

SV-11 : Physical Schema

This document defines the mapping between the DODAF SV-11 Physical Schema and the ISO 10303 AP233 Systems Engineering information model. This mapping is defined for the purpose of enabling data exchange between computer applications supporting the ISO AP233 standard and those supporting the US DoDAF CADM format, specifically CADM 1.02.

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1. Introduction

The SV-11 Physical Schema Product Description in the DoDAF Volume II: Product Descriptions document defines SV-11 as follows.

The Physical Schema product is one of the architecture products closest to actual system design in the Framework. The product defines the structure of the various kinds of system data that are utilized by the systems in the architecture. Product Purpose. The product serves several purposes, including (a) providing as much detail as possible on the system data elements exchanged between systems, thus reducing the risk of interoperability errors, and (b) providing system data structures for use in the system design process, if necessary.

SV-11 is an implementation-oriented data model that is used in the Systems View to describe how the information requirements represented in Logical Data Model (OV-7) are actually implemented. Entities represent (a) system data flows in SV-4, (b) system data elements specified in SV-6, (c) triggering events in SV-10b, and/or (d) events in SV-10c.

DoDAF Volume II also describes the use of UML class diagrams for representing SV-11 content.

2. SV-11 AP233 Mapping Issues

Warning:

At the time this document was written, AP233 was still undergoing development.

This section describes the issues in mapping between SV-11 Physical Schema and ISO AP233 as of the date of publication of this document. These issues may be addressed in future work by the DoDAF Working Group, the ISO AP233 development team or others.

1. The CADM USER PRESENTATION VIEW concept is out of scope for AP233 Edition 1. Presentation may be within the scope of an Edition 2 of AP233.

3. Mapping SV-11 CADM XML to AP233 XML

This section defines the mapping from the CADM XML representation of SV-11 Physical Schema into an ISO AP233 XML representation of that same data. The mapping is defined at

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the detailed level of the XML elements and attributes themselves as it is aimed at implementors. See AP233 for more information on the AP233 XML Schema and the AP233 EXPRESS schema.

Please review the rules for AP233 XML data production as they are applicable to all implementations.

3.1. SV-11 Physical Schema Specification Mapping

This section describes the mapping for the CADM SV-11 Physical Schema Specification itself. Because AP233 is an information modeling language, not an implementation method, a convenient representation of all of the CADM SV-11 requirements is not available. By treating each E-R Entity as an AP233 Product, with related version and definition, it is possible to fit the SV-11 detailed E-R concepts into AP233. However, as there are suitable notations available the current mapping assumes their usage for most of the SV-11 requirements.

The following SV-11 concepts are not directly supported by the current mapping:

- USER-PRESENTATION-VIEW
- INTERNAL-RECORD
- SYSTEM-PLATFORM
- DATA-ENTITY-RELATIONSHIP
- USER-PRESENTATION-VIEW-SYSTEM-PLATFORM
- INFORMATION-ASSET-RELATION

The following table documents the CADM PHYSICAL-SCHEMA-SPECIFICATION (PHYS_SCHEMA_SPEC) mapping.

CADM XML Element(s)	AP233 XML Element(s) or Attributes(s)
PHYS_SCHEMA_SPEC	An AP233 <code>Document</code> with related version and definition, as specified in the AP233 approach to documents each classified as a PHYSICAL-SCHEMA-SPECIFICATION . See the mapping for CADM Document for more detail.
PHYS_SCHEMA_SPEC / DOC_ID	The identifier for the <code>Document</code> representing the CADM Physical Schema Specification assigned by the owning organization.
PHYS_SCHEMA_SPEC / INT_DAT_MDL_IA_ID	An AP233 <code>Document_definition_relationship</code> where the AP233 representation of the CADM Physical Schema Specification is referenced by

	<p>the <code>Relating_document_definition</code> and the AP233 representation of the CADM Internal Data Model is referenced by the <code>Related_document_definition</code>. The AP233 <code>Document_definition_relationship</code> is classified as PHYSICAL-SCHEMA-SPECIFICATION-INTERNAL-DATA-MODEL.</p>
PHYS_SCHEMA_SPEC / USR_PRES_VW_IA_ID	USER PRESENTATION VIEW is not mapped.

Table 1: Within the PHYS_SCHEMA_SPEC_TBL CADM XML Element

3.2. Internal Data Model Mapping

The following table documents the CADM INTERNAL-DATA-MODEL (INTRNL_DATA_MDL) Element mapping

CADM XML Element(s)	AP233 XML Element(s) or Attributes(s)
INTRNL_DATA_MDL	<p>An AP233 <code>Document</code> with related version and definition, as specified in the AP233 approach to documents each classified as an INTERNAL-DATA-MODEL. The data model itself may be contained in an AP233 <code>File</code> in which case an AP233 <code>Digital_document_defintion</code> is used. See the mapping for CADM Document for more detail.</p>
INTRNL_DATA_MDL / INT_DAT_MDL_IA_ID	The identifier for the <code>Document</code> representing the CADM Internal Data Model.
INTRNL_DATA_MDL / INTDM_FLSTR_TY_CD	<p>A classification of the AP233 element representing the CADM Internal Data Model depending on the following values.</p> <ul style="list-style-type: none"> when 01, classified as RELATIONAL FILE STRUCTURE when 02, classified as HIERARCHICAL FILE STRUCTURE when 03, classified as FLAT FILE STRUCTURE when 04, classified as INDEXED SEQUENTIAL FILE STRUCTURE when 05, classified as FILE STRUCTURE OTHER when 08, classified as FILE STRUCTURE NOT SPECIFIED

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	<ul style="list-style-type: none"> when 09, classified as FILE STRUCTURE NOT KNOWN
INTRNL_DATA_MDL / INTDM_LANG_TY_CD	<p>A classification of the AP233 element representing the CADM Internal Data Model depending on the following values.</p> <ul style="list-style-type: none"> when 01, classified as DATABASE LANGUAGE SQL when 02, classified as DATABASE LANGUAGE NDL when 03,classified as OTHER DATABASE LANGUAGE when 07,classified as DATABASE LANGUAGE NOT APPLICABLE when 08, classified as DATABASE LANGUAGE NOT SPECIFIED when 09,classified as DATABASE LANGUAGE NOT KNOWN
INTRNL_DATA_MDL / INT_DAT_MDL_MIG_CD	<p>A classification of the AP233 element representing the CADM Internal Data Model depending on the following values.</p> <ul style="list-style-type: none"> when L, classified as LEGACY MODEL when M, classified as MIGRATION MODEL when T, classified as TARGET MODEL.
INTRNL_DATA_MDL / INT_DAT_MOD_RVS_DT	<p>An AP233 <i>Date_or_date_time_assignment</i> element (as specified in AP233 Dates) with a child <i>Items</i> element that refers to the AP233 representation of the CADM Internal Data Model. The <i>Date_or_date_time_assignment</i> is classified as a Revision calendar date.</p>
INTRNL_DATA_MDL / INT_DAT_MDL_TCH_NM	<p>A classification of the AP233 element representing the CADM Internal Data Model with a relevant the name of the technology. If an AP233 <i>File</i> contains the data model, it and the <i>Digital_document_definition</i> are classified.</p>
INTRNL_DATA_MDL / INT_DT_MDL_TYP_CD	<p>A classification of the AP233 element representing the CADM Internal Data Model depending on the following values.</p> <ul style="list-style-type: none"> when C, classified as CONVENTIONAL-DATA-MODEL when H, classified as HIERARCHICAL-DATA-MODEL when R, classified as

	<p>RELATIONAL-DATA-MODEL</p> <ul style="list-style-type: none"> when Y, classified as <p>NETWORK-DATA-MODEL</p>
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Table 1: Within the INTRNL_DATA_MDL_TBL CADM XML Element

4. Example SV-11 CADM XML Data

This section contains example SV-11 CADM XML data.

4.1. Example PHYS_SCHEMA_SPEC

```
<PHYS_SCHEMA_SPEC>
  <DOC_ID>11110001</DOC_ID>
  <INT_DAT_MDL_IA_ID>33440021</INT_DAT_MDL_IA_ID>
</PHYS_SCHEMA_SPEC>
<DOC>
  <DOC_ID>11110001</DOC_ID>
  <DOC_NM>SAMPLE PHYSICAL SCHEMA SPECIFICATION {SV-11}</DOC_NM>
  <CSC_ID>20000001</CSC_ID>
  <TIME_FRAME_PRD_ID>20102341</TIME_FRAME_PRD_ID>
  <DOC_APP_CALDT>20031126</DOC_APP_CALDT>
  <DOC_ARCHPROD_TY_CD>26</DOC_ARCHPROD_TY_CD>
  <DOC_CRTN_CALDT>20031203</DOC_CRTN_CALDT>
  <DOC_CAT_CD>J</DOC_CAT_CD>
  <DOC_VER_ID>VERSION 1.0</DOC_VER_ID>
</DOC>
```

4.2. Example INTRNL_DATA_MDL

```
<INTRNL_DATA_MDL>
  <INT_DAT_MDL_IA_ID>11115501</INT_DAT_MDL_IA_ID>
  <INTDM_FLSTR_TY_CD>01</INTDM_FLSTR_TY_CD>
  <INTDM_LANG_TY_CD>01</INTDM_LANG_TY_CD>
  <INT_DAT_MDL_MIG_CD>L</INT_DAT_MDL_MIG_CD>
  <INT_DAT_MOD_RVS_DT>20050322</INT_DAT_MOD_RVS_DT>
  <INT_DT_MDL_TYP_CD>R</INT_DT_MDL_TYP_CD>
</INTRNL_DATA_MDL>

<INFO_ASSET>
  <INF_ASST_DFN_TX>SQL DDL GOES HERE</INF_ASST_DFN_TX>
  <IA_ID>11115501</IA_ID>
  <INF_ASSET_NM>DDL FOR SYSTEM Q</INF_ASSET_NM>
  <IA_TY_CD>16</IA_TY_CD>
  <INF_ASST_VRS_ID>1</INF_ASST_VRS_ID>
</INFO_ASSET>
```

5. Example SV-11 AP233 XML Data

This section contains example SV-11 AP233 XML data.

5.1. Example Document and Document_assignment

```
<ap233:Document id="id-doc12771" />

<ap233:Identification_assignment id="id-doc12771-idassign">
  <Identifier>11110001</Identifier>
  <Items>
    <ap233:Document ref="id-doc12771" xsi:nil="true" />
  </Items>
</ap233:Identification_assignment>

<ap233:Classification_assignment
id="id-doc12771-idassign-classification_assignment">
  <Items>
    <ap233:Identification_assignment ref="id-doc12771-idassign"
xsi:nil="true" />
  </Items>
  <Assigned_class>
    <ap233:External_class ref="id-Document_identification_code"
xsi:nil="true" />
  </Assigned_class>
</ap233:Classification_assignment>

<ap233:Document_version id="id-docver12771">
  <Of_product>
    <ap233:Document ref="id-doc12771" xsi:nil="true" />
  </Of_product>
</ap233:Document_version>

<ap233:Document_definition id="id-docdef12771">
  <Defined_version>
    <ap233:Document_version ref="id-docver12771" xsi:nil="true" />
  </Defined_version>
  <Initial_context>
    <ap233:View_definition_context ref="id-sv11" xsi:nil="true" />
  </Initial_context>
</ap233:Document_definition>

<ap233:Classification_assignment
id="id-docall12771-classification_assignment">
  <Items>
    <ap233:Document ref="id-doc12771" xsi:nil="true" />
    <ap233:Document_version ref="id-docver12771" xsi:nil="true" />
    <ap233:Document_definition ref="id-docdef12771" xsi:nil="true" />
  </Items>
  <Assigned_class>
    <ap233:External_class ref="id-PHYSICAL-SCHEMA-SPECIFICATION"
xsi:nil="true" />
  </Assigned_class>
</ap233:Classification_assignment>
```

5.2. Example Document_definition_relationship

```

<ap233:Document_definition_relationship>
  <Relating_document_definition>
    <ap233:Document_definition ref="id-docdef445566" xsi:nil="true" />
  </Relating_document_definition>
  <Related_document_definition>
    <ap233:Document_definition ref="id-docdef12771" xsi:nil="true" />
  </Related_document_definition>
</ap233:Document_definition_relationship>

<ap233:Document id="id-doc445566" />

<ap233:Identification_assignment id="id-doc445566-idassign">
  <Identifier>11115501</Identifier>
  <Items>
    <ap233:Document ref="id-doc445566" xsi:nil="true" />
  </Items>
</ap233:Identification_assignment>

<ap233:Classification_assignment
id="id-doc445566-idassign-classification_assignment">
  <Items>
    <ap233:Identification_assignment ref="id-doc445566-idassign"
xsi:nil="true" />
  </Items>
  <Assigned_class>
    <ap233:External_class ref="id-Document_identification_code"
xsi:nil="true" />
  </Assigned_class>
</ap233:Classification_assignment>

<ap233:Document_version id="id-docver445566">
  <Of_product>
    <ap233:Document ref="id-doc445566" xsi:nil="true" />
  </Of_product>
</ap233:Document_version>

<ap233:Document_definition id="id-docdef445566">
  <Defined_version>
    <ap233:Document_version ref="id-docver445566" xsi:nil="true" />
  </Defined_version>
  <Initial_context>
    <ap233:View_definition_context ref="id-sv11" xsi:nil="true" />
  </Initial_context>
</ap233:Document_definition>

<ap233:Classification_assignment
id="id-docall445566-classification_assignment">
  <Items>
    <ap233:Document ref="id-doc445566" xsi:nil="true" />
    <ap233:Document_version ref="id-docver445566" xsi:nil="true" />
    <ap233:Document_definition ref="id-docdef445566" xsi:nil="true" />
  </Items>
  <Assigned_class>
    <ap233:External_class ref="id-INTERNAL-DATA-MODEL" xsi:nil="true" />
  </Assigned_class>
</ap233:Classification_assignment>

```

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```
</Assigned_class>  
</ap233:Classification_assignment>
```