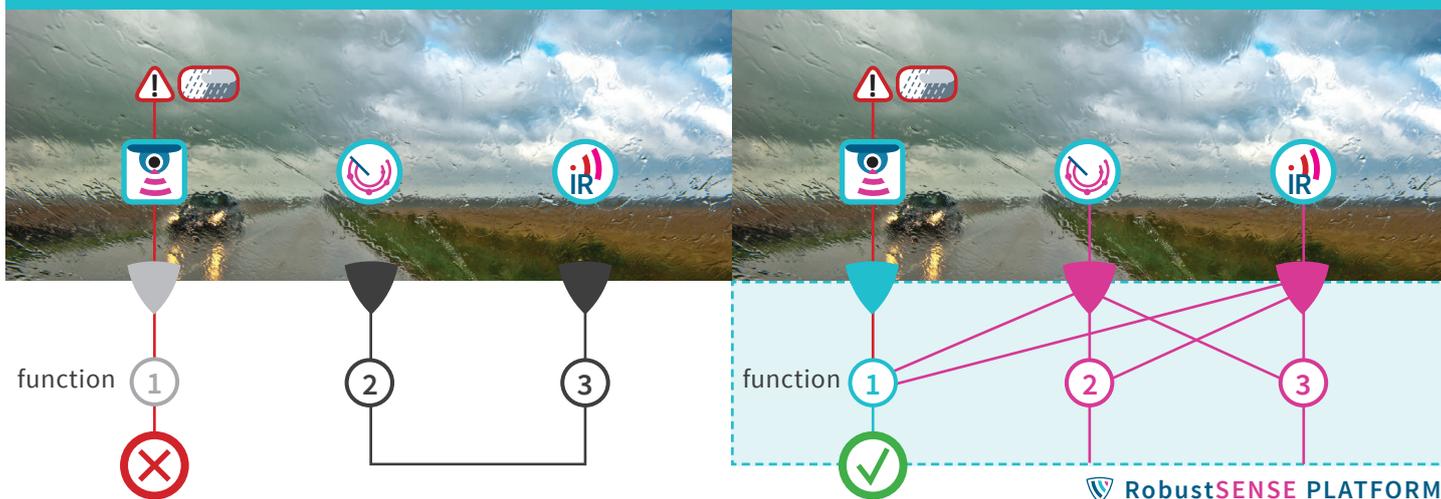


RobustSENSE develops a robust and reliable sensor platform for automated and assisted driving that will keep on working in harsh environmental conditions like snow, rain or sun-flare.



Today's systems decide in a binary manner on function availability. In case of a disturbance the system fails. ❌

RobustSENSE sensor platform with self-monitoring and information fusion allows for adaption to all environmental conditions. In case of a disturbance the system works. ✅

RobustSENSE will introduce a sensor platform capable of adapting to harsh conditions and failures on every system level.

RobustSENSE will improve sensor technologies and advance methods for sensor signal processing and sensor data fusion.

RobustSENSE will take an integrated system approach with added redundancy on sensor and processing level.

**Project:** started in June 2015, has duration of 36 months

**Project coordinator:** Werner Ritter, Daimler AG

**15 Partners:** Daimler AG, AVL List GmbH, AVL Deutschland GmbH, Robert Bosch GmbH, Centro Ricerche Fiat, Centro Tecnológico de Automoción de Galicia, EICT GmbH, Fico Mirrors S.A., Fraunhofer FOKUS, FZI Forschungszentrum Informatik, Modulight, Inc., Oplatek Group Oy, SICK AG, Universität Ulm, Teknologian Tutkimuskeskus VTT Oy

**Budget and Funding:** € 10.7 million total costs, thereof € 3.5 million funding from EU, ECSEL Joint Undertaking and € 2.7 million national funding



Co-funded by the European Union



## TECHNOLOGY

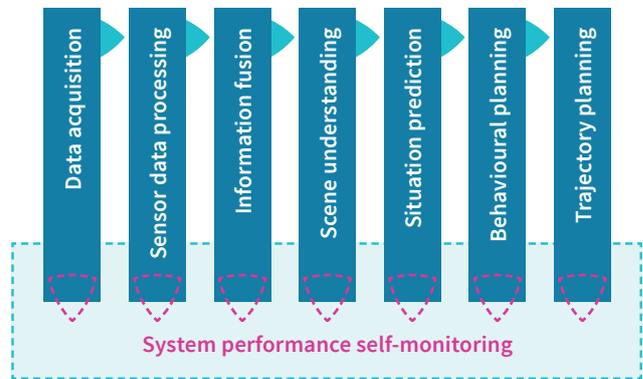
### Steady Situation Prediction by Information Fusion

The research and development focuses on prototyping a system platform that will be capable of self-monitoring and information fusion.

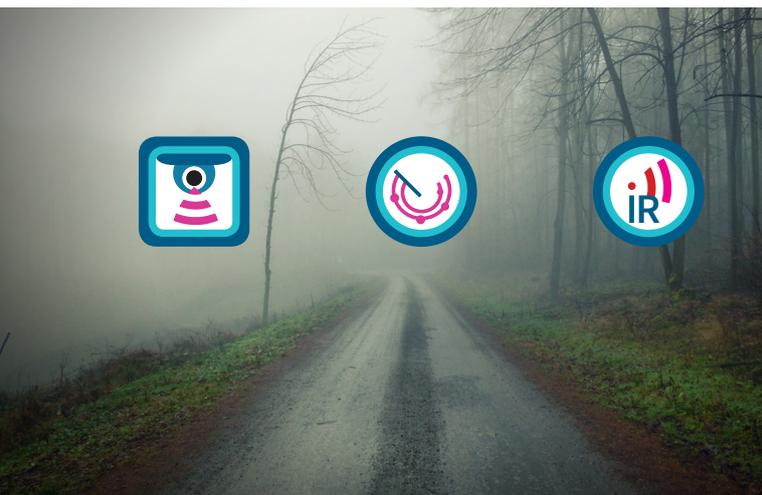
Each component of the system platform should be able to continuously monitor its own performance and deliver this information to the other modules. Based on the current reliability of the sensors, the overall performance of the driving assistance system will be adapted and might – e.g. in case of bad weather – be reduced consequently to the safe range. Thus further functioning of the driver assistance system (DAS) is ensured.

This is where current systems fail: single components or sensors might become inoperative if the sensing range or data quality drops under a certain threshold and causes

a system failure of the DAS. RobustSENSE will prevent this by establishing new sensor monitoring methods like the availability check, and due to the information fusion of all available data, resulting in the best environmental representation under the given circumstances. Consequently, this enables the DAS to keep on working – albeit with reduced performance.



 RobustSENSE PLATFORM



### Environment Sensing Improvement

A major technological challenge within the RobustSENSE project is to increase the robustness of existing sensors and sensor principles. The targeted sensors are radar, lidar as well as single, stereo and near infrared/far infrared cameras. Lidar sensors' degradation regarding distance measurements in foggy or heavy rain will be addressed by introducing new wavelengths. The polarisation properties and adaptive modulation of radar sensors, and the image properties of cameras like contrast and illumination will also be exploited to consequently enhance performance.

