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Advancing Traffic Efficiency and Safety through Software Technology phase 2 (ATESST2)

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Revision chart and history log

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0.2	18.08.09	Inputs on Autosar and ISO
1.0	26.08.09	Final release after review

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1 Introduction

This document describes the implementation of the standardization strategy of the ATESST2. It focuses on 1) what was achieved during period 1, namely the proposal of an annex to the OMG MARTE standard, voted favorably end of June 2009; 2) then presents a tentative schedule for period 2.

2 Results from period 1

Standardization efforts in ATESST2 are conducted on the basis of the results of ATESST1, and in the same spirit. Indeed three main tracks are followed:

1. Alignment with AUTOSAR [1]
2. Alignment with ISO26262 [2]
3. Alignment with OMG/MARTE [3]

1. Alignment with the AUTOSAR approach builds on the status by the end of ATESST1. In EAST-ADL, the entities corresponding to software and hardware components are taken from the AUTOSAR standard, but put in a context where system modeling concepts can be used. AUTOSAR compliant software architecture can thus be modeled with support for e.g. variability, requirements, traceability and verification and validation. In this sense the EAST-ADL language complements the AUTOSAR initiative by providing higher level abstraction means of modeling and analysis. This approach is currently being investigated by other projects such as EDONA with production of tooling support. The metamodel of EAST-ADL has been adjusted to follow the rules of AUTOSAR, which makes it possible to work with EAST-ADL and AUTOSAR in the same integrated metamodel. This promotes consistency and makes the EAST-ADL technology more accessible to the AUTOSAR community.

2. Alignment with ISO26262 is done by identifying the needs of ISO26262 and assessing which EAST-ADL entities are relevant to represent the information required by the standard. New entities and relations has been added to EAST-ADL where needed. As the ISO26262 standard does not provide exact requirements on representation, there is no single approach that has to be followed, but there is a flexibility for the user.

3. Alignment with OMG/MARTE has been further conducted based on the initial results obtained at the end of ATESST1, in conjunction with ADAMS project.

The EAST-ADL is aligned with UML2 by construction because EAST-ADL is designed as a UML2 profile, i.e. a specialization of the UML2 language for a specific application domain. One can see this as an implementation of the EAST-ADL in UML2, thus allowing for the use of various available UML2 modeling tools. SysML concepts are reused to manage requirements and plant modeling constructs.

MARTE is a UML2 profile for Modeling and Analysis of Real-Time and Embedded Systems (RTES). It fills several gaps of UML2 for modeling both hardware and software aspects of RTES and performing quantitative analysis on their characteristics.

During period 1, alignment of EAST-ADL and MARTE was further conducted based on results from ATESST1, in conjunction with ADAMS project. ADAMS project is a dissemination project for MARTE in various domains, including automotive (VTEC).

Result from this is an annex to the MARTE standard which explains how MARTE constructs can be used for EAST-ADL-like models. This annex was included in the latest beta 3 version of the MARTE profile (A.3 in the annex A "Guidance example for use of MARTE", p439-457[3]). EAST-ADL has now the same status as AADL in the standard.

OMG architecture board voted for this beta 3 candidate and acknowledged the high level of work done. Thus beta 3 should now be considered as MARTE specs 1.0. Following this, there will be a revision process with a revision task force, dedicated to bug fixing and standard evolution.

3 Plans for period 2

As concerns period 2, CEA which leads the standardization track, wants to go further in the alignment of EAST-ADL with MARTE by leading a reengineering of the EAST-ADL profile implementation, such that the next profile will inherit from MARTE profile.

Tentative date for this is end of 2009 for first suggestion and/or implementation. Benefits from this are threefold :

1. clear sign towards the standardization community of commitment from ATESSST2 partners;
2. enhance the structuring of profile, with a clear distinction between EAST-ADL pure concepts, MARTE-derived ones, and pure MARTE concepts which can complement the EAST-ADL language in some aspects not fully covered (e.g. analysis, platform modeling)
3. enable use of MARTE tools with EAST-ADL models.

There are other milestones for this period. One can foresee other steps in the long run:

- Agenda of AUTOSAR update publications will provide milestones for the harmonization of EAST-ADL and AUTOSAR. The strategy here would be to promote EAST-ADL as the analysis level language of an AUTOSAR modeling approach.
- Further work on the support for ISO26262 will be pursued. In particular, examples will be necessary to assess and explain the use of EAST-ADL to capture the safety-related information.
- Agenda of MARTE revision will also provide milestones. As of June 2009, MARTE standard is entering revision process, with a revision task force to be defined. Probably the main actors that designed the profile will be involved, hence CEA.

4 References

- [1] AUTOSAR, www.autosar.org
- [2] Road vehicles -- Functional safety, ISO/DIS 26262
- [3] UML Profile for MARTE, Beta 3 (ptc/08-06-09)