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Revision chart and history log

Version	Date	Reason
1.0	2011-06-30	First release Reflecting Maenad Month 9
2.0	2012-06-30	Second release Reflecting Maenad Month 21
2.1	2012-08-31	Added description on changes between different versions.
3.0	2013-05-31	Third release Reflecting Maenad Month 33
3.0.1	2014-02-07	Release for review
3.1	2014-02-13	Extra release covering EAST-ADL V2.1.12

Approval	Date
Henrik Lönn	2014-02-20

1   Overview

D4.3.1 is the EAST-ADL XML schema which defines the format of EAST-ADL XML files, called EAXML for short. The schema identifies which elements are valid in an EAXML file and how they are related.

This deliverable provides a very brief overview of EAXML, its version history and how it relates to the EAST-ADL domain model. A detailed documentation of XML tags in the EAXML format is not required, because there is a 1:1 correspondence between tags, attributes, etc. in EAXML and meta-classes and their attributes, relations etc. in the EAST-ADL domain model. The domain model documentation in D4.1.1 therefore applies to EAXML as well and no additional extensive documentation for EAXML is required. The main content of D4.3.1 is the actual, machine-readable XML Schema Definition (XSD) for EAXML, which is provided as a separate file.

This version of D4.3.1 introduces the schema for EAST-ADL V2.1.12, i.e. the version accepted by the EAST-ADL association. Earlier versions of the schema were MAENAD project internal.

For the principles of the creation of the XML schema and the tool environment see references [1] and [2].

2	Versions

The EAST-ADL XML schema from the previous ATESST2 project had the name EAST-ADL_100630.xsd and was released 2010-06-30; the specification has evolved during the MAENAD project as follows:

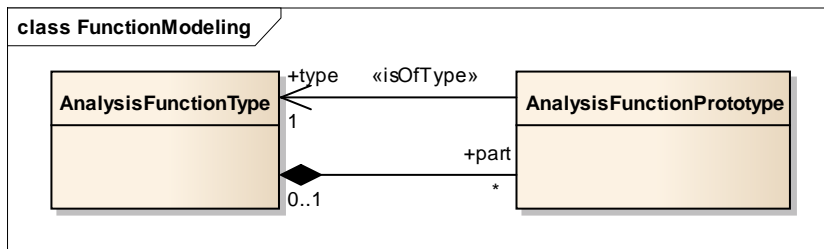| Date	Domain Model version	EAST-ADL XML schema version	Note
2010-06-30	2.1.8	EAST-ADL_100630.xsd	ATESST2
2011-01-30	(M2.1.1) M2.1.9		
2011-06-30	M2.1.9.1	EAST-ADL_M2.1.9.1.xsd	Month 9, should really be called 2.1.9.20110630
2011-08-30	M2.1.9.20110830	EAST-ADL_M2.1.9.20110830.xsd	Schema misses SHORT-NAME.
2012-03-30	M2.1.10		
2012-06-15	M2.1.10.20120629	EAST-ADL_M2.1.10.xsd	Month 21
2013-04-02	M2.1.11	EAST-ADL_M2.1.11.xsd	Month 33
2013-11-28	V2.1.12	eastadl_2-1-12.xsd	Version from EAST-ADL Association

3   Changes in M2.1.11

The EAST-ADL XML schema is generated from the language specification meta-model, hence the changes described in MAENAD D4.1.1 also imply the same changes in the EAST-ADL XML schema.

The generator used to generate the schema is, beginning with version M2.1.11, the EAAdapter generator from EATOP:

- http://code.google.com/a/eclipselabs.org/p/eclipse-auto-iwg/wiki/EATOP

An example of the result for the FunctionModeling concept AnalysisFunctionType, modeled as:

In the meta-model with the part attribute of type AnalysisFunctionPrototype is generated in the XSD as:

```xml
<!-- element group for class functionmodeling::AnalysisFunctionType -->
<xsd:group name="ANALYSIS-FUNCTION-TYPE">
   <xsd:annotation>
      <xsd:documentation>---</xsd:documentation>
      <xsd:appinfo source="stereotypes">atpType</xsd:appinfo>
   </xsd:annotation>
   <xsd:sequence>
      <xsd:element maxOccurs="1" minOccurs="0" name="PARTS">
         <xsd:annotation>
         </xsd:annotation>
         <xsd:complexType>
            <xsd:choice maxOccurs="unbounded" minOccurs="0">
               <xsd:element name="ANALYSIS-FUNCTION-PROTOTYPE"
type="EA:ANALYSIS-FUNCTION-PROTOTYPE"/>
            </xsd:choice>
         </xsd:complexType>
      </xsd:element>
   </xsd:sequence>
</xsd:group>
```

The schema from the MAENAD project differs from the ATESST2 project schema EAST-ADL_100630.xsd with regards to the name-space, see below.

3.1   EAST-ADL_100630.xsd

```xml
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
         xmlns:AR="http://autosar.org/3.1.4"
         targetNamespace="http://autosar.org/3.1.4"
         elementFormDefault="qualified"
         attributeFormDefault="unqualified">
```

3.2   EAST-ADL_M2.1.11.xsd

```xml
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
         xmlns:EA="http://maenad.eu/M2.1.11"
```

```
targetNamespace="http://maenad.eu/M2.1.11"
elementFormDefault="qualified"
attributeFormDefault="unqualified">
```

Note that the name-space has been changed from AR to EA. For releases of the EAST-ADL schema from the EAST-ADL Association the name-space **east-adl.info** is used. Elements in an XML instance of the schema may be without an explicit qualification if an implicit qualification is provided by a default name-space[3]. An extract of an example EAXML file with an AnalysisFunctionType is:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<EAXML xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns="http://maenad.eu/M2.1.11"
      xsi:schemaLocation="http://maenad.eu/M2.1.11 EAST-ADL_M2.1.11.xsd">

---

<ANALYSIS-FUNCTION-TYPE UUID="6e9f6c48-b208-49f6-8774-8c2085263f6f">
      <SHORT-NAME>FAA_T</SHORT-NAME>
      <OWNED-RELATIONSHIPS />
      <TRACEABLE-SPECIFICATION-REFS />
      <CONNECTORS />
      <IS-ELEMENTARY>false</IS-ELEMENTARY>
      <PORTS />
      <PORT-GROUPS />
      <PARTS>
            <ANALYSIS-FUNCTION-PROTOTYPE
                  UUID="8a430e46-f5e5-457d-b780-8ce51da0fec3">
                  <SHORT-NAME>pAA_ABS_FL</SHORT-NAME>
                  <TYPE-TREF DEST="ANALYSIS-FUNCTION-
TYPE">/BBW_Top/BBW_TopPackage_Main/BBW/AA_ABS_T</TYPE-TREF>
            </ANALYSIS-FUNCTION-PROTOTYPE>
      </PARTS>
</ANALYSIS-FUNCTION-TYPE>
```

4   Changes in V2.1.12

The schema generator was updated in version 2.1.12, and this changed the structure of the generated schema. This was done as a part of the process of making EATOP an Eclipse project[4] and aligning the generator with Eclipse Requirement Modeling Framework[5], rather than the AUTOSAR schema generator rules. The changes have limited effect on the EAXML files, but mentioned should be:

-    The DEST attribute of EA:REF extensions, e.g. TYPE-TREF has changed name to TYPE.

The schema of version 2.1.12 has the namespace definition as below.

4.1   eastadl_2-1-12.xsd

```
<xsd:schema xmlns:EA="http://east-adl.info/2.1.12"
            xmlns:xsd="http://www.w3.org/2001/XMLSchema"
            attributeFormDefault="unqualified"
            elementFormDefault="qualified"
            targetNamespace="http://east-adl.info/2.1.12">
```

5   References

[1] Pagel, M., Brörkens, M., Definition and generation of data exchange formats definition and generation of data exchange formats in AUTOSAR. Rensink, A., Warmer, J. (eds.) ECMDA-FA 2006. LNCS, vol. 4066, pp. 52–65. Springer, Heidelberg (2006)

[2] Brörkens, M., Köster, M., Improving the Interoperability of Automotive Tools by Raising the Abstraction from Legacy XML Formats to Standardized Metamodels. Akehurst, D.H., Vogel, R., and Paige, R.F. (eds.) ECMDA-FA 2007. LNCS, vol 4530, pp. 59–67, Springer, Heidelberg (2007).

[3] XML Schema Part 0: Primer Second Edition, W3C Recommendation 28 October 2004, http://www.w3.org/TR/2004/REC-xmlschema-0-20041028/

[4] EATOP Project, http://projects.eclipse.org/projects/modeling.eatop/

[5] Eclipse Requirement Modeling Framework, http://www.eclipse.org/rmf/