



MAENAD



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Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles

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Revision chart and history log

Version	Date	Reason
1.0	2011-08-31	First intermediate release
2.0	2012-08-31	Second intermediate release
3.0 prel	2014-02-18	Final M42 release for review
3.0	2014-02-25	Final M42 release

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1 Introduction

This deliverable provides a description of the presentation material that is developed within the MAENAD project and provides references to this material.

The project presentation material includes:

- Newsletters
- Concept presentations that describe the various conceptual parts of the EAST-ADL language
- Public project deliverables
- IGI Encyclopedia article
- White-paper on EAST-ADL
- Published papers
- The www.maenad.eu web site, providing the above material as well as more information about the MAENAD project.
- Poster, presenting MAENAD
- Wikipedia article on EAST-ADL

Before describing the actual presentation material, let us take a brief look at how dissemination activities are being organized and monitored within the MAENAD project:

The presentation material is closely related to the dissemination actions that take place in the project. Dissemination activities are monitored in the global action list Excel document, which includes four sheets dedicated to dissemination:

Newsletters: Includes planning of newsletters, including timing and responsible persons per section

Publication ideas: Includes publications under development, or topics that could lead to publications.

Disseminations: Performed dissemination activities, e.g. papers, presentations.

Dissemination venues: Identified venues where we should submit publications.

2 Presentation material

In this section, an overview of the project presentation material is given.

2.1 Newsletters

During the predecessor projects, ATESSST, and ATESSST2, an e-mail list (sig-adl) was set up, and during ATESSST2, 8 newsletters were distributed. Based on feedback from the development and reception of these newsletters, the following conclusions were made:

- The newsletters should avoid pictures, since they have a tendency to get trapped by anti-virus programs.
- The newsletters should be short and concise, and encourage further reading.
- We need results to publish newsletters, but to avoid that all newsletters are sent out at the end of the project, when all results are finished, they should be synchronized with project milestones and deliverables, as partial results will be available then.

Based on these conclusions the newsletters are planned as follows:

- After each milestone a newsletter is produced, based on results from this milestone. This includes deliverables that are released in this milestone.
- A draft of the newsletter should be available at the Milestone meeting, and the newsletter released when all deliverables are finished.

So far, nine newsletters have been published, they are available on the maenad.eu website “News Page”.

1. Information on project start, press release (sent 2010-12-01)
2. Initial phase: Requirements and needs, EAST-ADL language refinement (2010-02-04)
3. Demonstrators, New language concepts in discussion, methodology (2011-05-06)
4. Language and profile update, methodology, engineering scenarios, modeling platform update, enhancement of Language Support for Analysis, V&V (2011-10-24)
5. Language and profile update, EATOP, Analysis and synthesis algorithms for fully electric vehicles, Methodology (2012-04-02)
6. Information about public workshop, LinkedIn group, Language and profile update, case studies and tool support. (2012-10-02)
7. Language and profile update, Analysis concepts, Methodology (2013-04-08)
8. Milestone 8 update (2013-10-01)
9. Open Workshop coverage (2013-11-22)

2.2 Concept presentations

MAENAD has published a set of so called concept presentations, covering various EAST-ADL concepts at different level of detail. The purpose is to provide an easily accessible overview and introduction to EAST-ADL. The concept presentations holds also describes EAST-ADL tooling results from the MAENAD project, regarding modeling, synthesis and analysis. The following presentations are currently available:

Introduction

- Overview and Structure
- The relation between EAST-ADL and AUTOSAR
- The Behavior support of EAST-ADL
- The tools and meta-modeling aspects and support of EAST-ADL
- The Methodology of EAST-ADL
- The Variability support of EAST-ADL
- The Requirements support of EAST-ADL

Examples

- Range and mode control
- Regenerative braking
- Propulsion

Analysis Support

- FEV Analysis
- Timing Analysis
- ASIL decomposition
- Dependability analysis
- Optimization
- Behavior: External tools for behavior
- Behavior: Native behavior
- Behavior: Simulation

Tools

- EATOP Tooling
- MAENAD Modeling Workbench
- MAENAD Analysis Workbench
- MetaEdit+ implementation of EAST-ADL
- SystemWeaver implementation of EAST-ADL

2.3 Project deliverables

In the description of work, the public deliverables in Table 1 are defined. The intention is to publish these deliverables on the www.maenad.eu web site, as they are released. This includes deliverable D4.1.1, which is the EAST-ADL language specification.

Table 1. List of public deliverables

Del. no.	Deliverable name
D2.1.1	Engineering Scenarios and Requirements for FEV
D2.2.1	Design Methodology
D3.1.1	Language Concepts Supporting Engineering Scenarios
D3.2.1	Analysis and Synthesis Concepts Supporting Engineering Scenarios
D4.1.1	EAST-ADL Language Specification
D4.2.1	EAST-ADL profile for MARTE
D4.3.1	EAST-ADL XML Schema
D5.1.1	MAENAD Modelling Workbench
D5.2.1	MEANAD Analysis Workbench
D5.3.1	Tool adaptations for EAST-ADL
D6.1.1	Preliminary Case study Definition and metrics
D6.1.2	Case study Definition and metrics
D6.1.3	Case study analysis and safety assessment
D7.1.1	Project presentation material
D7.2.2	Standardization plan and activities

2.4 White paper of EAST-ADL

During the ATESS2 project, a gap was identified for stakeholders interested in EAST-ADL at a more detailed level than the concept presentations (compare section 2.2), but without having to go through the language specification (compare section 2.3). A solution in terms of a *white paper* was proposed within MAENAD, a document that describes e.g. the general benefits of using of EAST-ADL, why the language is designed the way it is, and how the different language extensions work, in a condensed publication. The target size of the paper was approximately 50 pages.

The white paper was developed, partly based on gathering of available material such as the IGI Encyclopedia article (described in the next section), but also new material. It has been internally reviewed by new partners in MAENAD, and also updated based on feedback from external users.

The white paper was released during the last MAENAD year, and is available from the maenad.eu web site.

The logo for EAST-ADL, featuring the text "EAST-ADL" in a bold, blue, sans-serif font. The letter "A" is stylized with a vertical line through its center.

EAST-ADL –
An Architecture Description Language for
Automotive Software-Intensive Systems

White Paper
Version 2.1.12

Hans Blom, Henrik Lönn (Volvo GTT, SE), Frank Hagl (Continental, DE),
Yiannis Papadopoulos (University of Hull, GB), Mark-Oliver Reiser (Technische Universität Berlin,
DE), Carl-Johan Sjöstedt, De-Jiu Chen (KTH Royal Institute of Technology, SE),
Ramin Tavakoli Kolagari (Ohrn Hochschule, DE)

EAST-ADL White Paper 2.1.12

Figure 1: The EAST-ADL white paper

2.5 The IGI Encyclopedia Article

IGI Global is a publisher of journals, books, encyclopedias, and teaching cases on information science and IT management. MAENAD got invited to write an article about EAST-ADL. This is a 13-page document describing EAST-ADL in overview, background, modeling concepts (Functional Abstraction, Timing Modeling, Requirements Modeling, Functional Safety Modeling, Variability Modeling and Behavior Constraint Modeling), methodology and related concepts. The article was prepared in April 2012, and updated based on feedback August 2012.

2.6 The MAENAD web-site

The screenshot shows the homepage of the MAENAD website. At the top right, the URL www.maenad.eu is displayed. The main heading is the word "MAENAD" in a large, blue, sans-serif font, with a vertical dashed line through the letter 'A'. Below the heading, the text "MAENAD FP7 Project" is followed by the subtitle "Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles". A navigation menu on the left side includes links for "MAENAD Home", "MAENAD Partners", "MAENAD Publications", and "MAENAD Links". The main content area contains the text "MAENAD is an FP7 project funded by the European Commission." and a paragraph about Fully Electric Vehicles (FEV). It also includes a call to action to check the "News page" and a list of three bullet points: "Read the project abstract", "The project description provides an information page about the project.", and "See the press release informing about the start of MAENAD." At the bottom, the contact email "maenad-coordinator@maenad.eu" is provided.

Figure 2: The maenad.eu website

The www.maenad.eu website was opened shortly after the project start, and contains information about the project. The objective is to have all the public dissemination material described in this deliverable available here.

According to web site statistics from the site provider, there is an increasing interest in the project, with around 50 visits per day, see Figure 1.

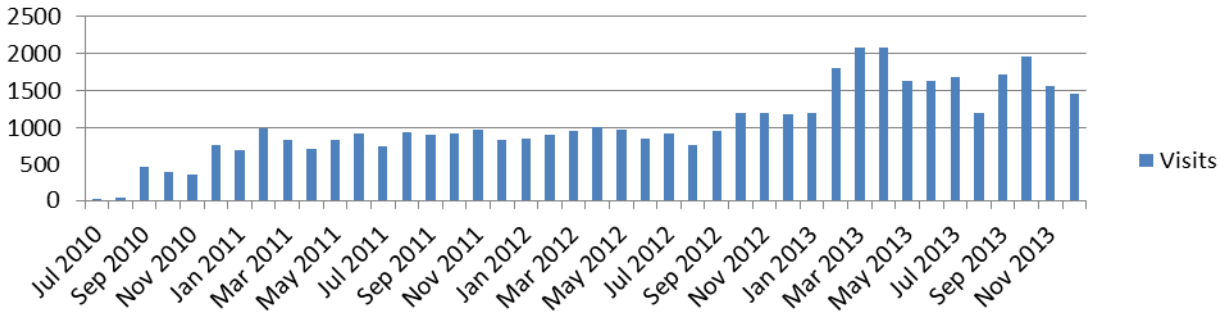


Figure 1. Web site statistics: True visits¹per month

¹ Visits is the number of individual visitors of the site. Whenever a request is made to the server from a given visitor, the amount of time since a previous visit by the same visitor is recorded. Only if this time difference is greater than 30 minutes, it is considered a new Visit.

2.7 Poster

A poster has been developed and shown in various contexts relevant for MAENAD. The first occasion was at the TIMMO-2-USE workshop.

The first poster shows project administrative information and overall project approach. The second poster goes more into technical details through a basic EAST-ADL model with relevant concepts.

MAENAD
Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles

Motivation and Objectives

Fully Electrical Vehicles pose new challenges to the engineering of the electrical and embedded systems. Chassis and powertrain systems will have more authority, share sensor resources, and rely less on mechanical decision. Complex power management and optimization algorithms are needed to ensure durability of components, high performance, range of travel and low energy consumption. To succeed in meeting these challenges, appropriate engineering support is required.

The objective of MAENAD is to

- Assist the safety process defined in the ISO 26262 automotive safety standard
- Provide effective prediction of quality attributes (dependability and performance)
- Provide tool support for the automated exploration of design spaces (dependability, performance and cost optimization).

Project Plan, Milestones, and Deliverables

The project will provide modeling concepts and tooling based on identified engineering needs and a methodology defined in the project. An electrical vehicle will be used to assess and provide feedback on project results.

Project Plan, Milestones, and Deliverables

- Identifying engineers' needs regarding development, verification and validation of PEV systems.
- Definition of a methodology for using EAST-ADL in the context of PEV.
- Refining EAST-ADL to meet identified engineering needs and methodology
- Definition of an EAST-ADL domain language metamodel according to AUTOSAR.
- Definition of an EAST-ADL UML profile and AUTOSAR compliant XML exchange format
- Development and refinement of tools for supporting EAST-ADL.
- Validation of concepts and tools on prototype electric vehicle.

Achievements

- Identification of requirements for modeling support for ISO26262 and relevant PEV standards
- Identification of methodology elements supporting ISO26262 in an EAST-ADL context
- Tool development for EAST-ADL based on Papyrus UML, System/Modeler and Metacolt
- Analysis and synthesis tooling including FTA/RMEA, ADL decomposition and AUTOSAR generation
- Modeling examples illustrating PEV and safety concerns

Organizational Information

Budget	4 ME	Partners:	Vehicle Manufacturers, Volvo Technology, Centro Ricerche Fiat
Duration	36 months		Automotive Suppliers, Consultants, Continental, Delphi/Meccel, JS Group
CoD / Unit	INRSO / ES		Tool Vendors, MetaCase, Polestar, Systemic
Coordinator	Herrnik Labs, Volvo Technology		Research Institutes and Universities, OEA LIST, KTH Stockholm, TU Berlin, University of Hull
Funding	2 ME		
Start	September 2010		
Contact #1	FP7-010-000087		
Contact	herrnik.labs@volvo.com		
Website	www.maenad.eu		

MAENAD
Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles

EAST-ADL Model Organization

On Vehicle Level, the feature model represents the externally visible properties of the vehicle.

On Analysis Level, the abstract functional definition of the vehicle systems is captured, to allow analysis of vehicle context independently of detailed design.

On Design Level, the design architecture represents the detailed design of the functional context and target hardware.

The Implementation Level is based on AUTOSAR, and thus contains the software architecture and target hardware.

The Environment Model captures the surrounding environment including vehicle mechanics and external systems. This model is common to all abstraction levels, as the external environment is the same, regardless of representation of the EC architecture. Sensors and actuators on the respective abstraction level serve as interface to the environment model.

Legend:

1 Entities on a lower abstraction level are realizations of entities on the higher level. This is modeled on Analysis Level.	3 Algorithms and functionality, as well as interactions with the environment are represented in a hardware-independent way on Analysis Level.	5 Functional elements of the FunctionalDesignArchitecture are allocated to components on the HardwareDesignArchitecture. For example, a hardwareFunction may be allocated to a sensor and a LocalDeviceManager to an Node.
2 Requirements can be allocated to any entity in the model. Requirements can be derived to more detailed requirements or refined to constraints or models.	4 Transfer functions and abstract aspects of middleware and platform and hardware components are represented by BasicFunctions and hardwareFunctions (respectively). DesignFunctions and LocalDeviceManagers represent application functionality for regular applications and sensor/actuator interfacing (respectively).	6 Software architecture is represented using AUTOSAR elements.
7 The EC System model on the respective abstraction level is connected to a shared environment model using ClumpConnectors that act as glue and the component boundaries.		

Orthogonal aspects like requirements, variability, VBI, and traceability information are associated to any entity, including AUTOSAR entities.



Figure 3. MAENAD Posters

2.8 Wikipedia article on EAST-ADL

Although Wikipedia is not considered to be a very reliable source, many people use Wikipedia as a first place to get an overview of a subject and find references to further reading. Hence, it is important to keep this information correct. A general update on the Wikipedia article of EAST-ADL was made, including information about MAENAD. The article was reviewed within MAENAD before being published. The page is available at:

<http://en.wikipedia.org/wiki/EAST-ADL>

For a snapshot, see Figure 4.

Overview [edit]

EAST-ADL is an [Architecture Description Language \(ADL\)](#) for automotive embedded systems, developed in several European research projects. It is designed to complement [AUTOSAR](#) with descriptions at higher level of abstractions. Aspects covered by EAST-ADL include vehicle features, functions, requirements, variability, software components, hardware components and communication^[1]. Currently, it is maintained by the EAST-ADL Association^[2] in cooperation with the European FP7 MAENAD^[3] project.

EAST-ADL contains several abstraction levels. The software- and electronics-based functionality of the vehicle are described at different levels of abstraction. The proposed abstraction levels and the contained elements provide a separation of concerns and an implicit style for using the modeling elements. The embedded system is complete on each abstraction level, and parts of the model are linked with various traceability relations. This makes it possible to trace an entity from feature down to components in hardware and software.

EAST-ADL is defined with the development of safety-related embedded control systems as a benchmark. The EAST-ADL scope comprises support for the main phases of software development, from early analysis via functional design to the implementation and back to integration and validation on vehicle level. The main role of EAST-ADL is that of providing an integrated system model. On this basis, several concerns are addressed:

- Documentation, in terms of an integrated system model.
- Communication between engineers, by providing predefined views as well as related information.
- Analysis, through the description of system structure and properties.

Behavioural models for simulation or code generation are supported as references from EAST-ADL functions to external models, such as a subsystem in [MATLAB/Simulink](#)^[4].

EAST-ADL Spotlight [edit]

EAST-ADL is a domain-specific language using meta-modeling constructs such as classes, attributes, and relationships.

It is based on concepts from [UML](#), [SysML](#) and [AADL](#), but adapted for automotive needs and compliance with [AUTOSAR](#).

There is an EAST-ADL UML2 profile which is used in UML2 tools for user modeling. The EAST-ADL definition also serves as the specification for implementation in domain-specific tools.

Organisation of EAST-ADL Meta-Model [edit]

The diagram illustrates the EAST-ADL meta-model organized into four abstraction levels: Vehicle Level, Analysis Level, Design Level, and Implementation Level. These levels are contained within an EnvironmentModel. The Vehicle Level includes a TechnicalFeatureModel. The Analysis Level includes a FunctionalAnalysisArchitecture. The Design Level includes FunctionalDesignArchitecture and HardwareDesignArchitecture. The Implementation Level includes AUTOSAR Application SW, AUTOSAR Basic SW, and AUTOSAR HW. To the right, Extensions ... are shown for Requirements, Variability, Timing, and Dependability. Arrows indicate 'Data exchange over ports' between levels and 'Allocation' from higher levels to the Implementation Level.

The EAST-ADL meta-model is organized according to 4 abstraction levels:

- Vehicle level contains modeling elements to represent intended functionality in a solution-independent way
- Analysis level represents the abstract functional decomposition of the vehicle with the principal internal and external interfaces.
- Design level has the detailed functional definition, a hardware architecture and allocations of functions to hardware.
- Implementation level relies on AUTOSAR elements and does not have EAST-ADL-specific constructs for the core structure.

Figure 4: The EAST-ADL Article on Wikipedia snapshot

2.9 Workshops

MAENAD has exchanged in Web-based workshops with other projects to discuss and harmonize concepts. Examples includes timing discussions with TIMMO-2-USE and methodology and safety discussions with SAFE, where MAENAD concepts were disseminated and TIMMO-2-USE and SAFE feedback was collected.

An open workshop was held in Berlin in September 2012 together with the projects AMALTHEA, TIMMO-2-USE and SAFE. The goal of the workshop was to present results and plans from the projects to an interested audience. The projects explained the challenges addressed and the solutions provided in the areas of methodology, representation and tooling.



Figure 5. Plenary and walk-around sessions from the AMST Workshop 2012.

Another open workshop was arranged in November 2013 together with EAST-ADL Association, Hosted by Volvo GTT/ATR in Gothenburg. The purpose was to describe EAST-ADL, show concrete examples of its usage along with various tools that support EAST-ADL and assist, automate and rationalise part of the system design process. The workshop also discussed and shared experiences on industrial deployment of EAST-ADL and development of automotive systems. Three formats were included, a set of plenary presentations, a walk-around session with tool demos and a panel discussion.

2.10 Publications

Main results from the project will be disseminated through scientific publications. The goal is to produce 5 collaborative journal papers, 15 collaborative conference papers within the project.

Below are the publications that until now have been issued.

2.10.1 Journal papers

Chen, DeJiu; Johansson, Rolf; Lönn, Henrik; Blom, Hans; Walker, Martin; Papadopoulos, Yiannis; Torchiaro, Sandra; Tagliabo, Fulvio; Sandberg, Anders: Integrated Safety and Architecture Modeling for Automotive Embedded Systems. e&i – elektrotechnik und informationstechnik, Volume 128, Number 6, Automotive Embedded Systems. Springer Wien, 2011. DOI 10.1007/s00502-011-0007-7.

Papadopoulos Y., Walker M., Parker D., Rude E., Hamann R., Uhlig A., Grätz U., Lien R. (2011) Engineering Failure Analysis & Design Optimisation with HiP-HOPS, Journal of Engineering Failure Analysis, 18 (2): 590-608, Elsevier Science, ISSN: 1350-6307

Adachi M., Papadopoulos Y., Sharvia S., Parker D., Tohdo T. (2011) An approach to optimization of fault tolerant architectures using HiP-HOPS, Software Practice and Experience, 41: n/a DOI: 10.1002/spe.1044, 36 pages, Wiley

N.Mahmud, Walker M., Papadopoulos Y. (2012), Compositional synthesis of Temporal Fault Trees from State Machines, ACM SIGMETRICS Performance Evaluation Review, 39 (4):79-88. 2012. ISSN:0163-5999

DeJiu Chen, Lei Feng, Tahir Naseer Qureshi, Henrik Lönn, Frank Hagl. An Architectural Approach to the Analysis, Verification and Validation of Software Intensive Embedded Systems. Journal: Computing, Springer. 2013. DOI: 10.1007/s00607-013-0314-4

Walker M., Reiser M-O., Tucci-Piergiovanni S., Papadopoulos Y., Lönn H., Mraidha C., Parker D., Chen D., Servat D.: Automatic Optimisation of System Architectures using EAST-ADL Journal of Systems and Software, Elsevier. 2013. DOI: 10.1016/j.jss.2013.04.001.

L. Azevedo, D. Parker M. Walker Y. Papadopoulos, R.E Araújo, Assisted Assignment of Automotive Safety Requirements, IEEE Software. Issue: 99. 2013. DOI 10.1109/MS.2013.118

2.10.2 Conference papers

Margot Bittner, Mark-Oliver Reiser, Helko Glathe, Matthias Weber: Manufacturer-Supplier Requirements Synchronization Using Exchange Containers and Multi-Level Systems. In: Proceedings of the 18th IEEE International Requirements Engineering Conference (RE 2010), 2010.

Tagliabo, Fulvio; Torchiaro, Sandra; Lönn, Henrik; Johansson, Rolf; Chen, De-Jiu; Papadopoulos, Yiannis; Walker, Martin; Sandberg, Anders: Modelling Support for the Automotive Functional Safety Standard, Sixth International Conference on Dependability and Computer Systems DepCoS-RELCOMEX June 27- July 1 2011

Qureshi, Tahir Naseer; Chen, DeJiu; Lönn, Henrik; Törngren, Martin: From EAST-ADL to AUTOSAR Software Architecture: A Mapping Scheme, the 5th European Conference on Software Architecture (ECSA 2011), Essen, Germany, 13-16 September 2011.

Papadopoulos, Yiannis; Walker, Martin; Lönn, Henrik: Automatic allocation of system safety requirements to components of a system architecture using HiP-HOPS, Model Based Safety Assessment Workshop, Toulouse France 14-17/03/2011

Sharvia S., Papadopoulos Y. (2011), Integrated Application of Compositional and Behavioural Safety Analysis, IEEE Dependable Computing Systems (DEPCOS'11), Advances in Intelligent and Soft Computing, AISC 97: 179-192, DOI: 10.1007, ISBN 978-3-642-21393-9, Springer.

Mahmud N., Walker M., Papadopoulos Y. (2011) Compositional synthesis of Temporal Fault Trees from State Machines, 6th Annual IEEE Conference Availability, Reliability and Security (ARES 2011), DYADEM workshop, Vienna, Austria, DOI 10.1109/ARES.2011.89, p.p. 429-435, ISBN: 978-0-7695-4485-4, IEEE publications

Sharvia S., Papadopoulos Y. (2011), IACoB-SA: an Approach towards Integrated Safety Assessment, 7th Annual IEEE Conference on Automation Science and Engineering (CASE 2011), Trieste, Italy, proceedings in electronic volume with ISBN 978-1-4577-1732-1/11/, IEEE publications

Papadopoulos Y., Adachi M., Sharvia S., Parker D., Tohdo T., Walker M. (2011) Optimization of fault tolerance using model transformations, 7th International Conference On Computer Science & Information Systems, Athens, June 2011, 10 pages, to be published as book chapter.

Nggada S.H., Parker D. J., Papadopoulos Y. (2010) Dynamic Effect of Perfect Preventive Maintenance on System Reliability and Cost Using HiP-HOPS, IFAC-MCPL 2010, 5th Conference On Management And Control Of Production And Logistics, September 2010, Coimbra – Portugal, published in ifac-paperonline.net.

Eric Armengaud, Markus Zoier, Andreas Baumgart, Matthias Biehl, DeJiu Chen, Gerhard Griessnig, Christian Hein, Tom Ritter, Ramin T. Kolagari Model-based Toolchain for the Efficient Development of Safety-Relevant Automotive Embedded Systems SAE 2011 World Congress & Exhibition, April 2011, Detroit, USA

Qureshi Tahir Naseer, Chen, De-Jiu, Persson Magnus and Törngren Martin, Towards the Integration of EAST-ADL and UPPAAL for Formal Verification of Embedded System Architectures, in Workshop on ime Analysis and Model-Based Design, from Functional Models to Distributed Deployments (TiMoBD). Taipei, Taiwan, October 9, 2011.

Parker D., Walker M., Azevedo L., Papadopoulos Y., Araujo R. (2013) *Automatic Decomposition and Allocation of Safety Integrity Levels using a Penalty-based Genetic Algorithm*. Proceedings of the 26th International Conference on Industrial, Engineering, and other Applications of Applied Intelligent Systems (IEA/AIE 2012): Special session on Decision Support for Safety-Related Systems. 17-21st June, Amsterdam, The Netherlands.

Qureshi Tahir Naseer, Chen, De-Jiu and Törngren Martin, A timed automata-based method to analyze EAST-ADL timing constraint specifications, 8th European Conference on Modelling Foundations and Applications, ECMFA 2012;Kgs. Lyngby; 2 July 2012 through 5 July 2012

Oscar Ljungkrantz, Henrik Lönn, Hans Blom, Cecilia Ekelin and Daniel Karlsson: Modelling of Safety-Related Timing Constraints for Automotive Embedded Systems. ASCoMS – Workshop on Architecting Safety in Collaborative Mobile Systems, Safecomp 2012

Carl Bergenhem, Rolf Johansson and Henrik Lönn: A novel modelling pattern for establishing failure models and assisting architectural exploration in an automotive context, ASCoMS – Workshop on Architecting Safety in Collaborative Mobile Systems, Safecomp 2012

Juha-Pekka Tolvanen, Steven Kelly: "Domain-Specific Modeling Languages for Embedded Systems Development", in: Proceedings of MeCoES - Metamodeling and code generation for embedded systems, workshop at Embedded Systems Week, 7 Oct 2012, University of Paderborn, 2012

Andreas Abele, Henrik Lönn, Mark-Oliver Reiser, Matthias Weber, and Helko Glathe: "EPM: a prototype tool for variability management in component hierarchies", in: "Proceedings of the 16th International Software Product Line Conference" (SPLC '12), Vol. 2. ACM, New York, NY, USA, pp. 246-249, 2012.

Ernest Wozniak, Chokri Mraidha, Sebastien Gerard, "Guided Task Model Construction for Automotive Systems based on Time Budgets" Work-in-Progress at 17th International Conference Emerging Technology and Factory Automation (ETFA), September 17-21, Cracovie, Poland

Asma Mehiaoui, Sara Tucci Piergiovanni, Jean-Philippe Babau, Laurent Lemarchand: "Optimizing the Deployment of Distributed Real-Time Embedded Applications". In Proceedings of the 18th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications, pages 400-403, August 20 - 22, 2012, Seoul, Korea

Ernest Edifor, Martin Walker, Neil Gordon: Quantification of Priority-OR Gates in Temporal Fault Trees, Frank Ortmeier, Peter Daniel (Eds.): Computer Safety, Reliability, and Security - 31st International Conference, SAFECOMP 2012, LNC 7612:99-110, ISBN 978-3-642-33677-5

Amer Dheedan & Yiannis Papadopoulos, Multi-Agent Safety Monitoring System, 8th International Conference On Computer Science & Information Systems, Athens, June 2011, 9 pages, to be published as book chapter.

Z Mian, L Bottaci, Y Papadopoulos, M Biehl: System Dependability Modelling and Analysis Using AADL and HiP-HOPS, IFAC Symposium on Information Control Problems in Manufacturing, Bucharest, 14 (1), 1647-1652, ISSN: 1474-6670, ISBN: 978-3-902661-98-2, 2012.

S. Voget, Safe development by adaptation of standardized safety concepts in AUTOSAR 4.0, ERTS 2012

S. Voget, Collaboration in Automotive - The Eclipse Automotive Industry Working Group, ERTS 2012

S. Voget, Definition of a standard for model based safety development and analysis compliant to ISO26262, Safetronic 2013

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2.10.4 Dissertations

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2.10.5 Presentations

Lönn, Henrik: Supporting the Engineering of Electrical Vehicle Systems, Electric Vehicle ICT-Infrastructure, Berlin, 23rd March 2011

- Lönn, Henrik: Timing Modelling and Analysis in an Automotive Context, DaNES Timing Analysis Workshop, Copenhagen February 2011
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- Yiannis Papadopoulos, EAST-ADL and HIP-HOPS: Model-based design and evaluation, Seminar, Flemish Mechatronics institute, Leuven, December 2011
- Lönn Henrik and Rolf Johansson: Supporting ISO26262 with EAST-ADL, SAFE project Seminar, February 2012
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- DeJiu Chen, Dagstuhl Seminar 12272: Architecture-Driven Semantic Analysis of Embedded Systems, July. 2012
- Lönn, Henrik: MAENAD Project status for EUCAR Integrated Safety Board, 17th Sept 2012
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- Ernest Wozniak: MAENAD: Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles, First Workshop on European Industrial & Academic Collaborations on Real Time and Embedded Systems Modeling and Analysis (EIAC-RTESMA), 'July 2012
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- Oscar Ljungkrantz: Support for ISO26262 in EAST-ADL/AUTOSAR context, IQPC Conference "Experiences with ISO 26262", Nov 2012
- DeJiu Chen: EAST-ADL – A Modeling Framework for Integrated Safety and Architecture Design of Automotive Embedded Systems. ICES Workshop: Efficient Systems Development with Functional Safety. Innovative Centre for Embedded Systems. Nov. 14, 2012. Södertälje, Sweden
- Henrik Lönn: ISO2626 and Collaborative Environment: Models as Enabler, presentation at Elektronik i Fordon, Göteborg, Sweden, 2013
- Henrik Lönn: Early Phase Functional Integration of Control Systems: IQPC Chassis and Safety Architecture; Stuttgart 2013
- Oscar Ljungkrantz: "Case study about ISO 26262 in the EAST-ADL/Autosar context", IQPC Conference "Experiences with ISO 26262", March 2013
- DeJiu Chen: System modeling for self-adaptive embedded computer systems. 1st WORKSHOP ON PROGRAMMING CYBER PHYSICAL SYSTEMS, Budapest, June, 2013
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- Zhibao Mian, Leonardo Bottaci, Yiannis Papadopoulos (2013) Multi-objective Architecture Optimisation for Dependable Systems, International Workshop on Model-Based Safety

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Henrik Lönn, Mark-Oliver Reiser: "Variability in a System Modelling Context: The EAST-ADL Approach", presentation on AutomotiveVariant Con 2013, Berlin, Nov. 28, 2013.



Figure 6. Mark-Oliver Reiser co-presenting at the Automotive Variantcon 2013 (we.CONNECT)



Figure 7. DeJiu Chen participating the Dagstuhl Seminar 12272 on Architecture-Driven Semantic Analysis of Embedded Systems
(<http://www.dagstuhl.de/de/programm/kalender/semhp/?semnr=12272>)

3 Summary

There are various artifacts channels for project dissemination, and dissemination of EAST-ADL and related technology solutions identified, targeted at slightly different audiences, e.g. academic (Publications), industry managers (Concept presentations, White paper), Engineers, EAST-ADL tool developers (specifications, EAXML schema), other projects (Newsletters, website, workshops) or general public (IGI Encyclopedia, Wikipedia,). We believe these all are relevant in regard to the overall objectives of MAENAD.