Vehicle systems

Smart and safe traffic

VTT has comprehensive knowledge in the area of Vehicle ICT. Our competence covers specific areas of Vehicle Systems – ranging from sensor solutions, V2X communication, traffic data processing, vehicle positioning, driver monitoring, impact assessment and data fusion methods to the innovations autonomous vehicles. We have great European wide networks to work with automotive and work machine industries.

Challenges
Vehicle systems is a fast-growing application area which utilises ICT technologies to make vehicles safer, environment friendly and more autonomous. Amount of the automotive software will increase exponentially in coming years due to transition to fully autonomous vehicles by 2030.

The development of future applications and services for drivers is challenging due to the dynamic environment and increasing driver workload. Solutions needs to be efficient, user-centred and carefully validated, because they can easily affect the safety of mobility.

Vehicle ICT laboratory
The Vehicle ICT Laboratory covers the fleet management centre, sensor development facilities and the instrumented vehicles, which has been designed to support high-grade research and development activities. 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.

The Fiat 500-series car serves as a platform for testing novel sensors, V2X communication, applications and evaluate their impacts to safety and ecology. VTT has installed a special sensor system for research and development purposes in this car.

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.
Solutions
- In-vehicle and roadside environmental perception
- Driver monitoring technologies
- Sensor data fusion
- Connected V2X drive
- Mobile driver supporting services
- Vehicle positioning
- Technical validation
- Impact assessment methodology

References
About 150 people out of VTT’s 2300 experts are working in the transportation sectors. VTT is a multi-disciplinary organisation with a reputation as a strong partner in the automotive and traffic ICT sector in Europe and also globally due to more than 1000 projects executed with transportation stakeholders and automotive industry. We also hold several patents and refereed scientific articles as a proof of our competence.

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