



Grant Agreement 224442

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

<b>Report type</b>	<b>Deliverable D7.1.2</b>
<b>Report name</b>	<b>Project Presentation Material</b>
<b>Dissemination level</b>	<b>PU</b>
<b>Status</b>	<b>Final</b>
<b>Version number</b>	<b>1.0</b>
<b>Date of preparation</b>	<b>2010-06-03</b>

**Authors****Editor**

MartinTörngren

**E-mail**

Martin@md.kth.se

**Authors**

MartinTörngren

Henrik Lönn

Rolf Johansson

David Servat

Yiannis Papadopoulos

Fulvio Tagliabo

Friedhelm Stappert

Anders Sandberg

Mathias Weber

Mark-Oliver Reiser

**E-mail**

Martin@md.kth.se

**The Consortium**

Volvo Technology Corporation (S)	VW/Carmeq (D)	Centro Ricerche Fiat (I)
Continental Automotive (D)	Delphi/Mecel (S)	
Mentor Graphics Hungary (H)	CEA LIST (F)	
Kungliga Tekniska Högskolan (S)	Technische Universität Berlin (D)	University of Hull (GB)

**Revision chart and history log**

<b>Version</b>	<b>Date</b>	<b>Reason</b>
Initial draft	18/3	Initial deliverable concept
0.1	14/5	First version and request for partner inputs
0.5	25/5	Intermediate deliverable based on inputs
1	3/6	Finalized deliverable

**Table of contents**

---

Advancing Traffic Efficiency and Safety through Software Technology phase 2 (ATESST2) .....	1
Authors .....	2
Revision chart and history log .....	3
Table of contents .....	4
1 Introduction .....	5
2 Input from previous ATESST2 work .....	6
3 Main Chapters .....	7
3.1 The EAST-ADL web-site .....	7
3.2 Newsletters .....	7
3.3 Published papers .....	7
3.4 Deliverables incl. the EAST-ADL language specification .....	7
3.5 Concept presentations, that describe the various concepts part of the EAST-ADL language .....	8
3.6 Example models .....	8
3.7 Tools and plugins .....	9
3.8 Project brochure and poster .....	9
4 Conclusions and Contribution to overall ATESST2 objectives .....	10

**1 Introduction**

This deliverable, Project Presentation Material, is produced as part of the dissemination task, 7.1 (part of work package 7: Dissemination, Exploitation and Standardization).

In essence, this deliverable provides a concise description of presentation material developed within the project and provides references to this material. The intention is to make all material available on the ATESST2 project web site.

The project presentation material includes,

- Newsletters
- A list of published papers which are available through the relevant publishers
- Deliverables including the EAST-ADL language specification
- Concept presentations that describe the various concepts part of the EAST-ADL language
- Example models
- Tools and plugins
- Project leaflet and poster
- The EAST-ADL web-site, providing the above material as well as more information about the ATESST2 project.

The project presentation material considers the various stake-holders as described in Deliverable D7.1 – Dissemination plan.

Particular emphasis has been placed on providing explanation of new concepts and in sharing the EAST-ADL specification. This has been considered important to explain the EAST-ADL language to related and parallel research projects, and to industries interested in the EAST-ADL.

Publications have targeted industrial venues such as SAE and FISITA for dissemination of results. The topic treated by ATESST2 is in focus both from industrial and research point of views. There are several other research projects that address various concerns of safety critical automotive systems. The projects typically have different focus and involve several disciplines. Many of the projects complement each-other and there are also in many cases some overlap. There is thus a strong potential for synergy in achieving cooperation between projects. The EAST-ADL language specification has been shared with several other projects and also been adopted by several projects such as EDONA, TIMMO and CESAR.

Emphasis has also been placed on interactions with a number of research/engineering communities that are related to the EAST-ADL approach. This is important since the EAST-ADL supports embedded systems engineering, and thus cuts across separated concerns such as software, control, product-line and safety engineering. The publications encompass problem formulations, state of the art surveys, intermediate and final results, meta-model and tools, as well as example systems and case-studies.

Following the established dissemination principles (D7.1), deliverables, relevant publications and other results will be made available on the project web-site and through direct communication to the identified stakeholders.

This deliverable is complemented by other deliverables part of task 7.1.

D7.1.1: Dissemination plan (D:= end of Sept.)

D7.1.2: Project presentation material (D:= End of project)

List of planned and performed dissemination actions

**2 Input from previous ATESST2 work**

---

This is one of the last deliverables in ATESST2. All the project presentation material mentioned in this deliverable has been developed throughout and as part of the ATESST2 project.

---

**3 Main Chapters**

---

This chapter provides a brief description of the various types of presentation material developed in the project.

---

**3.1 The EAST-ADL web-site**

---

The project web-site – [www.atesst.org](http://www.atesst.org) – provides most of the material described in this deliverable on-line (or at least information on where to find this information, applicable when the copyright is held by some publisher).

The web-site also provides additional information about the ATESSST2 project such as an overview of the project, a list of partners and information about the predecessor project – ATESSST1.

---

**3.2 Newsletters**

---

During 2010 a major dissemination effort was to set with regular electronic newsletters that describe the results of the project. The newsletters each have a theme that focuses on the various aspects of the EAST-ADL language such as safety, requirements, variability etc.

The following is the list of (published and planned) newsletters:

- EAST-ADL overview
- The relation between AUTOSAR and EAST-ADL
- Variability management in EAST-ADL and its connection to the AUTOSAR variability
- EAST-ADL support for the development of safety critical systems in compliance with ISO DIS 26262
- Modeling of requirements and verification & validation information, and requirements exchange
- Plant modeling and cooperative systems
- EAST-ADL tool support and plugins
- EAST-ADL exploitation

All newsletters will be made accessible on-line.

---

**3.3 Published papers**

---

The project has resulted in well over 20 publications including book chapters (4), journal papers (4), conference papers (15), PhD thesis (3) and technical magazine articles (1).

These are referenced on the web site.

---

**3.4 Deliverables incl. the EAST-ADL language specification**

---

All public deliverables are listed and will be made available on-line.

A major source of information is provided by the EAST-ADL language specification (referred to as the EAST-ADL Domain Model) and the specification of its implementation as a UML2 profile.

### 3.5 Concept presentations, that describe the various concepts part of the EAST-ADL language

---

A number of presentations were prepared during the project in order to provide introductory presentations of the concepts for model-based development that are included and integrated in the EAST-ADL language. We refer to these presentations as Concept presentations. They present the following aspects of the EAST-ADL language:

- Overview and Structure
- The Vehicle abstraction level of the EAST-ADL
- The Analysis abstraction level of the EAST-ADL
- The Design abstraction level of the EAST-ADL
- The Implementation abstraction level of the EAST-ADL
- The Requirements support of the EAST-ADL
- The Variability support of the EAST-ADL
- The Dependability support of the EAST-ADL
- The Behavior support of the EAST-ADL
- The tools and meta-modeling aspects and support of the EAST-ADL
- The Analysis and optimization support of the EAST-ADL
- The relation between EAST-ADL and AUTOSAR

All presentations are available on-line.

---

### 3.6 Example models

---

Throughout the project a large number of example models have been produced for internal verification and validation, as well as external dissemination.

Models currently exist for the following example systems:

- EPB – Electronic Parking Brake.
- Wiper system
- Cruise control systems
- Brake-by-wire system
- Cooperative braking

Some of these examples are used in concept presentations, articles and in deliverables to explain EAST-ADL usage and concepts. For example, the Wiper model is used in Deliverable D3.1 (appendix 3.3) and the Cruise control model is described in detail in Deliverable D6.1.2. The Brake-by-wire system is included in a tutorial that has been developed as an entry point for those who are new to the EAST-ADL.

The Brake-by-wire tutorial describes how to use the UML tool Papyrus for system modeling with EAST-ADL, how safety analysis can be carried out using the plug-in developed for the HiP-HOPS tool, and how model transformation between Simulink and EAST-ADL can be achieved. It is assumed that the user is familiar with basic UML concepts and diagrams such as class and package diagrams. The EAST-ADL specifications, available at [www.atesst.org](http://www.atesst.org), can also be used as a reference.

This EAST-ADL variability example presents a fictitious car product line to illustrate the EAST-ADL variability modeling concepts. The example demonstrates several important use cases of defining variability within a system model's design architecture and of propagating this variability up to higher containment levels in the FDA and then to the vehicle level. On the vehicle level, the main variability definition is the core technical feature model, which defines the product line's variability on a global level for the complete system - but still from a technical perspective. In addition, another feature model called Customer\_FM is defined to provide an end-customer-oriented view on the technical variability of the core technical feature models. Configuration decision models define how to map the variability from this customer-oriented feature model to the core technical feature model and from that to the FDA (called artifact level).

---

### **3.7 Tools and plugins**

---

A larger tooling effort has been carried out using the open source Eclipse based UML-tool Papyrus and with plugins that provide additional functionalities, such as for example exchange between Matlab/Simulink and Papyrus EAST-ADL models.

This toolset will be made available on-line. The intention is also to make the safety analysis and optimization tool HipHops available on line in the form of an evaluation version.

---

### **3.8 Project brochure and poster**

---

During the project, a poster and brochure that present the project, the EAST-ADL language and tools were prepared. These will be made available on-line.

---

**4 Conclusions and Contribution to overall ATESST2 objectives**

---

The project presentation material provided has largely served its purposes in providing information about the EAST-ADL language, its various parts and related tools.

The project has received positive feedback on the concept presentations. The number of publications exceeds the target set and the number of interactions with related projects has also been more extensive than initially anticipated. There are several projects acting in the area of model-based engineering, and several of them have adopted, or are evaluating the EAST-ADL for adoption.

A challenge for the dissemination and the project as a whole has been to provide example models and tutorials, useful for more in-depth end-user studies and experiences of the language. The challenge has been related to the fact that the language as such has been evolving during the project and so has the tool support. This has made it difficult to develop and maintain living examples, and of course also more difficult to develop integrated larger scale examples. A better way to handle this is required for follow-up projects. One possible approach is to use simplified meta-models, derived from the domain model, and implemented in dedicated domain-specific language tools. This would make it easier to experiment at the engineering user-level with the various concepts and constructs part of the EAST-ADL language.