LOCALIZATION & COLLISION AVOIDANCE ON THE PROVING GROUND

Project task:
Demonstration of a cost-effective backup position measuring system, which brings the vehicle into a safe state (standstill) after a short time on a reliable trajectory in case of GNSS failure. This backup position measuring system should be applicable on proving grounds as well as in field tests.

Challenges:
Monitoring (real life) test runs on proving grounds using a cost-effective multi-sensor system implemented on the roof of all vehicles associated with the test run.

Fast and reliable detection of ego pose deviations with scene interpretation.

Multi-Sensor Head:
Incorporating of RTK INS/ GNSS, binocular vision and high performance dynamic mesh communication module.

Algorithms:
• Visual Odometry for pose estimation, based on stereo image sequence analysis.
• Machine Learning (DNN) for semantic interpretation of vehicle surrounding.
• Scene reconstruction combined with Machine Learning for estimation of infrastructure on proving grounds in order to estimate ego pose based on a priori generated maps.