Chapter 3.1
Mobility

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E C S

Strategic Research and Innovation Agenda 2025

Aeneas

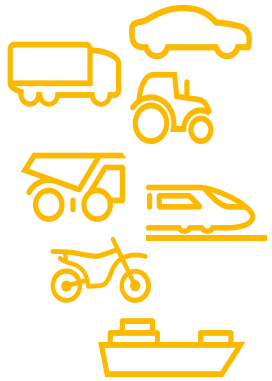
EPoSS. European Association on Smart Systems Integration

Inside Industry Association

Scope

Mobility modes considered in chapter:

- **Automotive mobility** for passengers and goods: passenger cars, two/three wheelers, trucks
- **Maritime mobility**: ships
- **Aerospace mobility** for passengers and goods: airplanes, helicopters, drones
- **Mobility on rails**: trains
- **Mobility in smart farming and off-road machinery**: smart farming machinery, smart mining, …



Automation level

– Vehicles supported by **ADAS** (advanced driver assistance systems)

– **Automated** and autonomous vehicles (AD)

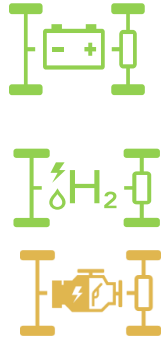
– **Software defined vehicles** (in-vehicle stack, off-vehicle cloud stack) (Infotainment, cockpit, ADAS/AD, Body & chassis control)

Energy type

– **Battery electric** vehicles (trains, passenger cars, trucks, off-road machinery, airplanes)

– **Hydrogen** powered vehicles (trains, passenger cars, trucks, off-road machinery, airplanes)

– **Hybrid** vehicles



Areas for ECS

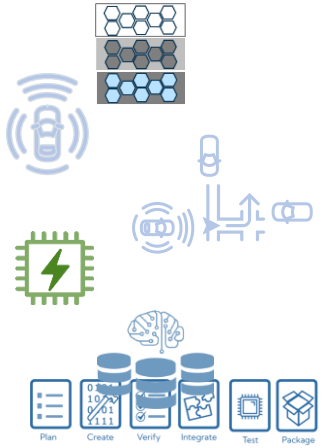
– **HPC HW** and **SW** for **Stacks** in mobility (e.g. SDV)

– **HW** and **SW** for **ADAS/AD sensors**

– **Automated driving** for various mobility modes

– **Fast** and **energy efficient** power converter chips (**SiC, GaN**)

– **AI** supported **engineering tools** and **toolchains** to significantly increase development efficiency in DevOps processes



Key trends

Societal trends

- **Green deal** (CO_2 free mobility)
- **Digitalization**
  - Inclusive mobility
  - Vision zero (fatalities)
  - Mobility for aging society
  - Mobility for smart farming, smart mining, smart trucking, …
  - Software defined vehicle
  - Edge2Cloud applications
- **Circular economy**

Technological trends

- **Solid state** batteries, sensors
- **RISC-V** HPC processor families
- Chiplets

- AI & Large language models
- DevOps
- Co-pilots in development

Major challenges in ECS for Mobility

- **Major challenge 1:** SDV hardware platforms: Modular, scalable, flexible, safe & secure
- **Major challenge 2**: SW Platforms for SDV of the future; Modular, scalable, re-usable, flexible, safe & secure, supporting edge2cloud applications
- **Major challenge 3:** Climate and energy neutral mobility: CO_2-neutral mobility
- **Major challenge 4:** Digitalisation: Affordable, automated, and connected mobility for passengers and freight
- **Major challenge 5:** Edge2cloud mobility applications: Added end-user value by cloud2cloud features
- **Major challenge 6:** Validation: Methods and tools using AI for validation and certification of safety, security, and comfort in mobility

NEW

NEW

NEW

These 2 challenges were combined in one topic in SRIA 2024

- **Multimodal mobility** — **moved** to chapter "**Digital Society**" in SRIA 2025

R&I focus areas

- European driven SW stack for Software defined vehicle of the future

- RISC-V hardware platform for automative applications (HPC, AI, chiplets, Safety & security, sensors)

- AI enabled engineering platform (DevOps SW development, Chip development, HW development, LLM, Co-pilots, …)