ECSEL Joint Undertaking

AI4CSM Overview at the glance

AI for Connected and Shared Mobility

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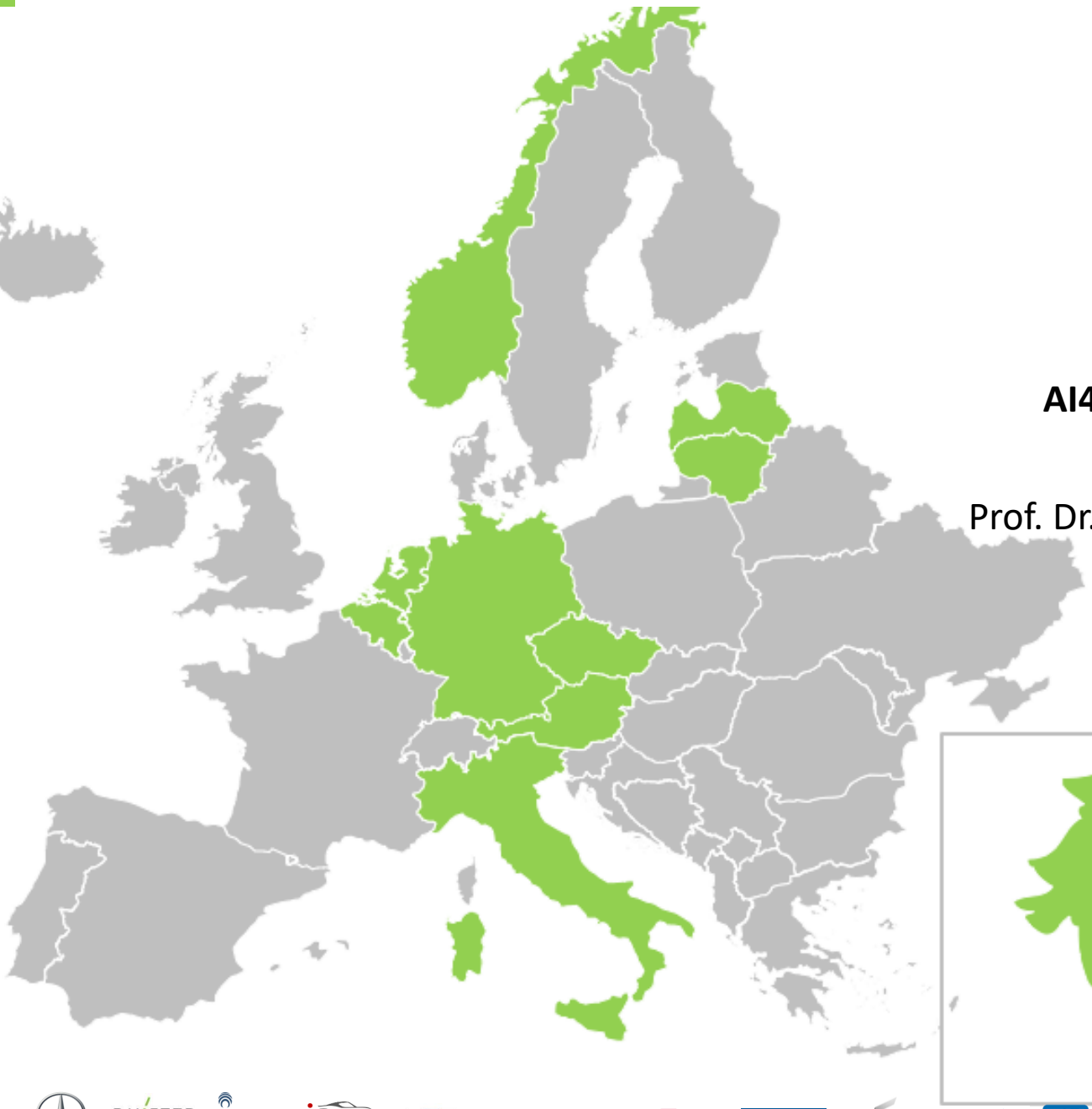
Athens, Greece

AI4CSM receives funding within the Electronic Components and Systems For European Leadership Joint Undertaking (ESCEL JU) in collaboration with the European Union's Horizon2020 Framework Programme and National Authorities, under grant agreement No. 101007326

The AI4CSM consortium



AI4CSM is coordinated by Infineon Technologies Germany AG.

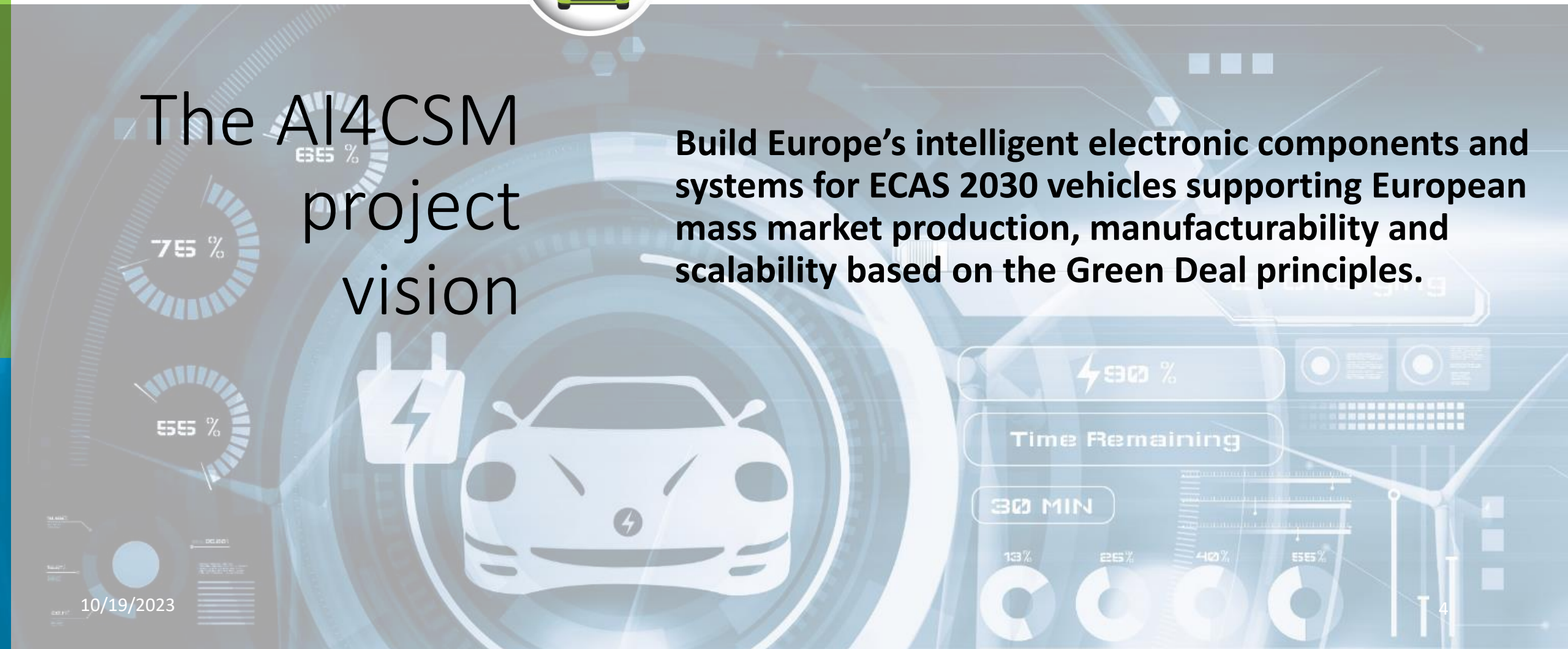
Dipl.-Ing.(FH) Jochen Koszescha – Project Coordinator
Prof. Dr. Eng. George Dimitrakopoulos – Executing Project Manager

41 project partners from 10 countries:

- Leading automotive OEMs
- Semiconductor companies
- Technology partners
- Universities and research institutes

The AI4CSM project vision

Build Europe's intelligent electronic components and systems for ECAS 2030 vehicles supporting European mass market production, manufacturability and scalability based on the Green Deal principles.



Project positioning on ECSEL/KDT

- ECSEL-2020 call
- Research and Innovation Action (RIA)
- Project No: 101007326

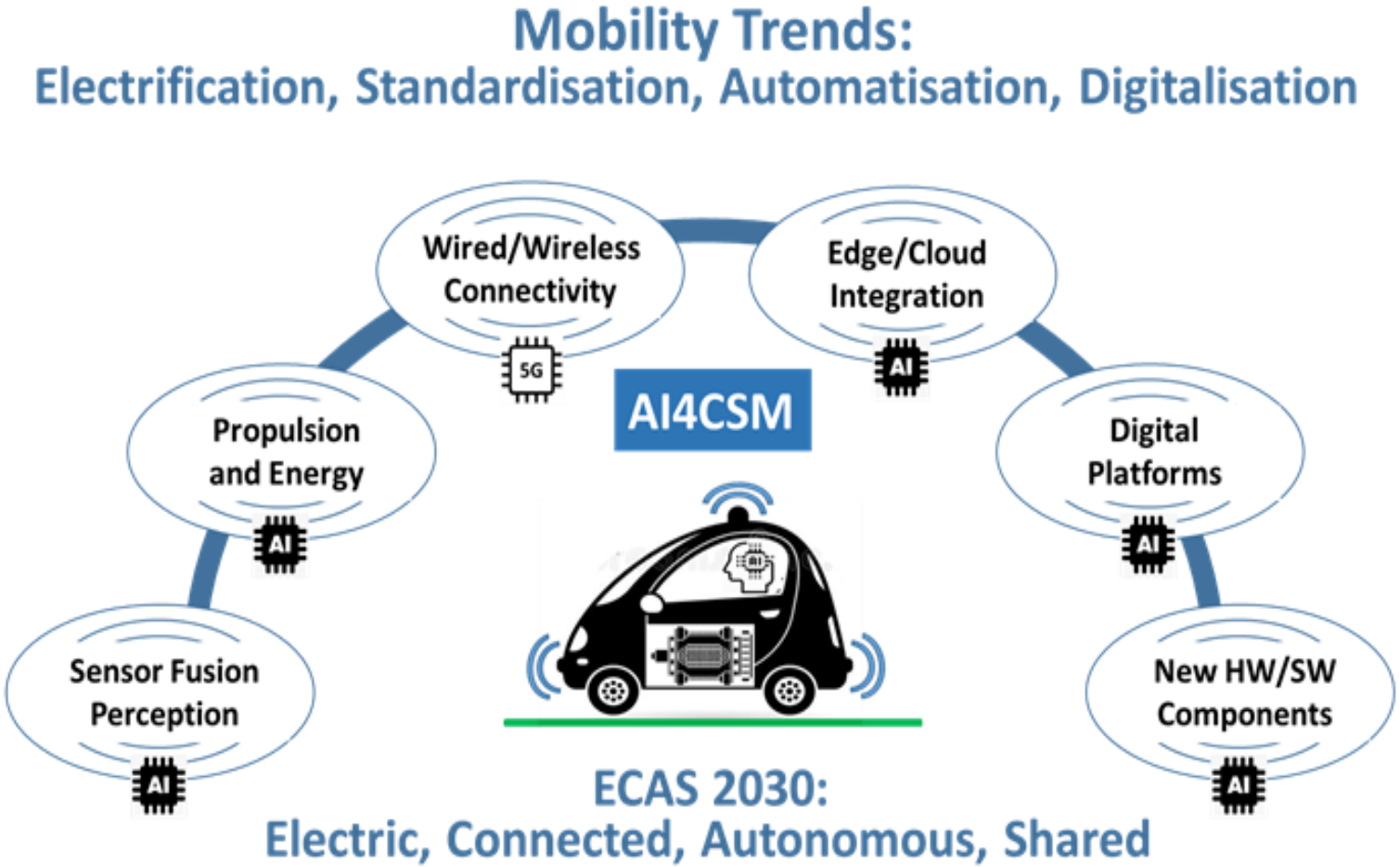
		ESSENTIAL CAPABILITIES				KEY APPLICATION AREAS	
		6. SYSTEMS & COMPONENTS: ARCHITECTURE, DESIGN & INTEGRATION	7. CONNECTIVITY & INTEROPERABILITY	8. SAFETY, SECURITY, & RELIABILITY	9. COMPUTING & STORAGE	TRANSPORTATION & SMART MOBILITY	DIGITAL LIFE & PUBLIC SPACES
#	OBJECTIVE						
1	Robust & Reliable mobile platforms			●		●	●
2	Scalable embedded intelligence		●	●	●	●	
3	Silicon for Decision and Learning	●	●		●	●	
4	Trustable AI			●	●	●	●
5	Functional integrated ECS	●		●	●	●	
6	EV5.0 for the Green Deal	●		●		●	●

Project positioning – Digital transformation

A significant enabler for attaining the sustainability goals of the European Green Deal

Sectors of interest:

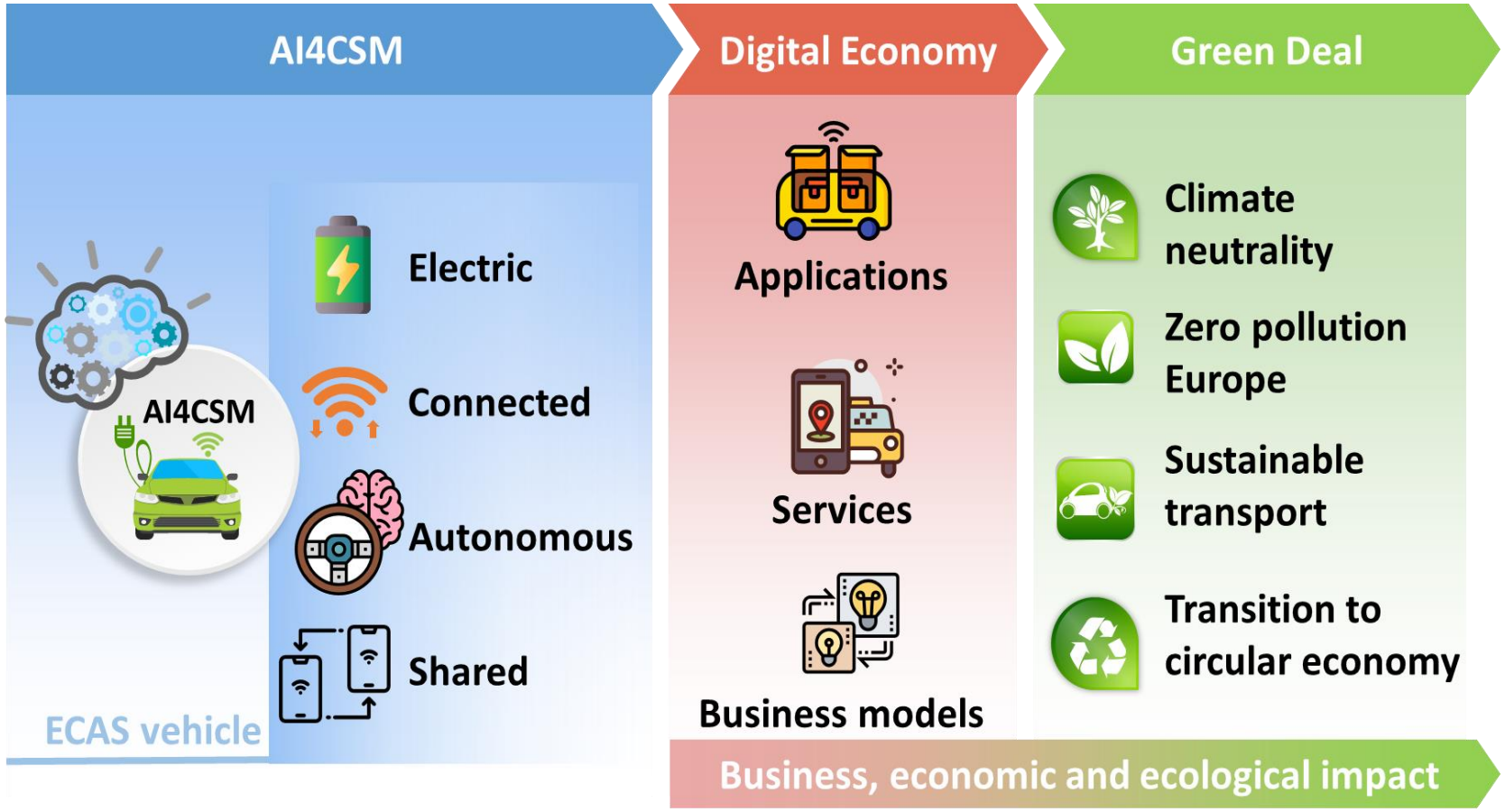
- Mobility
- Transportation



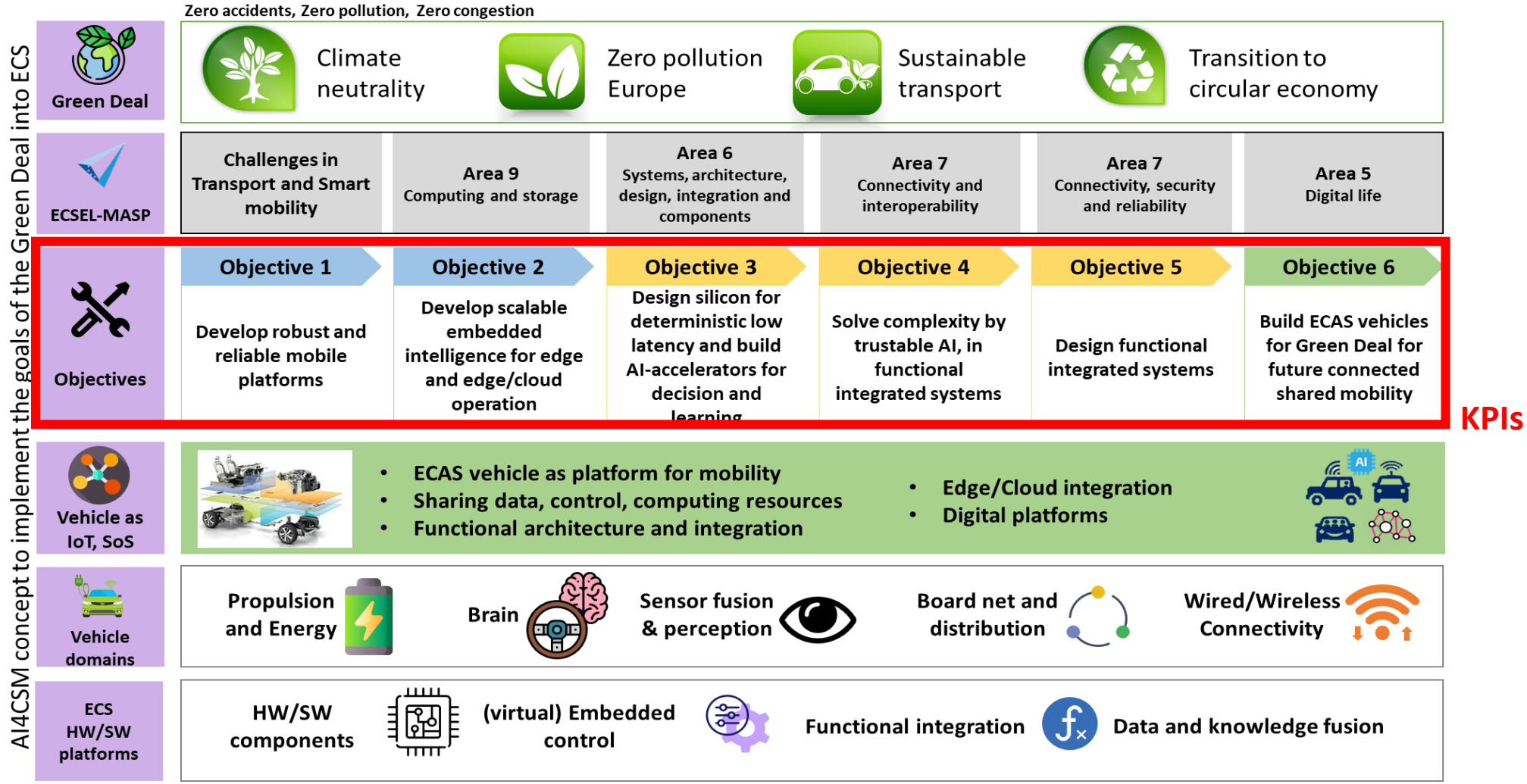
Project positioning – Digital economy

Transition towards the digital economy

- New applications and services, together with the implementation of new business models.
- Electric, connected, autonomous and shared (ECAS) vehicles.



Project mission – how to realize the vision



Project mission – Indicative outputs

Robust and reliable mobile platforms

- Increase the reliability of ECS to 99.9 %
- New sensor redundancy concepts
- Increase of semiconductor availability by at least 25%
- New technologies for "live" scenario monitoring and validation

Scalable embedded intelligence

- Cooperative edge/cloud approaches for environment perception and vehicle intelligence
- Digital twin supporting design, development, V&V, and operation of connected shared mobility
- Cloud AI-based city routing based on for example digital twins
- Secure, scalable, and robust communication architectures and systems between agents and cloud
- A layered processing approach for robust, reliable, and secure perception and vehicle intelligence
- Testing, verification, and validation approaches

Silicon for deterministic low latency and AI accelerators

- Specialised processors for the efficient acceleration of cognitive functions in silicon
- Scalable computational framework that can realize intelligence
- Federated intelligence across multiple layers of the sense-control chain
- Optimisation of autonomous systems

Project mission – Indicative outputs

Trustable AI

- Explainable AI methods over larger number of applications
- Methods to predict the decision-making when using learned models or models with adversarial inputs
- A method which predicts the classification outcome of a system based on separate inputs
- Rigorous AI design approaches, for improved safety guaranteed already at design time

Functional integrated systems

- Innovative technologies for open platforms to bring AI into safety-critical systems
- Integration of hardware for AI processing
- Mechanisms to ensure freedom of interference between AI-based and safety-critical software components
- Demonstration of architectural concepts to increase the reliability of AI
- Enabling autonomous driving and support of digital cockpit, drivetrain functions in manufacturing

ECAS vehicles for Green Deal

- Demonstration and quantification of the reliability and robustness of driver assistance
- Active safety and fail-operational behaviour
- Demonstration of the impact of shard mobility concepts on the Green Deal emissions targets
- Cost reduction of the vehicles updates and upgrades
- Higher energy efficiency

Funding

AI4CSM project has received funding from the ECSEL Joint Undertaking (JU) under grant agreement No 101007326. The JU receives support from the European Union's Horizon 2020 research and innovation programme. It is co-funded by the consortium members and grants from Germany, Austria, Norway, Belgium, Italy, Netherlands, Czech Republic, Latvia, India.

Summary of the AI4CSM project

AI4CSM will build intelligent electronic components and systems for ECAS 2030 vehicles supporting European mass market production, manufacturability and scalability based on the Green Deal principles.

Thank you!

Dipl.-Ing.(FH) Jochen Koszescha
Infineon Technologies AG