

automotive
HMI



Gefördert durch:



Bundesministerium
für Wirtschaft
und Technologie

aufgrund eines Beschlusses
des Deutschen Bundestages

automotiveHMI

Model-Based HMI-Development in the
Automotive Industry

February 2012



Public funded research project with the objective to optimize HMI-development processes in the German automotive industry

Basic facts & figures

Project Coordinator

Thomas Fleischmann
Elektrobit Automotive GmbH

Scientific Coordinator

Dr. Gerrit Meixner
German Research Center for Artificial Intelligence (DFKI)

Duration

36 months (January 2011 – December 2013)

Structure

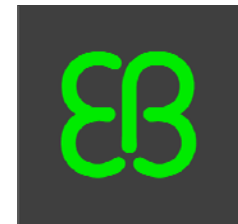
9 partners: 2 research and 7 industrial partners
4 associated partners (so far)

Volume

About 7,5 Mio. Euro

Funded by

Federal Ministry of Economics and Technology (BMWFi)





A consortium that covers the complete supply chain of automotive HMI-development

Partners

Car manufacturers



Audi

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VOLKSWAGEN

AKTIENGESELLSCHAFT

DAIMLER



PORSCHE



Research Facilities



Deutsches
Forschungszentrum
für Künstliche
Intelligenz GmbH



Tier-1 Suppliers



BOSCH

Technik fürs Leben



Associated Partners

Tool-Developer, System Integrator and Association



comlet

VDA

Verband der
Automobilindustrie



Collaborative approach to overcome paper-based HMI-specifications by establishing a formal interchange format as an industry standard

The project automotiveHMI

The time-to-market for human-machine-interfaces (HMI) in the German automotive industry has to be reduced. The increasing complexity of new HMI-systems due to the integration of new infotainment and driver assistance systems as well as the continuous shortening of innovation cycles in the consumer electronics industry increases the pressure on German car manufacturers and their suppliers. In the future, more complex HMI-systems have to be brought faster and less cost-intensive to the market.

However, today's HMI development processes are characterized by different, inconsistent work flows and heterogeneous tool chains. The exchange of paper-based specification documents between the process participants causes media discontinuity, inhibits version management, reduces the reusability and hampers the communication.

In the project automotiveHMI the partners pursue the objective of developing a domain specific, model-based exchange format allowing the formal and uniform specification of HMI development artifacts. The exchange format shall work as a machine-readable data interface between the different roles and actors involved in automotive HMI development. Thus it becomes possible to overcome the digital divide resulting from today's paper based and heterogeneous work flows.





Model-based exchange format, model-based HMI-testing and a new middleware approach as the three central project pillars

Model-based HMI-testing

- Automatic derivation of HMI-tests from the machine readable HMI-specification documents
- Reduction of test efforts by limiting the number of relevant HMI tests per variant and market
- Complete and efficient HMI tests despite increasing system complexity

Model-based exchange format

- Formal specification of HMI-systems
- Different tools but one common exchange format
- Domain specific
- Open XML-based implementation
- Linking of requirements and development artifacts
- Better traceability
- Iterative refinement: from informal mockups to formal screen specifications

Middleware

- Abstraction of concrete hardware platforms
- Standardization of the communication between HMI and application layer of the car
- Reduction of development costs and efforts by increasing reusability of components

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Contacts and Website

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