

# SV-5 : Operational Activity to Systems Function Traceability Matrix

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

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*This document defines the mapping between the DODAF SV-5 Operational Activity to Systems Function Traceability Matrix 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-5 Operational Activity to Systems Function Traceability Matrix Product Description in the DoDAF Volume II: Product Descriptions document defined SV-5 as follows.

Operational Activity to Systems Function Traceability Matrix is a specification of the relationships between the set of operational activities applicable to an architecture and the set of system functions applicable to that architecture.

DoDAF Volume II also describes the use of various means for representing SV-5 content.

## 2. SV-5 Concepts

An Operational Activity to Systems Function Traceability Matrix may be used to represent the following concepts in addition to the Operational Activity and System Function concepts defined in other DoDAF Views.

- See Issues - question on Status of a System supporting an Activity (e.g. Red, Green, Yellow)

## 3. SV-5 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-5 Operational Activity to Systems Function Traceability Matrix 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. In DODAF Vol II SV-5 says it supports the status of a System supporting an Activity (e.g. Red, Green, Yellow) but there is no attribute or relation in the CADM 1.02 XML for this concept.
2. How to support the complex CADM Caveated Security Classes needs to be investigated further.

## 4. Mapping SV-5 CADM XML to AP233 XML

This section defines the mapping from the CADM XML representation of SV-5 Operational Activity to Systems Function Traceability Matrix into an ISO AP233 XML representation of that same data. See AP233 for more information on the AP233 XML Schema and the AP233

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EXPRESS schema.

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

### 4.1. SV-5 Mapping

This section describes the mapping for the CADM SV-5 SYSTEM-FUNCTION-TRACEABILITY-MATRIX and SYSTEM-FUNCTION-TRACEABILITY-MATRIX-ELEMENT concepts. They are represented by the SYS\_FUNC\_TRC\_MTRX and SYS\_FCTN\_TRC\_MTXEL XML elements.

See Example SYS\_FUNC\_TRC\_MTRX for example CADM XML SV-5 Operational Activity to Systems Function Traceability Matrix data.

The following table documents the Systems Function Traceability Matrix mapping.

CADM XML Element(s)	AP233 XML Element(s) or Attributes(s)
SYS_FUNC_TRC_MTRX	An AP233 Document with related version and definition as specified in AP233 approach to documents. An AP233 Group is associated with the Document_definition using an AP233 Document_assignment. The Document and related version and definition and the Group and Document_assignment are each classified as <b>SYSTEM-FUNCTION-TRACEABILITY-MATRIX</b> . See the CADM Document mapping for more.
SYS_FUNC_TRC_MTRX / DOC_ID	The identifier for the Document assigned by the owning organization.

**Table 1: Within the SYS\_FUNC\_TRC\_MTRX\_TBL CADM XML Element**

See Example SYS\_FCTN\_TRC\_MTXEL for example CADM XML SV-5 System Function Traceability Matrix Element data.

The following table documents the Systems Function Traceability Matrix Element mapping.

CADM XML Element(s)	AP233 XML Element(s) or Attributes(s)
SYS_FCTN_TRC_MTXEL	An AP233 Group which relates the various AP233 representations of CADM Process-Activities, System Functions, etc. This Group is related to the AP233 Group representing the matrix by being referenced in

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	the Elements child of that Group.
SYS_FCTN_TRC_MTXEL / SYS_FTMTE_ID	The identifier of the Group representing the matrix element.
SYS_FCTN_TRC_MTXEL / SC_CD	The assignment of a Security_classification to the Group representing the matrix element.
SYS_FCTN_TRC_MTXEL / DOC_ID	The AP233 Group representing the matrix element being referenced by a child of the Elements child of the Group representing the matrix. The link to the AP233 Document_definition related to the Group representing the matrix is made by a Document_assignment.
SYS_FCTN_TRC_MTXEL / OPER_PA_ID	A reference to the AP233 representation of the CADM Operational Process Activity within the AP233 Elements child of the Group representing the matrix element.
SYS_FCTN_TRC_MTXEL / SYS_ID	A reference to the AP233 representation of the CADM System within the AP233 Elements child of the Group representing the matrix element.
SYS_FCTN_TRC_MTXEL / SYS_PA_ID	A reference to the AP233 representation of the CADM Process Activity for a System within the AP233 Elements child of the Group representing the matrix element.
SYS_FCTN_TRC_MTXEL / SPA_ID	A reference to the AP233 representation of the CADM System Process Activity within the AP233 Elements child of the Group representing the matrix element.
SYS_FCTN_TRC_MTXEL / TSK_ID	A reference to the AP233 representation of the CADM Task within the AP233 Elements child of the Group representing the matrix element.
SYS_FCTN_TRC_MTXEL / CSC_ID	See issues list.

**Table 2: Within the SYS\_FCTN\_TRC\_MTXEL\_TBL CADM XML Element**

### 5. Example SV-5 CADM XML Data

This section contains example SV-5 CADM XML data.

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### 5.1. Example SYS\_FUNC\_TRC\_MTRX

```
<SYS_FUNC_TRC_MTRX>
  <DOC_ID>40940000</DOC_ID>
</SYS_FUNC_TRC_MTRX>
<DOC>
  <DOC_ID>40940000</DOC_ID>
  <DOC_NM>SAMPLE SV-5</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>38</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>
```

### 5.2. Example SYS\_FCTN\_TRC\_MTXEL

```
<SYS_FCTN_TRC_MTXEL>
  <CSC_ID></CSC_ID>
  <DOC_ID>40940000</DOC_ID>
  <OPER_PA_ID>90909090</OPER_PA_ID>
  <SC_CD>14</SC_CD>
  <SYS_ID>77777777</SYS_ID>
  <SYS_PA_ID></SYS_PA_ID>
  <SYS_FTMTE_ID>69690000</SYS_FTMTE_ID>
  <SPA_ID>34444444</SPA_ID>
  <TSK_ID>07079999</TSK_ID>
</SYS_FCTN_TRC_MTXEL>
```

## 6. Example SV-5 AP233 XML Data

This section contains example SV-5 AP233 XML data.

### 6.1. Example Group

```
<ap233:Group id="id-group20000">
  <Id>99999999</Id>
  <Name>The Group for the matrix</Name>
  <Elements>
    <ap233:Group ref="id-group16650" xsi:nil="true" />
  </Elements>
</ap233:Group>
<ap233:Group id="id-group16650">
  <Id>99991007</Id>
  <Name>The Group for matrix element 1</Name>
  <Elements>
    <ap233:System_functional_element ref="id-sysfunel1111" xsi:nil="true" />
  </Elements>
  <ap233:Activity_method ref="id-actmeth2222" xsi:nil="true" />
</ap233:Group>
```

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```
</Elements>
</ap233:Group>
<ap233:Security_classification_assignment id="id-secclassassn16650">
  <Classification>
    <ap233:Security_classification ref="id-Unclassified" xsi:nil="true" />
  </Classification>
  <Items>
    <ap233:Group ref="id-group16650" xsi:nil="true" />
  </Items>
</ap233:Security_classification_assignment>
```

### 6.2. Example Document\_assignment

```
<ap233:Document_assignment id="id-docassn26022">
  <Assigned_document>
    <ap233:Document_definition ref="id-docdef8700" xsi:nil="true" />
  </Assigned_document>
  <Is_assigned_to>
    <ap233:Group ref="id-group20000" xsi:nil="true" />
  </Is_assigned_to>
  <Role>System_function_traceability_matrix</Role>
</ap233:Document_assignment>
<ap233:Classification_assignment id="id-260229494">
  <Items>
    <ap233:Document_assignment ref="id-docassn26022" xsi:nil="true" />
  </Items>
  <Assigned_class>
    <ap233:External_class ref="id-System_function_traceability_matrix"
xsi:nil="true" />
  </Assigned_class>
</ap233:Classification_assignment>
```