Embedded Intelligence

Embedded Intelligence: Agenda

➤ Human-Machine Interface

    ➤ From Research to Design

    ➤ How to make it real

➤ The links to standards: AUTOSAR

➤ Local project with partners: EDONA

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Embedded HMI: Method & Approach

Human Centered Cognitive Approach

- Analysis of relationships between customer (user), vehicle and environment with the purpose to generate interaction value, unique experience & innovation

- Research methods used in Cognitive Ergonomics represent our scientific application to analyze the relationships between human, world and artifact in use to find solutions for optimized cognitive interaction.

- This approach extends the perspective of Physical Ergonomics concerned with the analysis and product-specification for postural comfort, manipulation, body-strength, dimensions, reach- and vision-envelopes for improved physical interaction.

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Examples of Research for HMI

Examples

- Comparative HMI usability testing

- Dynamic HMI performance testing
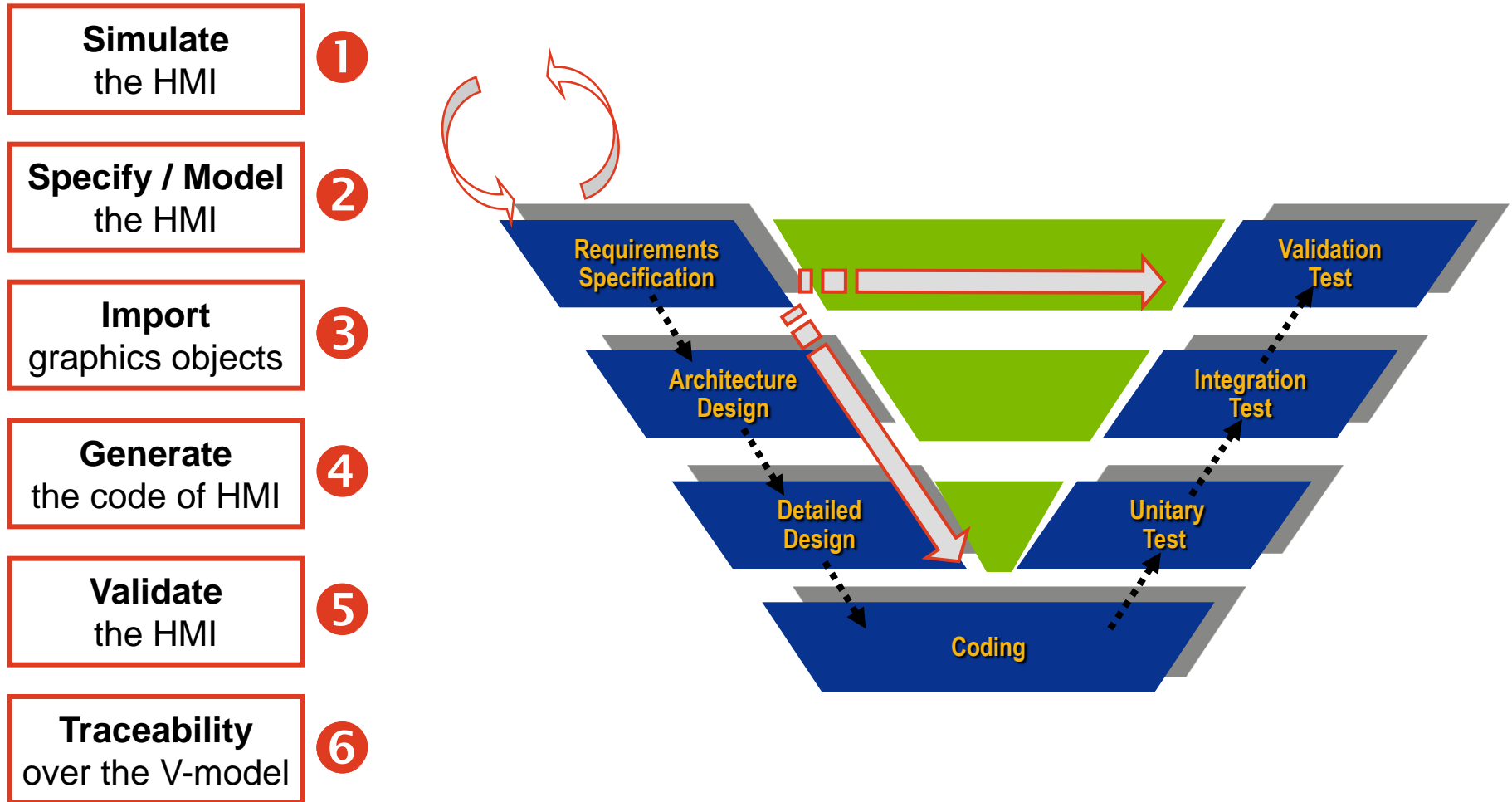
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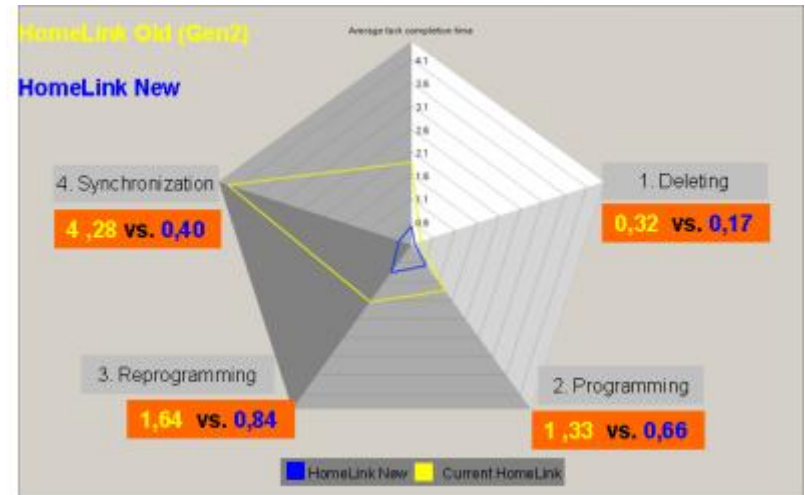
Examples of Design Development for HMI

Example

- Tactile User Interface
- Graphic User Interface
- Information (Priority) Management
- Spatial Correlation
- Menu Structures, Logic, & Behavior
- Functional & Physical Integration

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Process view: How to implement the HMI in the embedded ECU

Simulate the HMI ❶

Specify / Model the HMI ❷

Import graphics objects ❸

Generate the code of HMI ❹

Validate the HMI ❺

Traceability over the V-model ❻

Requirements Specification

Architecture Design

Detailed Design

Coding

Validation Test

Integration Test

Unitary Test

Proprietary and confidential

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AUT⊘SAR

- AUTOSAR project in JCI:
  - Introduction in JCI ECUs with BSW from supplier
  - Validation environment & Prototype realization
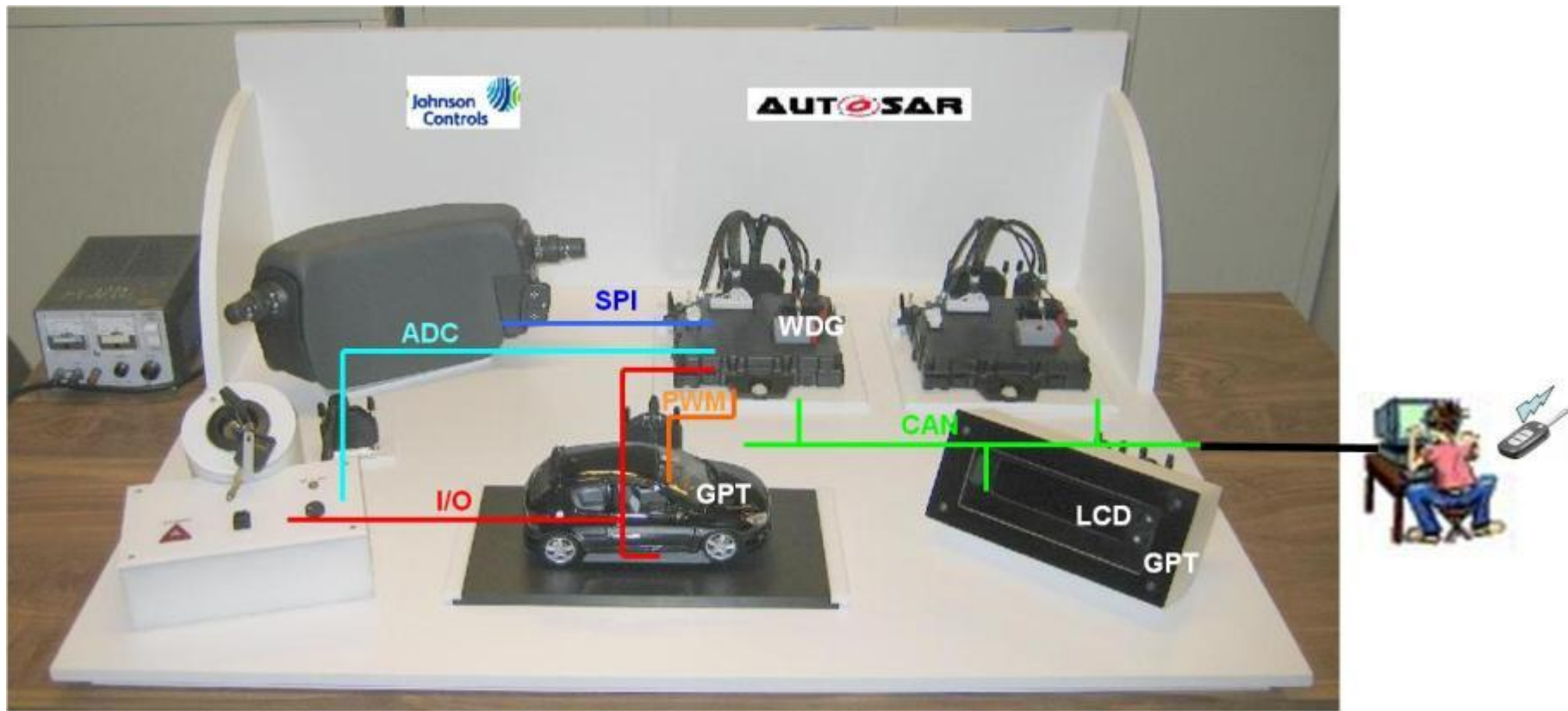
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Systematic / Numatec / EDONA Project
Workpackage 3 : Functional algorithms tests tool

Definition and realization of a set of tools for Simulink® models validation

Discrete and continuous models available in
Johnson Controls and Delphi

Project duration: 36 months

Exploratory phase

Study and development phase

HMI development

Partners: