

EDONA Newsletter n° 2 - July 2009

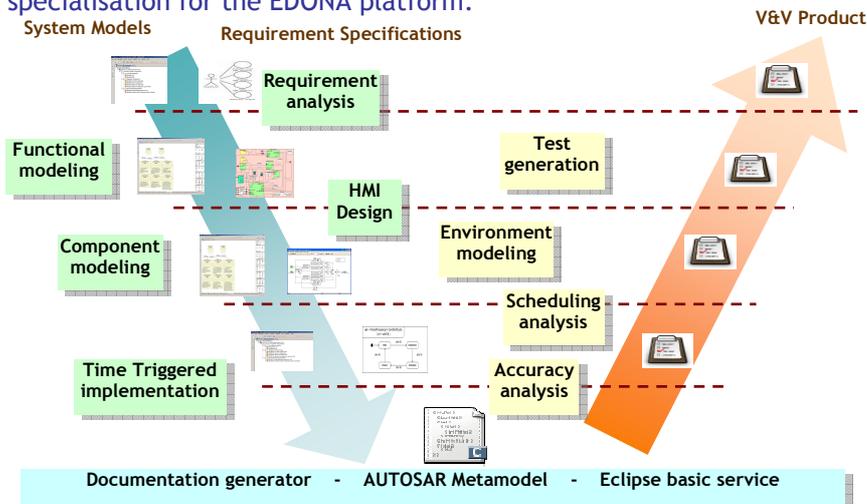
About EDONA: First demonstrations at System@tic, 22th of June.

This System@tic day obtained a large audience, and the French Minister of Digital Economy underlined the importance of the cluster activity domain and of the results of its projects. EDONA, the integration platform of the *Automotive and Transport* working Group of the "System@tic Paris-Région" world class cluster has presented three tool chain demonstrations illustrating focussed use cases for the tools :

- System architecture modelling from high level requirements down to generation of AUTOSAR component descriptors. (cf. newsletter n° 1).
- HMI¹ early prototyping and design for safety (see next page).
- Matlab-based test suite generation for functional and structural testing (more in next issue).



They are integrated in the platform around the AUTOSAR meta-model provided by the Artop component (cf. newsletter n° 1). More detailed presentations of those and other tool chains have been made during the EDONA day, June 4 2009, ensuring a full understanding of the various technologies by all project partners. Those additional demonstrations included: requirement management tool integration; Simulink based development process including impact analysis of generated C code, Time-Triggered design and implementation, AUTOSAR platform integration in system environment models; documentation generator specialisation for the EDONA platform.



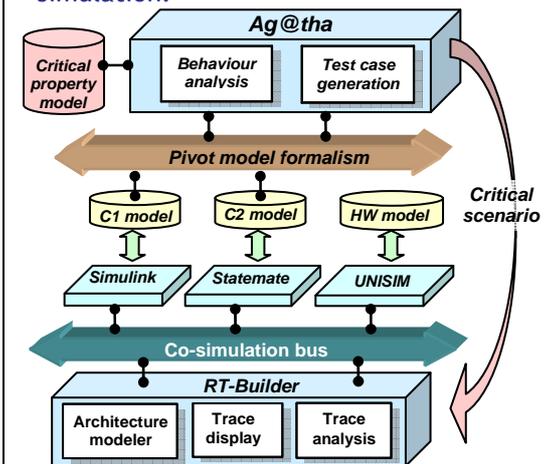
¹ HMI: Human Machine Interface

What's happening outside?

Co-simulation of Heterogeneous systems

The *HeCoSim* project of the French National Research Agency (projet-hecosim.org) is focussed on simulating and validating heterogeneous virtual platforms of automotive systems. It is based on heterogeneous models of the components of a system using namely Simulink and StateMate tools. The project associates two complementary approaches:

- Global analysis of the models against particular properties and behaviours that the system has to ensure. From the heterogeneous models of the system components, and from a formal representation of validation objectives, critical scenarii are generated for simulation.



- Co-simulation obtained by integrating the various tool simulators in a communication bus with synchronisation protocols and dedicated HMI providing a graphical environment for modelling system architecture, simulating it via the native heterogeneous tool simulators and analyzing monolithic and distributed real time embedded systems.

In addition, specific hardware simulators are built and integrated in the simulation using SystemC models on an open source platform (see www.unisim.org).

See: *Improving Model Based Design Quality and Safety for Mechatronic Systems via Co-simulation*. J.-F. Bisson, D. Laroudie, in IAEC, Paris, November 2008.

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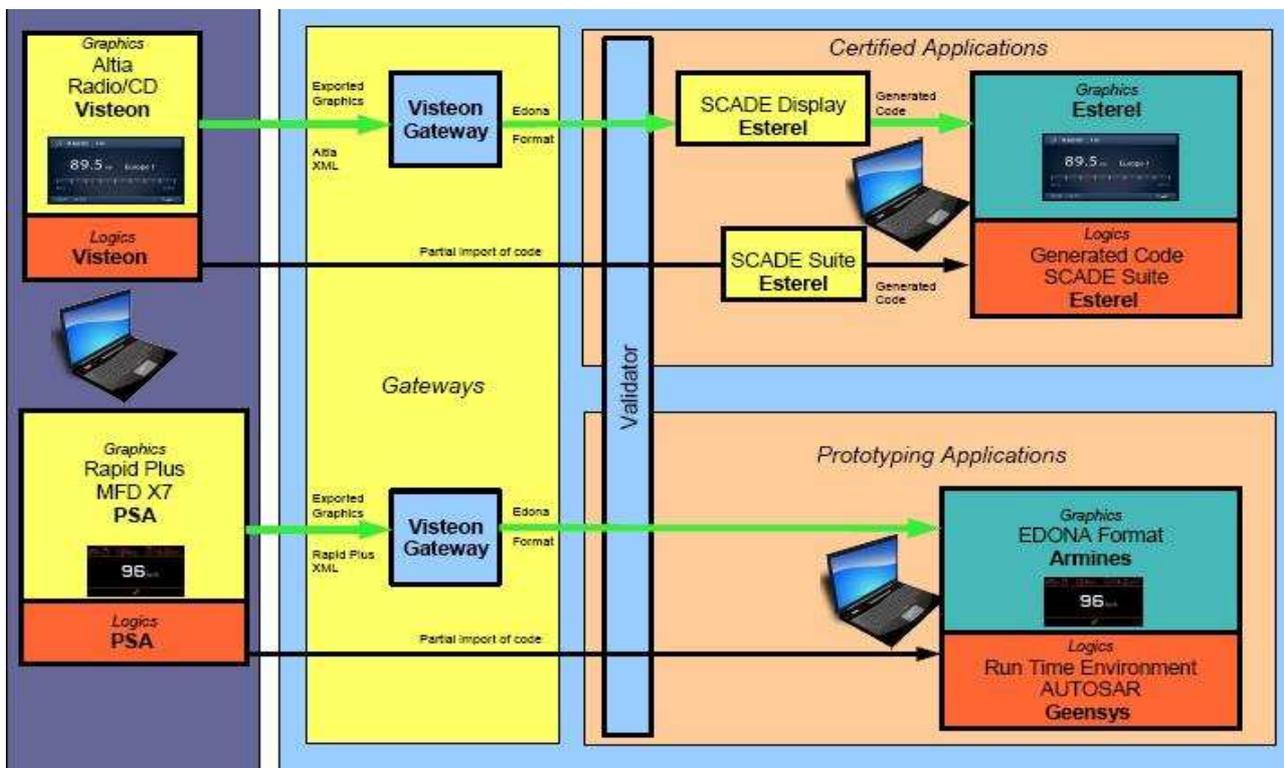
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Focus on some results

Interoperable tool chain for Automotive HMI design

From WP4, interoperability between various HMI design tools is a major concern when it comes to reducing development times. When a car manufacturer uses a given design tool to make an interactive HMI specification, suppliers often have to re-start from scratch since they use different software (see figure). That is exactly the issue addressed by the EDONA HMI format. Based upon the SVG Tiny 1.1 specifications, the EDONA HMI format has been extended to enable most HMI graphical needs, including basic logic handling (aka micro functional layer).

Once specified, the EDONA HMI exchange format has been implemented through different gateways ensuring export/import capabilities by HMI design tools. Thus, graphical aspects of a design can now be preserved and exported into any other EDONA compliant tool.



Converting HMI design files from Altia and Rapid plus to the EDONA format

In addition, Eclipse-based viewer and tools have been implemented by WP4 partners to handle the EDONA HMI format. This format makes it possible to seamlessly integrate functional mockups in the AUTOSAR-compliant system they belong to, in order to review the HMI design in action or simulate it while debugging its sibling software components.

See: *SVG for Automotive User Interfaces*, J.-M. Temmos - Visteon, M. Othman Abdallah - Ecole des Mines de Paris, S. Boisgérault - Ecole des Mines de Paris, 6th International Conference on Scalable Vector Graphics, August 26 to 28 2008, Nuremberg, Germany.

Some of the technology provider projects

- **IHS10** is a project of System@tic Paris Région cluster (www.systematic-paris-region.org) focused on building of a Virtual Reality Equipment and architecture dedicated to human machine interfaces design. The strong differentiation between logics and graphics is an approach shared with EDONA.
- **Love**, a project of System@tic Paris Région cluster (love.univ-bpclermont.fr), emphasises the safety of pedestrians for road transportation. The EDONA HMI platform addresses the specific needs of such applications.

More projects and details in our next issues...

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