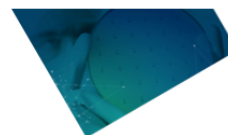# HiPer creates High Performance Vehicle Computer and Communication System for Autonomous Driving

A project within the EUREKA PENTA programme

Paris, 31 October 2019 -HiPer, a project in the EUREKA PENTA Cluster and managed by industry association AENEAS, is building on Europe's leading position in automotive semiconductors (chips) to create electronics vital for the future of road travel. By creating an advanced High-Performance Vehicle Computer (HPVC) and Communication System, HiPer will fill a vital need for computer processors and electronic control units with the safety, performance, security and reliability necessary for real-world self-driving vehicles ('Autonomous Driving', also known as 'Level 5 automation').

The market for partially and fully autonomous vehicles is expected to rise from USD 42 billion in 2025 to nearly USD 77 billion in 2035[1], with the first virtually autonomous driving cars on sale by 2021. These vehicles will need to handle complex tasks such as vision processing, object recognition and interaction with intelligent traffic systems with complete reliability in real-time. However, electronic systems with the necessary processing power and speed of communication that can also withstand harsh vehicle conditions, such as heat and humidity, do not yet exist. HiPer intends to fill this gap through innovations in semiconductor design, manufacturing and packaging to create automotive grade solutions in three key areas: computation, communication and integration.

Among key innovations, HiPer will develop new cooling technologies for processors with a heat dissipation of 300 W and novel Automotive Ethernet technology to support high data rates, high data integrity and high-speed communication to systems outside the vehicle. The project will also work on new detectors and new chip packaging techniques to improve the thermo-mechanical reliability and functional safety of the HPVC in automotive environments, increasing operational lifetimes to 50,000 hours from today's 8,800 hours.

To achieve these goals, the HiPer consortium brings together industry, SME and research organisations from Belgium, Germany and the Netherlands, with expertise along the entire automotive value chain. Partners include Audi, a world leading premium car manufacturer; Robert Bosch GmbH, a leading global supplier of technology and services; and NXP, a leading manufacturer of high-performance IT platforms, vehicle electronics and communication solutions. The consortium aims to deliver market leading solutions for centralized, safe and secure HPVCs at affordable prices, based on architectures and concepts that can lead to new standards. These results will strengthen Europe's competitiveness and its ability to lead the world in the transition to electric vehicles and autonomous driving.

---

[1] www.bcg.com/de-de/industries/automotive/autonomous-vehicle-adoption-study.aspx
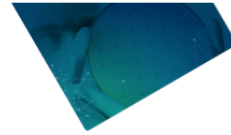
About the PENTA programme (managed by the AENEAS Industrial Association)

PENTA is a EUREKA cluster whose purpose is to catalyse research, development and innovation in areas of micro and nanoelectronics enabled systems and applications - where there is shared national and industrial interest. Based on the Electronic Components & Systems (ECS) Strategic Research Agenda (SRA) key areas and essential capabilities, PENTA programme contributes to the development of electronic solutions with the opportunity for rapid competitive exploitation and a strong impact on European societal challenges. The PENTA project team is supporting SMEs, large corporations, research organisations and universities by facilitating access to funding, fostering collaborative work and creating consortia.

PENTA is managed by AENEAS.
More on PENTA: http://www.penta-eureka.eu
More on AENEAS: https://aeneas-office.org

About HiPer

HiPer is a RD&I project consortium involving 17 partners from 3 countries. The project partners are: Robert Bosch GmbH (project leader), Advanced Packaging Center B.V., Audi AG, Boschman Technologies B.V., Technische Universität Chemnitz, Chemnitzer Werkstoffmechanik, Technische Universiteit Delft, Dynardo GmbH, Technische Universiteit Eindhoven, FastTree3D, Fraunhofer Institut für Elektronik und Nanosysteme, Glück Industrie-Elektronik GmbH, imec, Interflux Electronics, Materialise, NXP Semiconductors Netherlands B.V., NXP Semiconductors Germany GmbH.

National funding support is provided by Belgium, Germany and the Netherlands.