Vehicle ICT

Smart and safe traffic

VTT has comprehensive knowledge in the area of Vehicle ICT. Our competence covers specific areas of Vehicle ICT – ranging from sensor development, sensor data processing and fusion methods to the innovation of navigation services. In addition, VTT has strong knowledge of, for example, environmental perception and driver monitoring systems and extensive know-how in connecting vehicles to fleet management and cooperative systems.

Challenges
Vehicle ICT is a fast-growing application area. Vehicle and machine industries use ICT to make vehicles safer, more environmentally friendly and increase the attractiveness of their products. The development of future applications and services for drivers is challenging due to the dynamic environment and driver work load. Solutions must be efficient, user-centred and carefully validated, because they can easily affect the safety of travel.

Vehicle ICT laboratory
The Vehicle ICT Laboratory is a mobile laboratory entity which has been designed to support high-grade research and development activities. The laboratory comprises several sub-systems which can be utilised either as separate units or as an interoperable system.

The BMW 500-series car serves as a platform for the moving laboratory. It has been equipped with an extensive set of factory-fitted optional equipment, such as active cruise control with stop&go function, a head-up display, a lane departure warning system, and more. VTT has installed a special sensor system for research and development purposes.

Another research vehicle is the VW Golf, which has been equipped with an unobtrusive driver monitoring system. This system can be used to record the driver’s actions for further analysis.

For cooperative traffic solutions and telematics service development, VTT has built a client-server system which can be used to exchange information between vehicles and infrastructure. For special research and development purposes, Vehicle ICT Laboratory has a movable traffic monitoring system.
Solutions
• Environmental perception systems for Intelligent Vehicle Safety Systems (IVSS)
• Driver monitoring technologies
• Sensor data fusion and vehicle context awareness
• Mobile and driver supporting services
• Tailored sensor solutions and energy harvesting

Benefits
VTT’s Vehicle ICT Laboratory is built around instrumented cars running in normal traffic and therefore capturing real driver, road and traffic data for various purposes, such as for Field Operational Tests (FOT) and naturalistic driving studies. The data acquisition system makes the core of the versatile data collection platform. The vehicle ICT enable the development of context-aware services by taking into account actual driver and traffic conditions. VTT offers the opportunity to partner an impartial large organisation in all essential areas of future traffic ICT systems.

References and merits
With its staff of 3,000 trained researchers, VTT is a multi-disciplinary organisation with a reputation as a strong partner in the automotive and traffic ICT sector in Europe and beyond.

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