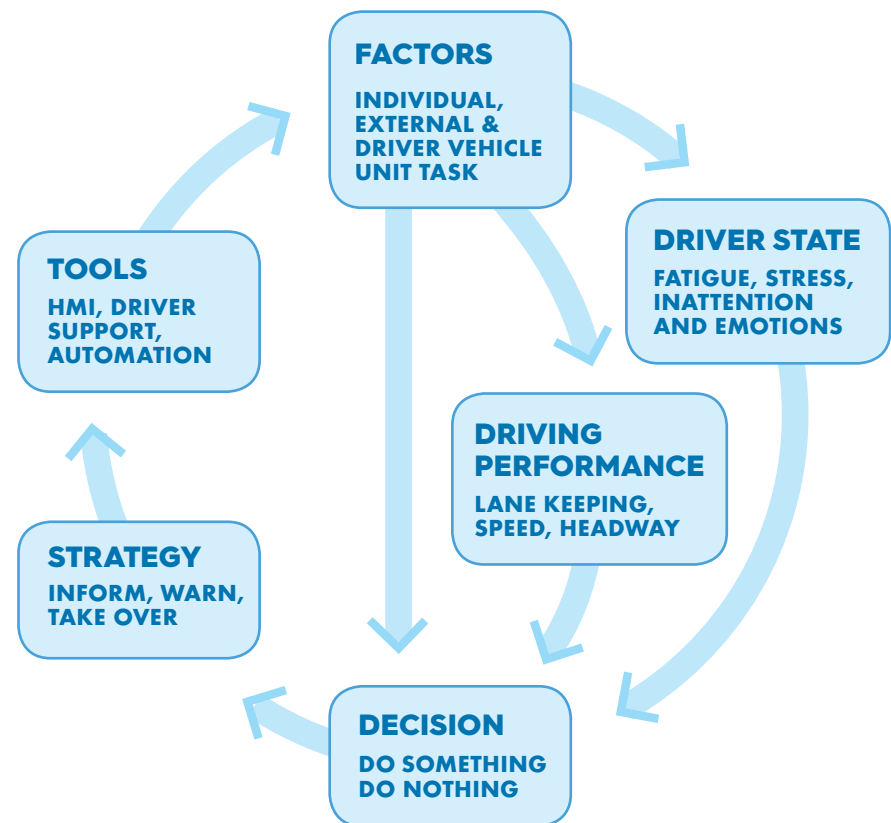


CONCEPT



CONSORTIUM

RESEARCH



INDUSTRY



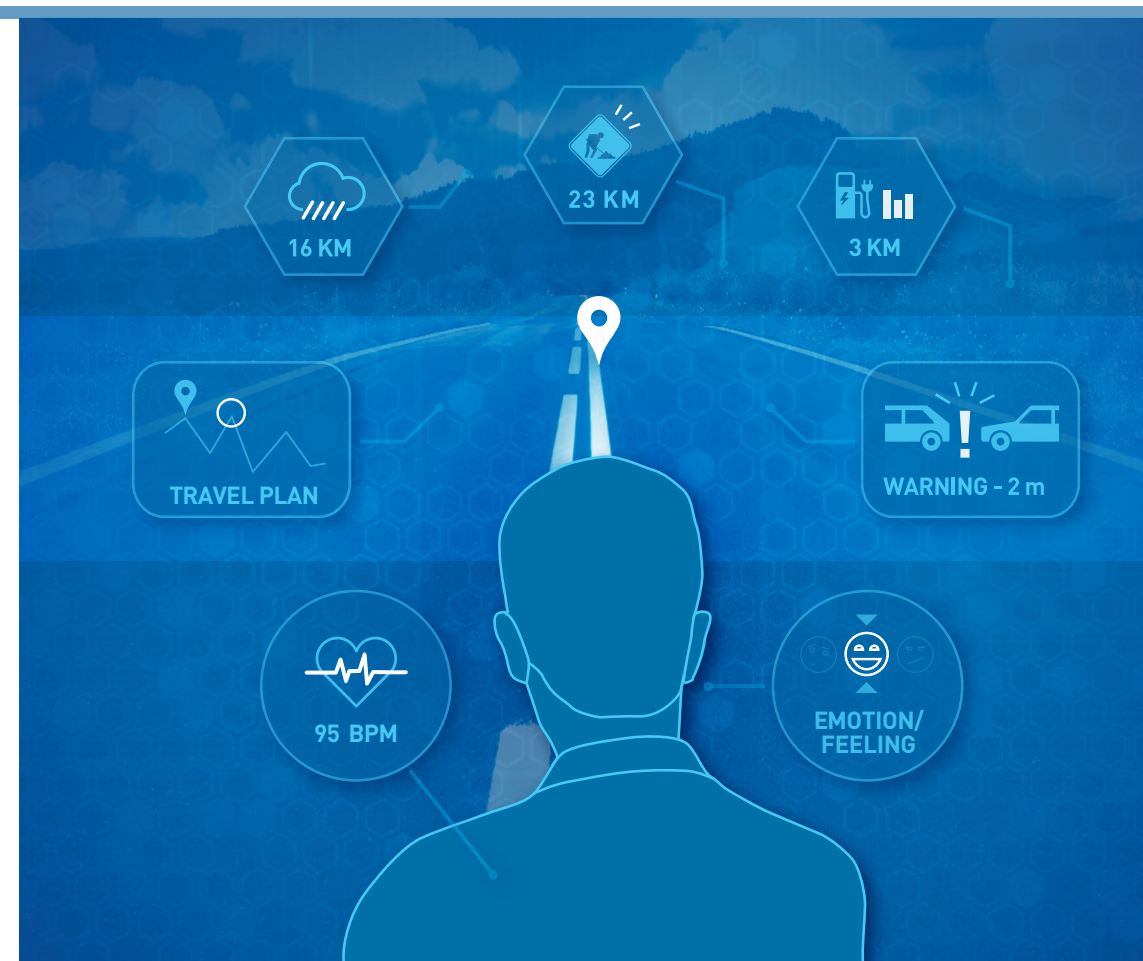
COMPANIES



USERS & ASSOCIATIONS



ADAPTIVE ADAS TO SUPPORT INCAPACITATED DRIVERS MITIGATE EFFECTIVELY RISKS THROUGH TAILOR MADE HMI UNDER AUTOMATION



TARGETS

Develop **ADAS** that incorporate **driver/rider state, situational/ environmental context** and **adaptive HMI** to **automatically hand over different levels of automation** and thus ensure **safer** and **more efficient road usage** for **all vehicle types** (conventional and electric car, truck, bus, motorcycle)



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OBJECTIVES

Development of robust detection/prediction algorithms for driver/rider state monitoring of fatigue/drowsiness, stress, inattention/distraction and impairing emotions.

Development of multimodal, user oriented and adaptive information, warning, actuation and handover strategies.

Integration of the developed algorithms, sensing technologies, supportive technologies (automation, V2X) and HMI algorithms/components into driver/rider state monitoring systems.

Development of personalised driver/rider behaviour profiles, considering inter-individual differences.

Design of HMI concepts, prototypes and guidelines for automated functions that take into account driver/rider state.

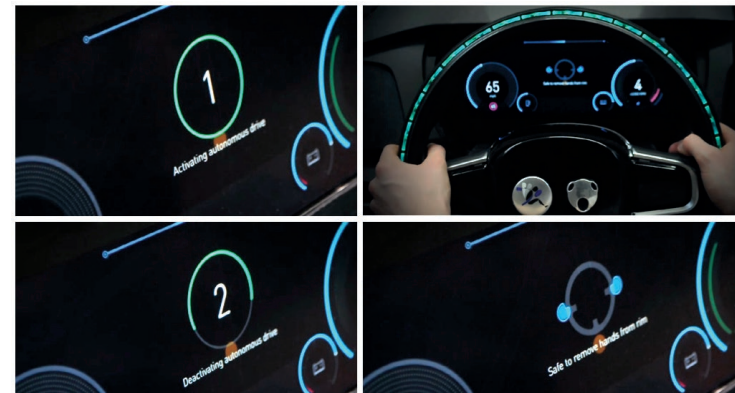
Instrumentation of evaluation/demonstration tools (simulators & vehicles) to evaluate the developed systems in different environments.

Adaptation of existing EuroNCAP test protocols from non-automated to automated driving modes.

Performance of targeted tests for the selection of HMI elements that optimally support each Use Case.

Evaluation of the developed systems and use cases with a wide pool of drivers/riders under simulated, controlled and real road conditions and for different driver/rider states and automation use cases/levels.

Holistic impact assessment of automation opportunities to enhance safety by supporting the impaired driver/rider, as well as of handover transitions optimisation.



ADAS&ME DRIVERS IN DIFFERENT DRIVER STATES RECEIVE SUPPORT DURING TRANSITIONS TO AND FROM AUTOMATION

ATTENTIVE LONG HAUL TRUCKING



Anna is a truck driver. Autonomous driving will enable her to relax during her long working hours and ensure that she is more refreshed when she needs to take over the driving task. Her truck communicates with her when it is time to hand over control to her.

ELECTRIC VEHICLE RANGE ANXIETY



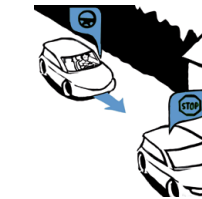
Paul is driving an electric car. He feels anxious about whether he will reach his destination within the range of the car. By means of information visualisation and rerouting propositions provided by the car, Paul will arrive safe and relaxed at his destination.

DRIVER STATE-BASED SMOOTH AND SAFE AUTOMATION TRANSITIONS



Niki, a car driver, is offered the option of automated driving when the vehicle detects she is stressed and sleepy. When Niki is again deemed fit to drive, the vehicle will ask if she wishes to take back control.

NON-REACTING DRIVER EMERGENCY MANOEUVRE



In some situations, Niki may not be able to drive or react in a safe way. The vehicle will then automatically take over control and handle the situation safely.

LONG RANGE ATTENTIVE TOURING WITH MOTORBIKE



Bruno is riding a motorcycle capable of checking whether he's impaired (e.g. stressed) by monitoring his body. His vehicle is able to warn him and propose a suitable rest stop, or even limit its own performance, to help ensure that Bruno will arrive safely at his destination.

RIDER FAINT



Tania is riding a motorcycle during a very hot day. Her motorcycle detects her "unfit" state and proposes that she take a rest. Tania is not responsive, so her motorcycle limits its performance, turns on the hazard lights, decelerates automatically and assists her until it stops on the side of the road.

PASSENGER PICK-UP/DROP OFF AUTOMATION FOR BUSES



Peter is driving a bus and would benefit from support at the bus stop during a stressful and safety-critical situation. At the bus stop, the system takes over and Peter is able to relax and focus on his passengers. Leaving the bus stop, the system checks that Peter is fit to drive and hands back control to him.