« Beyond Autosar » panel

→ Elements current large related projects

→ Challenges
Research program related to automotive embedded systems

System Safety

Co-habitation of Multi-level of criticity

OS&MW mechanisms

Traceability
Requirement

Modeling, refinement validation

Architecture description

UML, Statemate, Matlab, Scade

ADL

AUTOSAR

RTE

ISO
**SYSTEM@TIC  Usine Logicielle (Software factory)**

Heterogeneous modeling

- **Formalisms Bridges**
- Scade DSL Plug
- Scilab DSL Plug
- MARTE UML RTE

**Formalisms Bridges**
- EMF
- Reposit.
- Scilab Action Language
- DSL Plug
- UML2 Meta Model

**Execution infrastructure built through generation & libraries**
**Integration of fault tolerance services**

**Standard and specifici HW (e.g. FPGA)**

**Model Driven Engineering for:**
- Heterogeneity & interoperability management
Some challenges in development of safe, modular, reusable embedded components and systems

- **Link with requirements at model level until implementation**
  - ✔ Heterogeneity of modeling formalisms & tools
    - ▪ Semantics equivalence
    - ▪ Explicit model of calculus, programming, execution
    - ▪ Model of platforms, relation with co-design
    - ▪ Variability of QoS & behaviour → product lines

- **Standardization actions… should become multi-domains…**
  - ✔ Component meta-model (at the various levels)
  - ✔ Timing, safety, etc.
  - ✔ Infrastructure architecture and production mechanisms

- **Impact of safety:**
  - ✔ Continuous and vertical view of safety vs local actions
  - ✔ Coexistence of several levels of safety on same ECU, infrastructure, system…

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