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Automotive Electronics and Software

In the automotive business today, the embedded architectures are constantly evolving. Thus, the ambition is to support technological and economic challenges generated by the connected car market and the advanced driver assistance systems (ADAS).

1. Context and Issues

Opportunities

Car and its usage evolution: electrification, ADAS popularization (e.g. active safety, autonomous driving), car sharing & multi-modal trip deployment, legal requirement strengthening (e.g. eCall, car2car)

ICT technology affordability: onboard computing power, embedded networking and sensors, broadband mobile communication

Issues

Design & validation complexity: new architectural paradigms, e.g. resource sharing, asynchronous, concurrent or massively parallel treatments, cooperative/communicating ADAS

Security & safety: Internet proximity, multiplication of car radio interfaces, architecture complexity, asynchronous execution flows

2. Challenges

- Definition of **architectural patterns**, choice and/or development of associated components
- Design **methodology** definition, choice and/or development of necessary **tools**

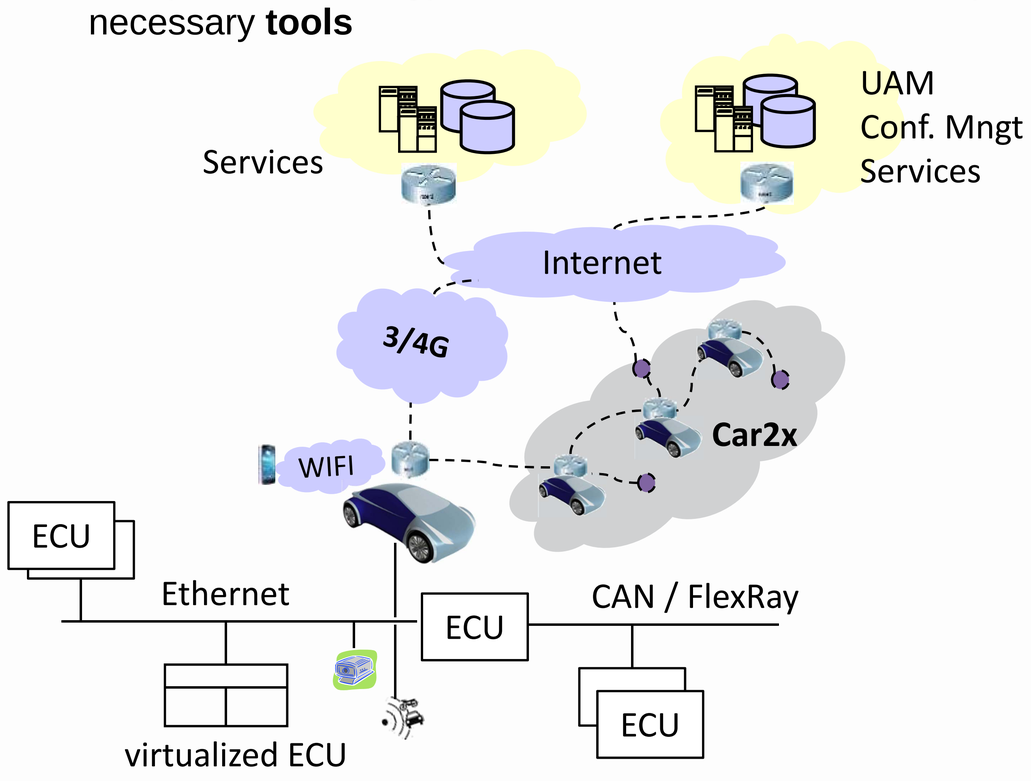


Fig 1. Car ecosystem

3. Innovation

Project work-packages

- Real-time virtualization
- Embedded image processing for ADAS
- Multi-core & parallel real-time algorithms
- Cybersecurity
- Networking
- Design processes and tools, validation and integration
- Demonstration & dissemination

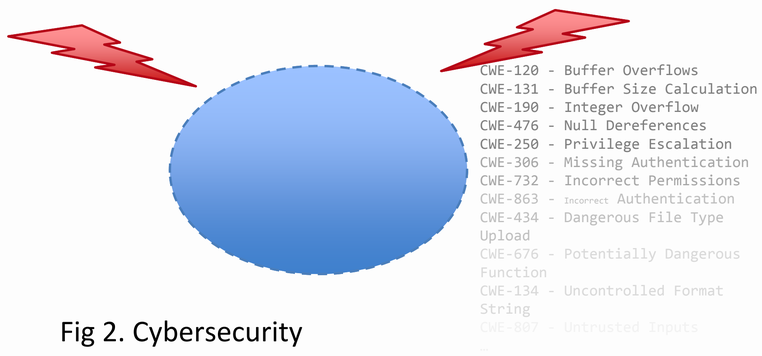


Fig 2. Cybersecurity

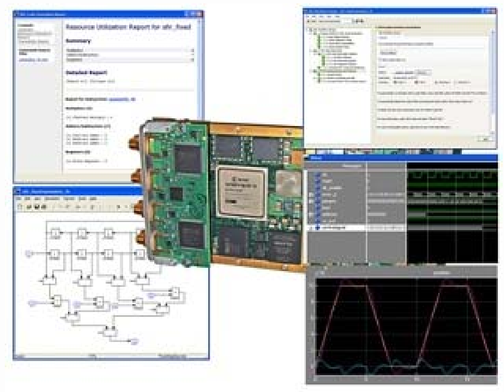
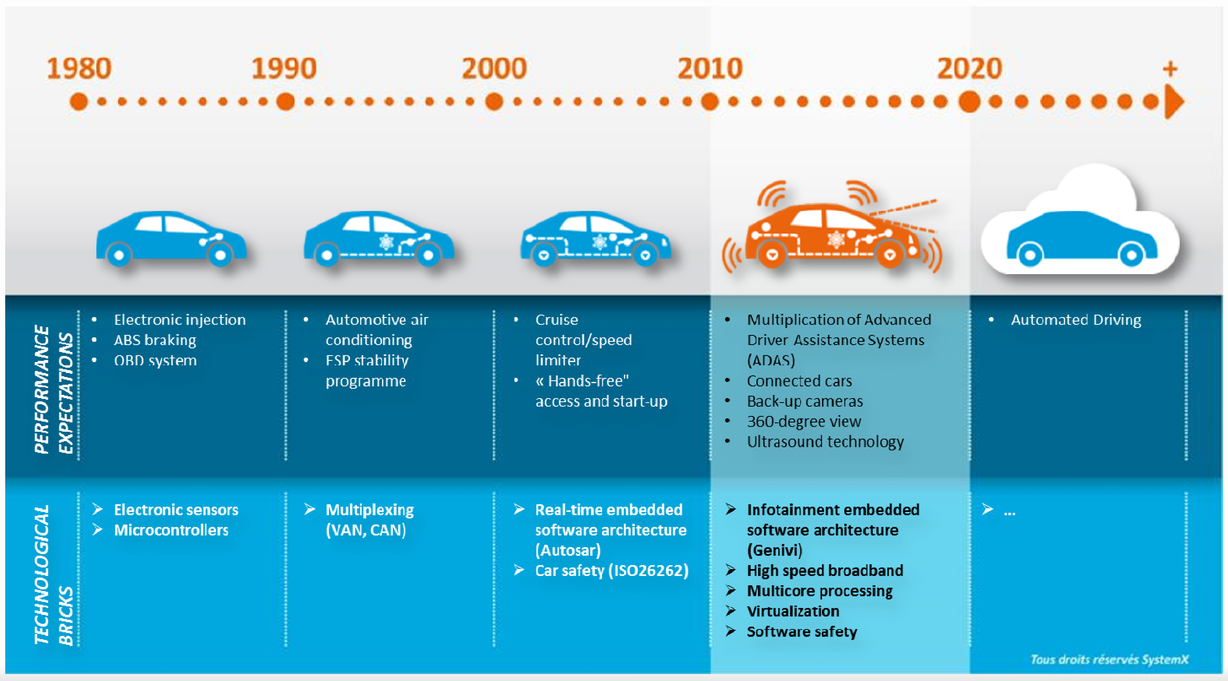


Fig. 3 – Design Processes and tools, validation and integration

4. Expected Results



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