. Figure 64 shows the PDM html file under the folder **Chapter01_PDM**. This file has been copied from the root folder, **\NPDI_SCIM\Altova_StyleVision**. Under each chapter folder is the folder , ***.\images\chapterID*** (for example, ***.\images\PDM***). On a per chapter basis, this is a copy of the same folder shown in Figure 64

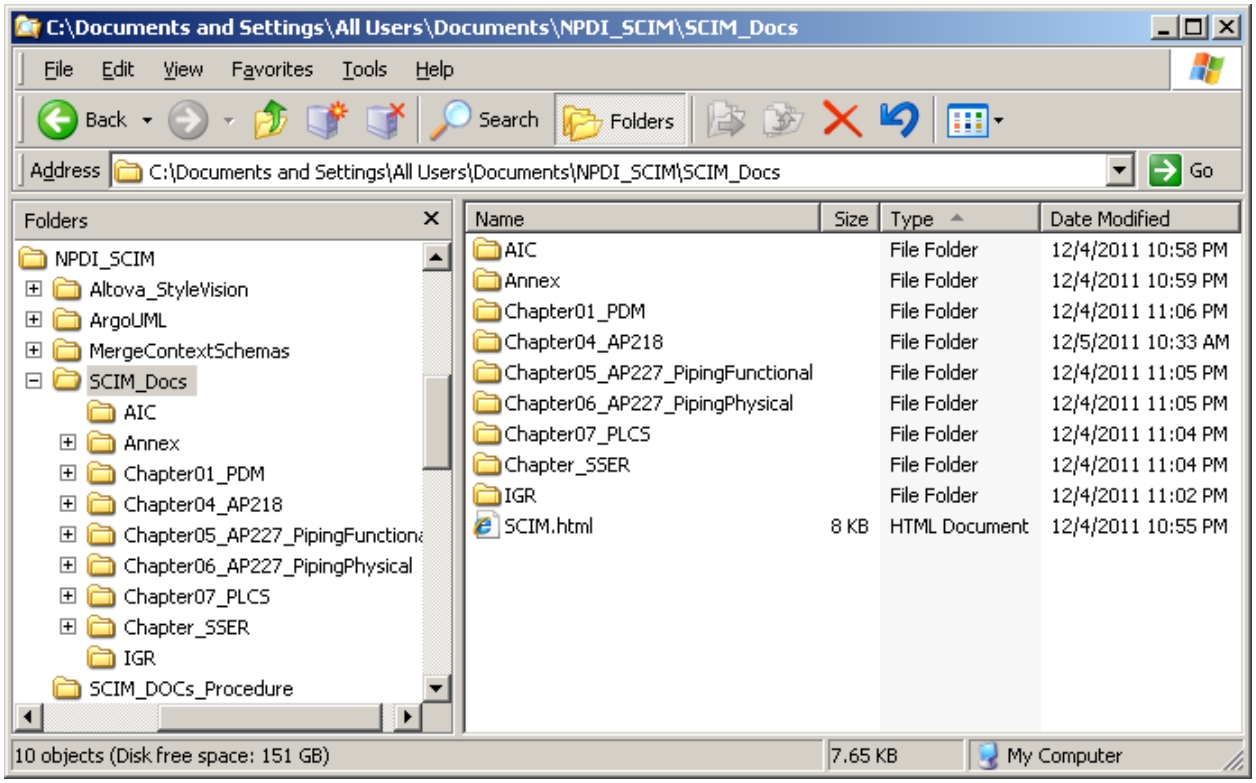


Figure 63 Top level SCIM HTML file, \NPDI_SCIM\SCIM_Docs\SCIM.html

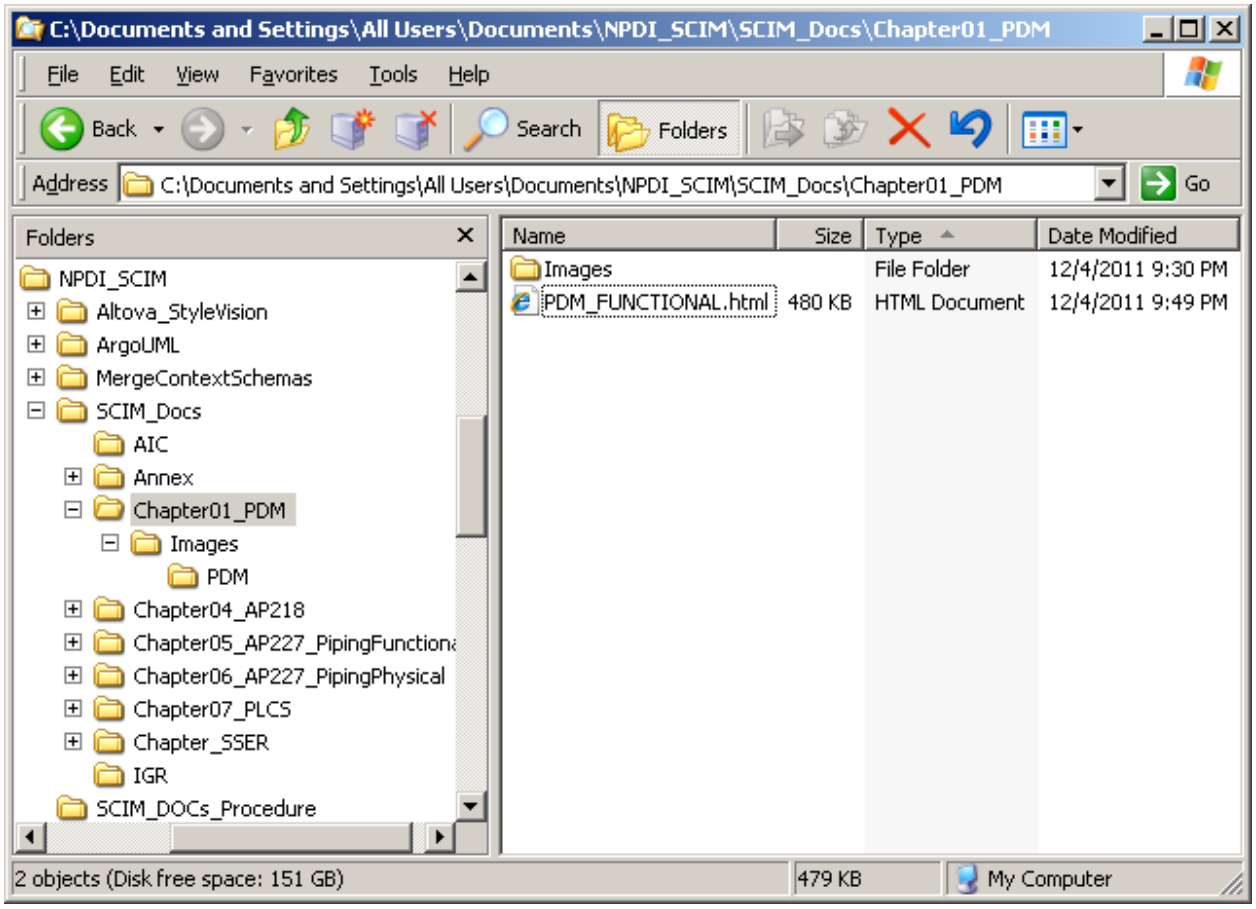


Figure 64 SCIM Docs chapter folder example: PDM

All of the chapter folders and the Annex have Images folder and chapter specific subfolder. The AIC and IGR folders do not since the HTML for these parts of the SCIM data model have no images.

Currently, the HTML files are copied to the correct folder manually when StyleVision generates the file. Image files are manually copied from the appropriate subfolder located at \NPDI_SCIM\Altova_StyleVision\Images. A more automatic approach to this process is desired and will be documented here when in place.

8 Acronyms

1. AKA Also known as (aliases for entity names)
2. AIC Application interpreted construct
    a. e.g., Part 508: Non-manifold surface (ISO 10303-508) as implemented in edo_508.xml
    b. e.g., Part 511: Topologically bounded surface (ISO 10303-511) as implemented in edo_511.xml

   c. e.g., Part 514: Advanced boundary representation (ISO 10303-514) as implemented in edo_514.xml
3. AP Application Protocol such as STEP Part 218: Application protocol: Ship structures (AP218)
4. CPR Common Parts Procurement chapter
5. IGR Integrated Generic Resource
   a. e.g., Part 41 (ISO 10303-41); e.g., measure_schema.xml
   b. e.g., Part 42 (ISO 10303-42); e.g., geometry_schema.xml
   c. e.g., Part 43 (ISO 10303-43); e.g., representation_schema.xml
6. ISO International Standards Organization. Standards body for STEP.
7. NGTS Northrop Grumman Technical Services (Mike Olson and Dave Pierce)
8. PDM Product Data Management
9. SCIM Ship Common Information Model
10. SSER Ship structural envelope required
    a. A set of entities and associations common to AP215, AP216, AP218. Available to other AP context schemas as needed.
    b. Examples from AP218:

npd:Buttock_table	xtc:Entity
npd:Frame_table	xtc:Entity
npd:Local_co_ordinate_system	xtc:Entity
npd:Local_co_ordinate_system_with_position_reference	xtc:Entity
npd:Longitudinal_position	xtc:Entity
npd:Longitudinal_position_with_offset	xtc:Entity
npd:Longitudinal_table	xtc:Entity
npd:Precision	xtc:Entity
npd:Principal_characteristics	xtc:Entity
npd:Shipyard_designation	xtc:Entity
npd:Spacing_position	xtc:Entity
npd:Spacing_position_with_offset	xtc:Entity
npd:Spacing_table	xtc:Entity
npd:Station_table	xtc:Entity
npd:Transversal_position	xtc:Entity
npd:Transversal_position_with_offset	xtc:Entity
npd:Transversal_table	xtc:Entity
npd:Vertical_position	xtc:Entity
npd:Vertical_position_with_offset	xtc:Entity
npd:Vertical_table	xtc:Entity
npd:Waterline_table	xtc:Entity
npd:Axis	xtc:Association

npd:Global_axis_placement_defined_for	xtc:Association
npd:Hull_applicability_spacing_table	xtc:Association
npd:Local_co_ordinate_system_defined_for	xtc:Association
npd:Location	xtc:Association
npd:Parent_co_ordinate_system	xtc:Association
npd:Principal_characteristics_ship	xtc:Association
npd:Ref_direction	xtc:Association
npd:Shipyard_designation_ship	xtc:Association
npd:Spacing_table_representation	xtc:Association
npd:Spacing_table_representations_longitudinal	xtc:Association
npd:Spacing_table_representations_transversal	xtc:Association
npd:Spacing_table_representations_vertical	xtc:Association

11. XSLT XSL Transformations. XSLT is used to transform XML documents into other formats such as HTML, Word, RTF, PDF or other XML documents. Altova StyleVision (http://www.altova.com/stylevision.html) facilitates transformations from XML to HTML, Word, RTF, or PDF as direct outputs.

9 Configuration Management

Northrop Grumman Technical Services will configure manage the NPDI_SCIM project files and upload the latest version to ISE Tool. The NPDI_SCIM project files are available by downloading the latest version from ISE Tools:

http://www.isetools.org/eb-cgi-bin/yabb2_ISE/YaBB.pl?num=1319085837/0

The NPDI_SCIM project archive (**YYYY_MM_DD_NPDI_SCIM.zip**) contains the entire NPDI_SCIM project folder. The SCIM_Docs archive (**YYYY_MM_DD_ SCIM_Docs.zip**) contains the SCIM HTML pages located at **\NPDI_SCIM\SCIM_Docs**.

The NPDI_SCIM project archive includes the SCIM_Docs folder. The SCIM_Docs archive is provided for those only needing the HTML files.

Check all replies on the topic, ISE Forums › SCIM › Working Documents > ILE Phase 2: NPDI_SCIM Project, to ensure the latest versions are located.

After either archive is downloaded, extract the archive and navigate to the folder

\NPDI_SCIM\SCIM_Docs (when extracting NPDI_SCIM project archive, **YYYY_MM_DD_NPDI_SCIM.zip**)

\SCIM_Docs (when extracting SCIM_Docs archive (**YYYY_MM_DD_ SCIM_Docs.zip**)

Then double click on the SCIM.html file (or drag the file to Internet Explorer). The SCIM table of contents will appear in your browser. Links bring up the SCIM chapters. A link back to the SCIM table of contents is provided at the top of each chapter web page.

10 SCIM Chapter mergeSpec Excel spreadsheet

The SCIM Chapter mergeSpec Excel spreadsheet identifies the namespaces, entities, associations, and simpletypes required by the merged context schema. In addition, the SCIM Chapter mergeSpec Excel spreadsheet provides the following information:

a. Atomic context schema source of the entities, associations, or simpleType
b. Alphabetical or functional organization of the entities, associations, and simpletypes.
c. Any comments on the spreadsheet row. Comments are not currently translated to the merged context schema.

10.1 Column Headers

Category – identifies either namespaces required to properly validate the merged context schema or the folder that contains the atomic context schema. Legal values:

- **Namespaces**
- **AtomicContextSchemas**
- **AIC**
- **IGR**

If new atomic context schema folders are created in the future, they will be added to the legal values.

SCIM_Modules – identifies the prefix of the context schema containing the entity, association, or simpleType on that spreadsheet row.

Function_or_Alphabetical – user defined string. Recommended values:

- "**Alphabetic Order**" if the entities, associations, or simpletypes are to be written in alphabetical order. Please use the Data sorting feature of Excel to ensure the range of entities, associations, or simpletypes are indeed alphabetical because the translator will output in the order presented in the spreadsheet.
- A string representing the function of the functional grouping of entities, associations, or simpletypes. Order of entities, associations, or simpletypes within a function is up to the author. Order can be alphabetical or some other order such as by inheritance hierarchy. Examples of functional strings can be found in the PDM and AP218 mergeSpecs.

Type – specifies entity, association, or simpleType to be written to the merged context schema. Legal values:

- **xtc:Entity**
- **xtc:Association**
- **xs:simpleType**

Name – the namespace qualified entity or association name. Also the xs:simpleType name, which are not namespace qualified.

Comment – user comment. Max of 255 characters (Excel cell maximum). This is not written to the merged context schema at this time.

10.2 How to fill out the spreadsheet

The namespaces are written to the merged context schema in the order presented in the spreadsheet. The first row should be

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:iso10303-28:xslt/xtc ../XSD/xtc_mapping.xsd"

The last row should be the prefix row using the correct prefix value for the chapter:

prefix="AP218"

Entities are written to the merged context schema in the order presented in the spreadsheet first by the order "**Function_or_Alphabetical**" appears in the spreadsheet then by "**Name**" order. This will permit ranges of entities that can be strictly alphabetical (no implied function), functionally related, or unordered, at the desire of the chapter author. The author's intent is captured in the "**Function_or_Alphabetical**" column. Except for Namespaces category, this column must be populated with a string. The string is output as an XML comment just before the group of entities that share this string.

This spreadsheet supports the following features

1) Alphabetical ordering of entities, associations, and simple types.
2) Functional ordering of entities, associations, and simple types. Within a functional group, the order can be alphabetical if the spreadsheet author ensures the names of the entities, associations, or simple types are in alphabetical row sequence.
3) Merged context schema output is in the following order:
   a) xtc:Entity, xs:simpleType**,** xtc:Association (controlled by the XSLT stylesheet)

b) Within each of the above groups (see section 10.1,"Column Headers"):
   i) **SCIM_modules**, then **Function_or_Alphabetical,** then **Name**

NOTE: This is under the control of the spreadsheet author based on the row order in the spreadsheet. Thus for a given set of entities, associations, or simpletypes, the author controls the order of atomic context schemas and within each schema the functional or alphabetical order of the individual constructs.

The comment column is not written to the output merged context schema. It represents comments internal to the spreadsheet.

Table 6 AP218 Merge Specification as of 17 Nov 2011

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
Namespaces	AP218			xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:iso10303-28:xslt/xtc ../XSD/xtc_mapping.xsd"	
Namespaces	PDM			xmlns:ex="urn:iso:std:iso:10303:28:ed-2:2005:schema:common"	
Namespaces	PDM			xmlns:npd="urn:iso10303-28:xslt/npd"	
Namespaces	PDM			xmlns:q="http://www.w3.org/xqueryx"	
Namespaces	PDM			xmlns:xs="http://www.w3.org/2001/XMLSchema"	
Namespaces	PDM			xmlns:xsl="http://www.w3.org/1999/XSL/Transform"	
Namespaces	PDM			xmlns:xtc="urn:iso10303-28:xslt/xtc"	
Namespaces	hsh			xmlns:hsh="urn:iso10303-28:xslt/hsh"	
Namespaces	geometric_model_schema			xmlns:geometric_model_schema="urn:iso10303-28:xslt/geometric_model_schema"	
Namespaces	geometry_schema			xmlns:geometry_schema="urn:iso10303-28:xslt/geometry_schema"	
Namespaces	measure_schema			xmlns:measure_schema="urn:iso10303-28:xslt/measure_schema"	
Namespaces	product_property_repre			xmlns:product_property_representation_schema="urn:iso103	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
	sentation_schema			03-28:xslt/product_property_representation_schema"	
Namespaces	representation_schema			xmlns:representation_schema="urn:iso10303-28:xslt/representation_schema"	
Namespaces	support_resource_schema			xmlns:support_resource_schema="urn:iso10303-28:xslt/support_resource_schema"	Used on geometry_schema representation_schema schemas as xtc:Property datatype
Namespaces	topology_schema			xmlns:topology_schema="urn:iso10303-28:xslt/topology_schema"	
Namespaces	aic508			xmlns:aic_non_manifold_surface="urn:iso10303-28:xslt/aic_non_manifold_surface"	
Namespaces	aic514			xmlns:aic_advanced_brep="urn:iso10303-28:xslt/aic_advanced_brep"	
Namespaces	AP218			prefix="AP218"	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Analysis_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Applied_approval_assignment	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Approval_date_time	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Approval_person_organization	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Approval_relationship	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Catalog_part	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Certification	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Change_request	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Configuration_item	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Configuration_item_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Contract	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Design_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Design_occurrence_assembly	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Design_occurrence_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Design_part	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Design_part_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Digital_file	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Document_metadata	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:External_geometric_model	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:File_location_identification	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Generic_part	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Global_axis_placement	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Hull_applicability	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Logistics_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Logistics_occurrence_assembly	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Material_quality_requirements	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Naval_activity	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Part_assembly	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Physical_assembly	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Physical_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Physical_part	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Safety_requirements	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Security_classification	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Shape_representation	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Shape_representation_relationship	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Ship	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Ship_designation	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Entity	npd:Weight	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Buttock_table	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Frame_table	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Local_co_ordinate_system	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Local_co_ordinate_system_with_position_reference	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Longitudinal_position	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Longitudinal_position_with_offset	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Longitudinal_table	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Precision	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Principal_characteristics	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Shipyard_designation	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Spacing_position	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Spacing_position_with_offset	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Spacing_table	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Station_table	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Transversal_position	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Transversal_position_with_offset	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Transversal_table	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Vertical_position	

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Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Vertical_position_with_offset	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Vertical_table	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Entity	npd:Waterline_table	
AtomicContext Schemas	AP218	STRUCTURAL FEATURES	xtc:Entity	npd:Structural_feature	
AtomicContext Schemas	AP218	STRUCTURAL FEATURES	xtc:Entity	npd:Position_feature	
AtomicContext Schemas	AP218	STRUCTURAL FEATURES	xtc:Entity	npd:Seam	
AtomicContext Schemas	AP218	STRUCTURAL FEATURES	xtc:Entity	npd:Composite_structural_feature	
AtomicContext Schemas	AP218	STRUCTURAL CUTOUTS	xtc:Entity	npd:Structural_cutout	
AtomicContext Schemas	AP218	STRUCTURAL CUTOUTS	xtc:Entity	npd:Corner_cutout	
AtomicContext Schemas	AP218	STRUCTURAL CUTOUTS	xtc:Entity	npd:Edge_cutout	
AtomicContext Schemas	AP218	STRUCTURAL CUTOUTS	xtc:Entity	npd:Edge_feature	
AtomicContext Schemas	AP218	STRUCTURAL CUTOUTS	xtc:Entity	npd:Interior_cutout	
AtomicContext Schemas	AP218	STRUCTURAL MANUFACTURING FEATURES	xtc:Entity	npd:Structural_manufacturing_feature	
AtomicContext Schemas	AP218	STRUCTURAL MANUFACTURING FEATURES	xtc:Entity	npd:Structural_added_material_feature	
AtomicContext Schemas	AP218	STRUCTURAL MANUFACTURING FEATURES	xtc:Entity	npd:Structural_weld_shrinkage_allowance_feature	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Feature_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Corner_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Round_corner_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Inward_round_corner_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Outward_round_corner_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Bevel_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Shear_bevel_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Rectangular_cutback_corner_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Edge_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Drain_hole_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Explicit_feature_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Interior_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Free_form_interior_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Circular_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Elliptical_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Elongated_oval_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Rectangular_cutout_design_definition	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Round_corner_rectangular_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Round_edge_rectangular_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Triangular_cutout_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Position_feature_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Seam_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Structural_added_material_feature_design_definition	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Entity	npd:Structural_weld_shrinkage_allowance_feature_design_definition	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Entity	npd:Structural_part	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Entity	npd:Plate	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Entity	npd:Profile	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Entity	npd:Built_profile	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Entity	npd:Structural_system	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Entity	npd:Panel_system	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Entity	npd:Plate_strake	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Structural_design_definition	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Structural_part_design_definition	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Structural_system_design_definition	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Panel_system_design_definition	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Plate_design_definition	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Profile_design_definition	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Profile_curve_trace_line	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Entity	npd:Twist_location	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Structural_system_relationship	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Structural_system_adjacency_relationship	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Panel_system_relationship	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Panel_system_boundary_relationship	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Structural_system_symmetry_relationship	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Structural_system_penetration_relationship	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Panel_system_curve_boundary	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Entity	npd:Panel_system_plane_boundary	
AtomicContext Schemas	AP218	HULL CROSS SECTION	xtc:Entity	npd:Hull_cross_section	
AtomicContext Schemas	AP218	HULL CROSS SECTION	xtc:Entity	npd:Hull_cross_section_design_definition	
AtomicContext Schemas	AP218	HULL CROSS SECTION	xtc:Entity	npd:Flare_area	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Structural_part_joint_design_definition	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Welded_joint_design_definition	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Fillet_weld	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Continuous_fillet_weld	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Intermittent_fillet_weld	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Groove_weld	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Beveled_groove_weld	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Butt_groove_weld	
AtomicContext Schemas	AP218	STRUCTURAL PART JOINT DESIGN DEFINITIONS	xtc:Entity	npd:Spot_seam_weld	
AtomicContext Schemas	AP218	JOINTS AND WELDS	xtc:Entity	npd:Structural_part_joint	
AtomicContext Schemas	AP218	JOINTS AND WELDS	xtc:Entity	npd:Welded_joint	
AtomicContext Schemas	AP218	JOINTS AND WELDS	xtc:Entity	npd:Structural_part_connection_implementation	
AtomicContext Schemas	AP218	JOINTS AND WELDS	xtc:Entity	npd:Weld	
AtomicContext Schemas	AP218	JOINTS AND WELDS	xtc:Entity	npd:Weld_design_definition	
AtomicContext Schemas	AP218	JOINTS AND WELDS	xtc:Entity	npd:Welding_sequence	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Explicit_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Parametric_profile_cross_section	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Flanged_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:W_shape_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:T_bar_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Channel_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Channel_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Bar_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Bulbflat_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Flat_bar_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Round_bar_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Angle_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Angle_bar_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Non_circular_hollow_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Square_tube_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Circular_hollow_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Proprietary_profile_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Flanged_plate_cross_section	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Entity	npd:Section_properties	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Structural_part_relationship	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Plate_boundary_relationship	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Plate_relationship	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Profile_relationship	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Profile_boundary_relationship	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Profile_trace_line_relationship	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Structural_part_symmetry_relationship	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Entity	npd:Structural_part_penetration_relationship	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Structural_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Edge_cutout_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Edge_feature_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Interior_cutout_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Structural_part_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Plate_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Profile_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Structural_system_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Panel_system_functional_definition	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	STRUCTURAL FUNCTIONAL DEFINITIONS	xtc:Entity	npd:Plate_strake_functional_definition	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Entity	npd:Structural_feature_relationship	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Entity	npd:Structural_added_material_boundary_relationship	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Entity	npd:Structural_cutout_manufacturing_relationship	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Entity	npd:Structural_cutout_boundary_relationship	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Entity	npd:Corner_cutout_boundary_relationship	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Entity	npd:Seam_curve_relationship	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Entity	npd:Position_feature_relationship	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Entity	npd:Ship_material_property	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Entity	npd:Homogeneous_ship_material_property	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Entity	npd:Weld_filler_material	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Entity	npd:Structural_material_quality_requirements	
AtomicContext Schemas	AP218	SHIP GENERAL CHARACTERISTICS	xtc:Entity	npd:Centre_location	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Assembly_bounding_box	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Layout_label	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Layout_mark	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Manufacturing_definition	

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Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Assembly_manufacturing_definition	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Structural_part_manufacturing_definition	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Plate_manufacturing_definition	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Profile_manufacturing_definition	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Weld_manufacturing_definition	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Entity	npd:Weld_testing	
AtomicContext Schemas	AP218	PRODUCT STRUCTURES	xtc:Entity	npd:Assembly	
AtomicContext Schemas	AP218	PRODUCT STRUCTURES	xtc:Entity	npd:Assembly_manufacturing_position	
AtomicContext Schemas	AP218	WELDS	xtc:Entity	npd:Electrode_chemical_composition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Analysis_occurrence.design_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Applied_certification_assignment	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Applied_contract_assignment	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Applied_security_classification_assignment	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Assigned_approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Authorized_approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Center_of_mass	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Certification_approval	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Change_request.design_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Configuration_item.approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Configuration_item.design_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Configuration_item.hull_applicability	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Contract.approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Dated_approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Design_occurrence.approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Design_occurrence.document	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Design_occurrence.hull_applicability	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Design_occurrence_assembly.child	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Design_occurrence_assembly.parent	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Digital_file.location	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:External_geometric_model.context	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:External_geometric_model.digital_file	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:External_geometric_model.placement	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Global_axis_placement.hull_applicability	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Item_definition	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Logistics_occurrence.design_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Logistics_occurrence.physical_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Logistics_occurrence_assembly.child	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Logistics_occurrence_assembly.parent	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Make_from	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Material_quality_reqs.design_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Occurrence_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Occurrence_shape_representation	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Part_assembly.child	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Part_assembly.parent	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Part_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Part_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Part_realization	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Physical_assembly.child	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Physical_assembly.parent	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Physical_occurrence.design_occurrence	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Physical_occurrence.ship	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Physical_part.design_part	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Related_approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Relating_approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Rep_1	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Rep_2	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Safety_reqs.design_definition	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Security_classification.approval	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Shape_representation.items	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Ship.document	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Ship_designation.ship	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Transform	
AtomicContext Schemas	PDM	Alphabetical Order	xtc:Association	npd:Weight.design_definition	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Axis	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Global_axis_placement_defined_for	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Hull_applicability_spacing_table	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Local_co_ordinate_system_defined_for	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Location	

Merge SCIM Context Schema and SCIM Document Procedures

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Parent_co_ordinate_system	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Principal_characteristics.local_units	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Principal_characteristics_ship	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Ref_direction	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Shipyard_designation_ship	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Spacing_table_representation	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Spacing_table_representations_longitudinal	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Spacing_table_representations_transversal	
AtomicContext Schemas	SSER	Alphabetical Order	xtc:Association	npd:Spacing_table_representations_vertical	
AtomicContext Schemas	AP218	STRUCTURAL FEATURES	xtc:Association	npd:Composite_feature.composed_of	
AtomicContext Schemas	AP218	STRUCTURAL FEATURES	xtc:Association	npd:Structural_feature.parent	
AtomicContext Schemas	AP218	STRUCTURAL FEATURES	xtc:Association	npd:Seam.parent	
AtomicContext Schemas	AP218	STRUCTURAL CUTOUTS	xtc:Association	npd:Structural_cutout.parent	
AtomicContext Schemas	AP218	STRUCTURAL MANUFACTURING FEATURES	xtc:Association	npd:Structural_manufacturing_feature.parent	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Definition.local_units	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Design_definition.representations	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Panel_system_design_definition.moulded_surface	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Plate_design_definition.border	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Plate_design_definition.interior_point	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Plate_design_definition.moulded_surface	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Profile_design_definition.cross_section_placement	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Profile_design_definition.trace_line	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Profile_design_definition.twist	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Profile_design_definition.border	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Profile_curve_trace_line.curve	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Profile_curve_trace_line.displacement	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Twist_location.location	
AtomicContext Schemas	AP218	DESIGN DEFINITIONS	xtc:Association	npd:Twist_location.orientation	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Structural_part_functional_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Plate_functional_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Profile_functional_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Structural_part_design_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Plate_design_definition.defined_for	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Profile_design_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Structural_system_functional_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Panel_system_functional_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Plate_strake_functional_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Structural_system_design_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Panel_system_design_definition.defined_for	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Structural_system.items	
AtomicContext Schemas	AP218	STRUCTURAL PARTS AND STRUCTURAL SYSTEMS	xtc:Association	npd:Structural_system.relationships	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Structural_feature_design_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Seam_design_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Corner_cutout_design_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Edge_cutout_functional_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Edge_cutout_design_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Edge_feature_functional_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Drain_hole_cutout_design_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Interior_cutout_functional_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Interior_cutout_design_definition.defined_for	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Structural_added_material_feature_design_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Structural_weld_shrinkage_allowance_feature_design_definition.defined_for	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Free_form_interior_cutout_design_definition.bounding_curve	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Seam_design_definition.seam_curve	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Seam_design_definition.border	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Feature_design_definition.representations	
AtomicContext Schemas	AP218	FEATURE DESIGN DEFINITIONS	xtc:Association	npd:Explicit_feature_design_definition.representations	
AtomicContext Schemas	AP218	HULL CROSS SECTION	xtc:Association	npd:Hull_cross_section_design_definition.flare_area_buckling	
AtomicContext Schemas	AP218	HULL CROSS SECTION	xtc:Association	npd:Hull_cross_section_design_definition.defined_for	
AtomicContext Schemas	AP218	HULL CROSS SECTION	xtc:Association	npd:Hull_cross_section.items	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Panel_system_boundary_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Panel_system_design_definition.border	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Panel_system_curve_boundary.curve	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Panel_system_plane_boundary.plane	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_symmetry_relationship.mirroring_plane	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_adjacency_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_relationship.item_1	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Panel_system_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_symmetry_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_penetration_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_penetration_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL SYSTEM RELATIONSHIPS	xtc:Association	npd:Structural_system_penetration_relationship.penetration_result	
AtomicContext Schemas	AP218	JOINTS AND WELD	xtc:Association	npd:Structural_part_joint.item_1	
AtomicContext Schemas	AP218	JOINTS AND WELD	xtc:Association	npd:Structural_part_joint.item_2	
AtomicContext Schemas	AP218	JOINTS AND WELD	xtc:Association	npd:Structural_part_joint_design_definition.defined_for	
AtomicContext Schemas	AP218	JOINTS AND WELD	xtc:Association	npd:Structural_part_connection_implementation.realization_of	
AtomicContext Schemas	AP218	JOINTS AND WELD	xtc:Association	npd:Weld_design_definition.weld_geometry	
AtomicContext Schemas	AP218	JOINTS AND WELD	xtc:Association	npd:Weld.realization_of	
AtomicContext Schemas	AP218	JOINTS AND WELD	xtc:Association	npd:Weld_design_definition.defined_for	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Association	npd:Profile_cross_section.section_properties	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Association	npd:Explicit_profile_cross_section.cross_section_geometry	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Association	npd:Explicit_profile_cross_section.local_coordinate_system	
AtomicContext Schemas	AP218	CROSS SECTIONS	xtc:Association	npd:Profile_design_definition.cross_section	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Profile_trace_line_relationship.auxiliary_line	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Structural_part_symmetry_relationship.mirroring_plane	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Structural_part_penetration_relationship.penetration_result	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Plate_boundary_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Structural_part_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Structural_part_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Plate_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Profile_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Structural_part_symmetry_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Structural_part_penetration_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Structural_part_penetration_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Profile_boundary_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL PART RELATIONSHIPS	xtc:Association	npd:Profile_trace_line_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Structural_feature_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Structural_feature_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Structural_added_material_boundary_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Structural_cutout_manufacturing_relationship.item_1	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Position_feature_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Seam_curve_relationship.item_2	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Structural_cutout_boundary_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Corner_cutout_boundary_relationship.item_1	
AtomicContext Schemas	AP218	STRUCTURAL FEATURE RELATIONSHIPS	xtc:Association	npd:Structural_cutout_boundary_relationship.item_2	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Association	npd:Ship_material_property.material_reference	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Association	npd:Ship_material_property.local_units	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Association	npd:Ship_material_property.quality_requirements	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Association	npd:Homogeneous_ship_material_property.defined_for	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Association	npd:Weld_filler_material.chemical_composition	
AtomicContext Schemas	AP218	SHIP MATERIALS	xtc:Association	npd:Weld_filler_material.defined_for	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Assembly_bounding_box.point_max	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Assembly_bounding_box.point_min	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Layout_label.location	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Layout_label.label_size	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Layout_label.direction	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Layout_mark.location	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Layout_mark.shape	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Layout_mark.components	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Layout_mark.thickness_throw_vector	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Manufacturing_definition.representations	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Assembly_manufacturing_definition.assembly_positions	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Assembly_manufacturing_definition.assembly_drawing	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Assembly_manufacturing_definition.defined_for	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Assembly_manufacturing_definition.centre_of_gravity	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.bottom_annotation	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.bottom_layout_marks	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.bottom_punch_points	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.defined_for	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.inner_contours	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.top_annotation	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.top_layout_marks	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Structural_part_manufacturing_definition.top_punch_points	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Plate_manufacturing_definition.outer_contour	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Profile_manufacturing_definition.defined_for	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Profile_manufacturing_definition.inverse_bend_trace	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Profile_manufacturing_definition.outer_flange_contour	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Profile_manufacturing_definition.outer_web_contour	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Weld_manufacturing_definition.defined_for	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Weld_manufacturing_definition.sequences	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Weld_manufacturing_definition.weld_test	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Weld_manufacturing_definition.welding_procedures	
AtomicContext Schemas	AP218	SHIP MANUFACTURING DEFINITIONS	xtc:Association	npd:Weld_testing.test_sequence	
AtomicContext Schemas	AP218	PRODUCT STRUCTURES	xtc:Association	npd:Assembly_manufacturing_position.bounding_box	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Approval_role	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Approval_status	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Certification_type	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Contract_type	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Deep_submergence_indicator	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Discipline_indicator	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Global_coordinate_system_orientation	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Material_quality_indicator	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Material_testing_indicator	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Nuclear_indicator	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Quality_assurance_indicator	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Security_classification_level	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	ShipClassification	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	ShipType	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Shock_grade_type	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Source	
AtomicContext Schemas	PDM	Alphabetical Order	xs:simpleType	Subsafe_indicator	
AtomicContext Schemas	SSER	Alphabetical Order	xs:simpleType	Shipyard_role	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Alignment	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Backing_type	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Bevel_shape	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Butt_shape	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Edge_cutout_functionality	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Edge_feature_functionality	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Fillet_shape	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Interior_cutout_functionality	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Intermittent_weld_rule	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Joint_tightness	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Spot_seam_weld_context	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Structural_part_functionality	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Structural_part_joint_form	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Structural_part_joint_type	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Structural_system_functionality	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Structure_class	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Taper_type	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Tightness_type	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Weld_joint_penetration	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Weld_sidedness	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Weld_surface_shape	
AtomicContext Schemas	AP218	AP218 Design simpleTypes	xs:simpleType	Welded_joint_configuration	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Assembly_class	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Degree_of_automatizations	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Environment	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Layout_label_type	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Layout_mark_type	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Position	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Process	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Test_methods	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Test_results	
AtomicContext Schemas	AP218	AP218 manufacturing simpleTypes	xs:simpleType	Welding_deposition_sequences	
AIC	aic508	Alphabetical Order	xtc:Entity	aic_non_manifold_surface:non_manifold_surface_shape_representation	
AIC	aic514	Alphabetical Order	xtc:Entity	aic_advanced_brep:advanced_brep_shape_representation	
IGR	geometric_model_schema	Alphabetical Order	xtc:Entity	geometric_model_schema:rectangle_domain	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:axis2_placement_2d	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:axis2_placement_3d	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:bounded_curve	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:cartesian_point	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:curve	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:direction	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:geometric_representation_context	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:line	

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:plane	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:point_on_curve	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:surface	
IGR	geometry_schema	Alphabetical Order	xtc:Entity	geometry_schema:vector	
IGR	measure_schema	Alphabetical Order	xtc:Entity	measure_schema:derived_unit	
IGR	measure_schema	Alphabetical Order	xtc:Entity	measure_schema:named_unit	
IGR	product_property_representation_schema	Alphabetical Order	xtc:Entity	product_property_representation_schema:shape_representation	aic508
IGR	representation_schema	Alphabetical Order	xtc:Entity	representation_schema:representation_item	Used by PDM
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometric_model_schema:geometric_set.elements	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:axis1_placement.axis	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:axis2_placement_3d.axis	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:axis2_placement_3d.ref_direction	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:b_spline_curve.control_points_list	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:cartesian_transformation_operator.axis1	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:cartesian_transformation_operator.axis2	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:cartesian_transformation_operator.local_origin	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:cartesian_transformation_operator_3d.axis3	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:composite_curve.segments	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:composite_curve_segment.parent_curve	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:conic.position	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:curve_replica.parent_curve	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:curve_replica.transformation	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:line.dir	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:line.pnt	

Merge SCIM Context Schema and SCIM Document Procedures

Category	SCIM_Modules	Function_or_Alphabetical	Type	Name	Comment
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:offset_curve_3d.basis_curve	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:offset_curve_3d.ref_direction	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:placement.location	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:point_on_curve.basis_curve	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:point_replica.parent_pt	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:point_replica.transformation	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:polyline.points	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:trimmed_curve.basis_curve	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:trimmed_curve.trim_1	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:trimmed_curve.trim_2	
IGR	geometry_schema	Alphabetical Order	xtc:Association	geometry_schema:vector.orientation	
IGR	representation_schema	Alphabetical Order	xtc:Association	representation_schema:mapped_item.mapping_source	
IGR	representation_schema	Alphabetical Order	xtc:Association	representation_schema:mapped_item.mapping_target	
IGR	representation_schema	Alphabetical Order	xtc:Association	representation_schema:representation.context_of_items	
IGR	representation_schema	Alphabetical Order	xtc:Association	representation_schema:representation.items	
IGR	representation_schema	Alphabetical Order	xtc:Association	representation_schema:representation_map.mapped_representation	
IGR	representation_schema	Alphabetical Order	xtc:Association	representation_schema:representation_map.mapping_origin	
IGR	measure_schema	Alphabetical Order	xs:simpleType	area_measure	
IGR	measure_schema	Alphabetical Order	xs:simpleType	length_measure	
IGR	measure_schema	Alphabetical Order	xs:simpleType	plane_angle_measure	
IGR	measure_schema	Alphabetical Order	xs:simpleType	positive_length_measure	
IGR	measure_schema	Alphabetical Order	xs:simpleType	ratio_measure	