



## Automated vehicle ODD impacts of limited sensor range

### Problem description

Connected and Automated Vehicles (CAVs) are expected to become increasingly prevalent on roads in the near future. These vehicles make use of a wide array of sensors to perceive their environment, such as LiDAR, RADAR, camera's etc. The use of these sensors and the traffic environment in which a CAV is present is subject to the Operational Design Domain (ODD) of the vehicle, which states the conditions under which the CAV can reasonably be expected to drive independently. However, some recent accidents have already shown that incorrect observations and practical limitations of the perception sensors can lead to dangerous situations and momentarily sudden loss of ODD. This is easy to understand if one thinks about the required distance that a CAV may need to perceive and the actual distance that such a vehicle does.

### Objectives & Assignment

The objective of this project is to investigate the consequences of CAV sensor range limitations and errors on the ability of the vehicle to remain within it's ODD and the knock-on effect for traffic flow and safety. A focus of the project will be to describe these effects and where possible also quantify them, as well as giving recommendations for policymakers, road authorities, regulators and OEMs on how to deal with the issues.

This Master thesis can include an internship at Rijkswaterstaat or another organisation

### Research group

DiTTlab, Transport & Planning Department  
 Thesis supervisor: prof.dr.ir. Bart van Arem  
 Daily supervisor: dr.ir. Simeon Calvert

### External support

Rijkswaterstaat

### Information

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