



When AIs do drive cars but do not pay bills

Cooperative model in vehicle automation

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AutoMate: rEvolution in vehicle automation

Our envisioned systems will enhance safety by using the strength of both the automation and human driver in a dynamic situation dependent way. The automation is understood and designed as the driver's companion or TeamMate.

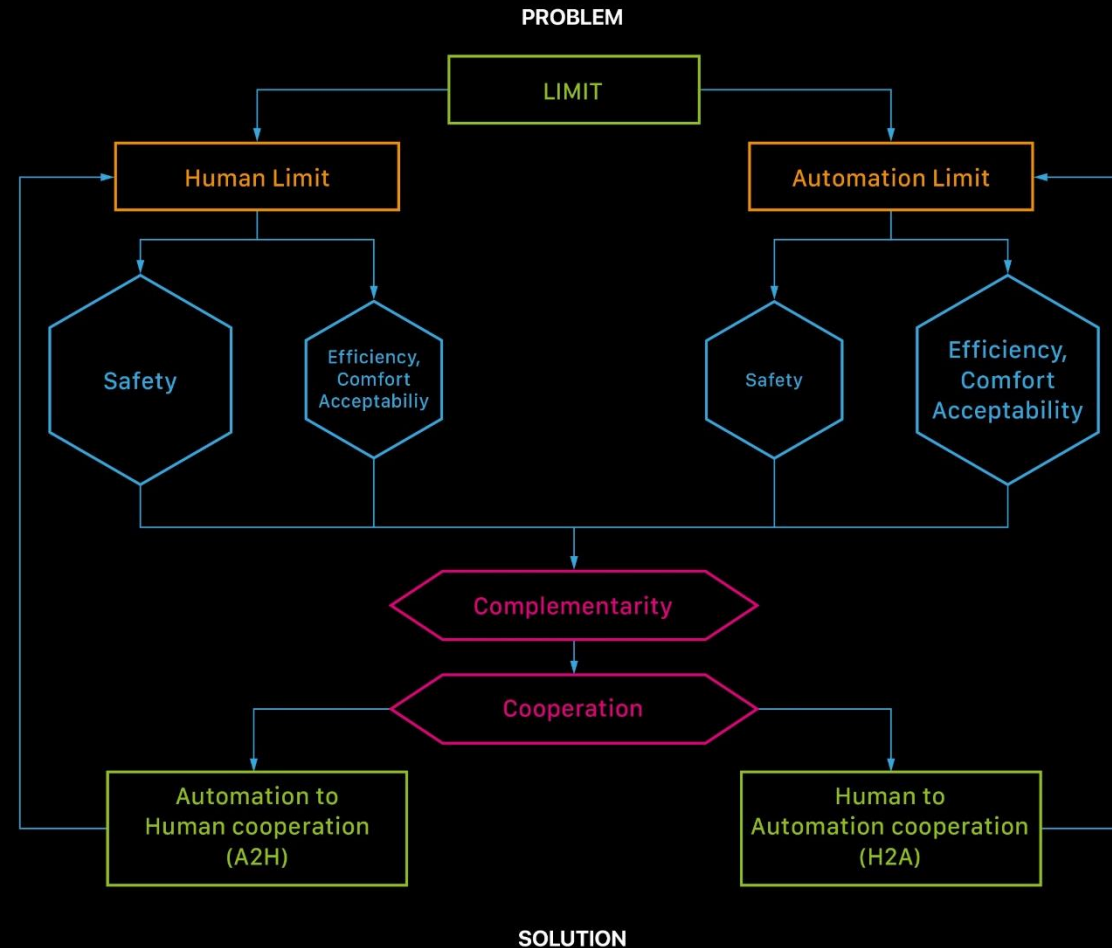
Project number: 690705

Call identifier: H2020-MG-2015_TwoStages

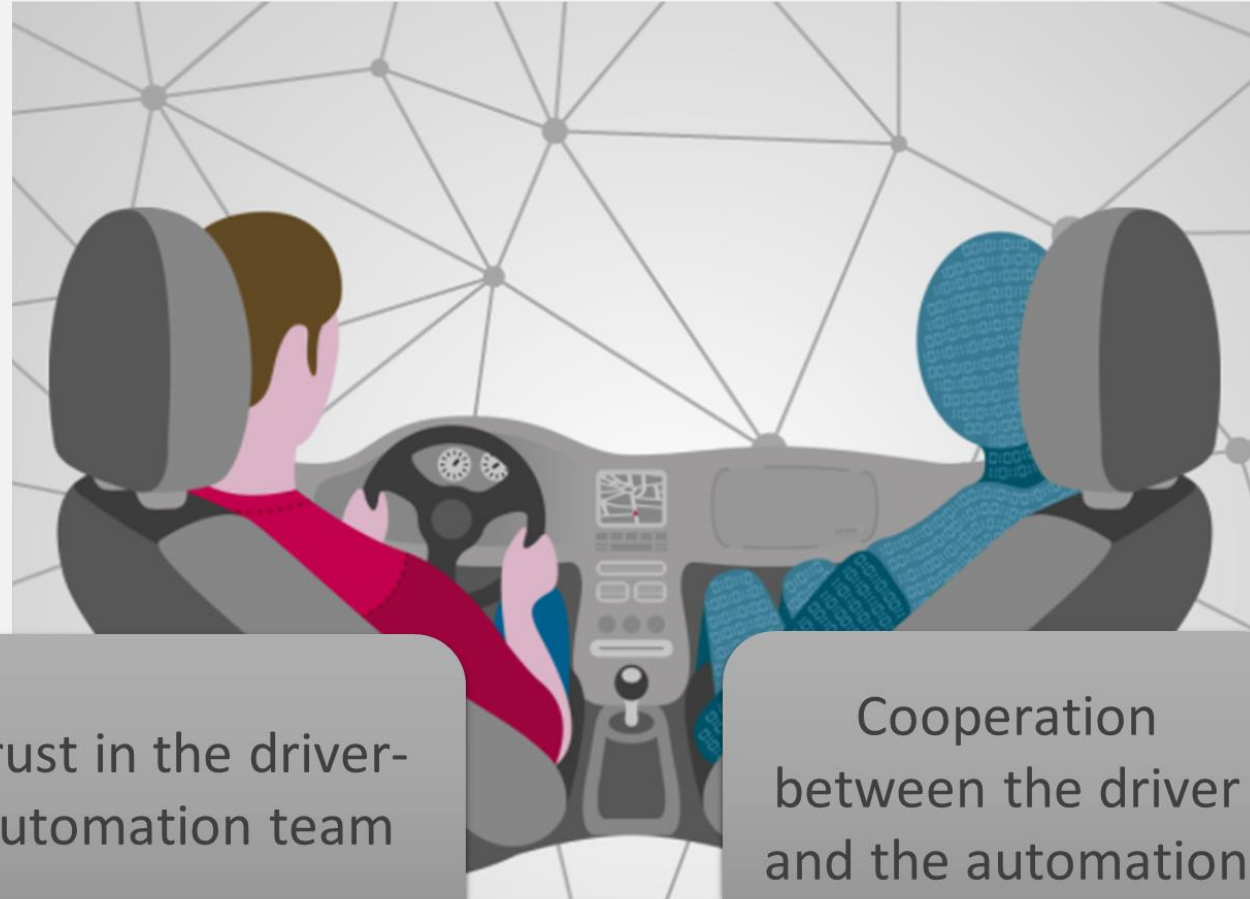
Topic: MG-3.6a-2015 Safe and connected automation in road transport

Tags/ Keywords: Man Machine interface, Human-Machine Team, Driver and Situation Monitoring, Dynamic Driving Task Distribution, Shared Understanding, Mutual Support, Safety

Conceptual Model of Human-Machine Cooperation for highly automated vehicles



The Concept of Cooperation

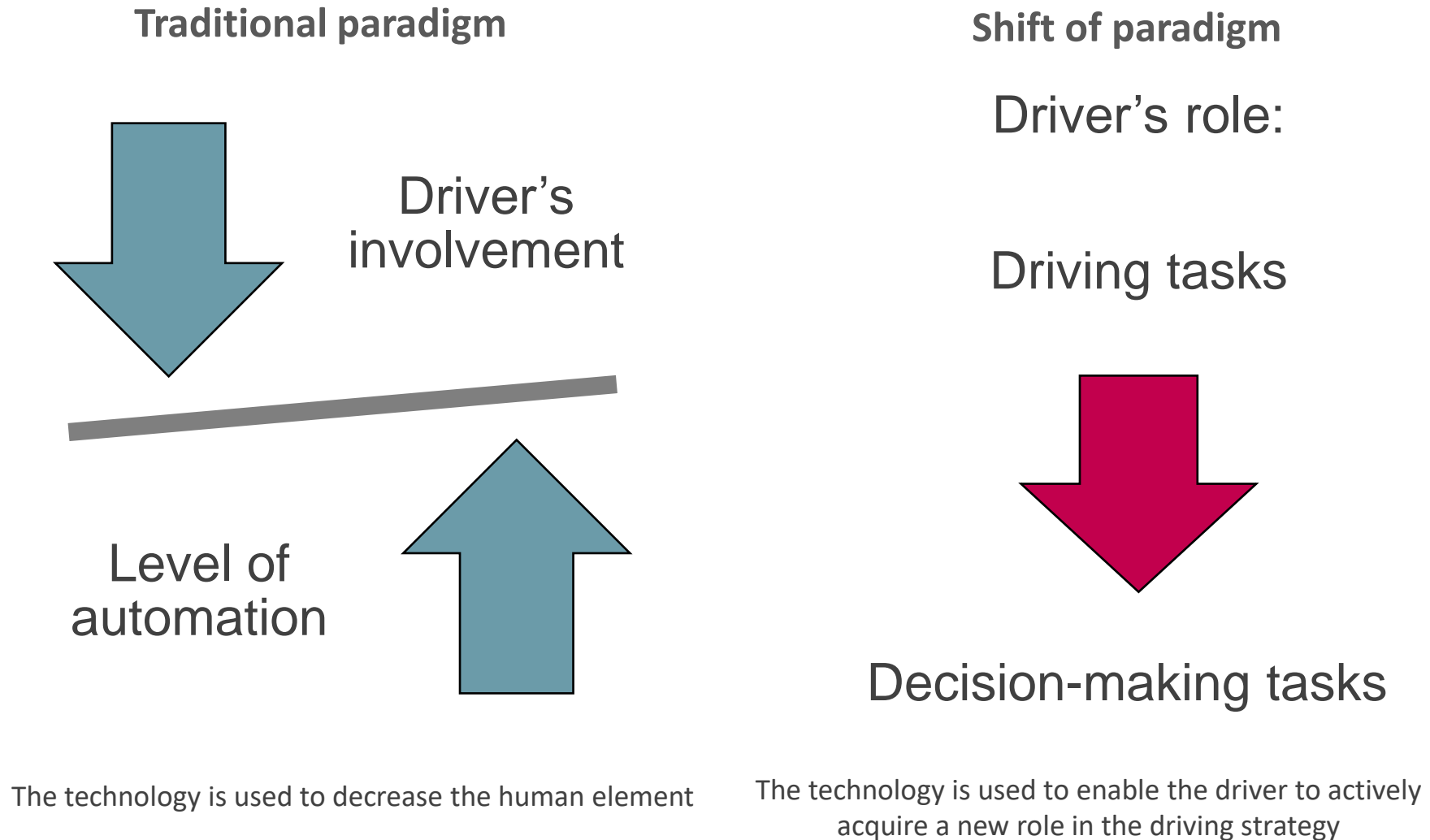


Trust in the driver-automation team

Cooperation between the driver and the automation



Shift of paradigm in the interaction with automated agents: The new role of the driver



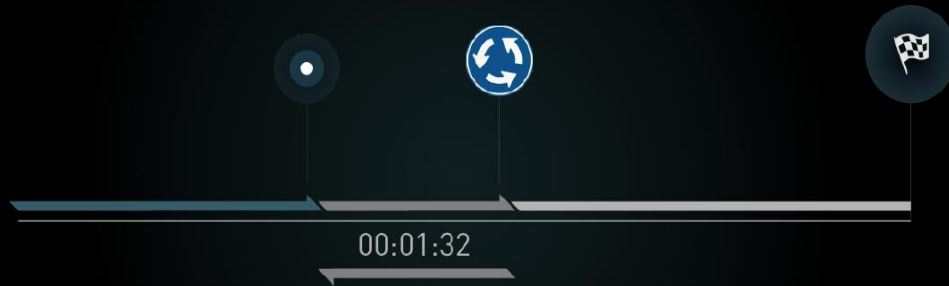
Pillar 1

EXPLANATION TO INCREASE TRUST



Pillar 2

REDUCTION OF THE «TAKE OVER ANXIETY»



Pillar 3

CONTINUOUS DRIVER MONITORING

The screenshot displays a complex software interface for driver monitoring. At the top, there are tabs for "Distraction", "Exposure", "Drowsiness", and "Yawn Speech". The main area is divided into several sections:

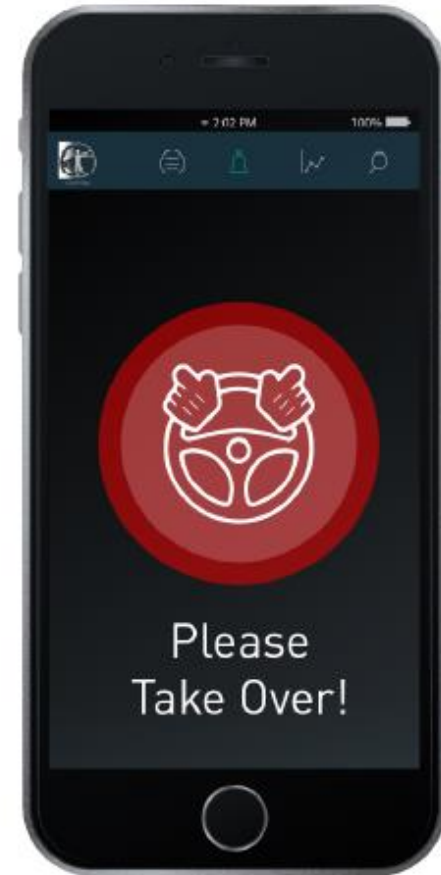
- Simulation Model:** Shows a 3D wireframe model of a vehicle with a green bar indicating a "Distraction Level: Attentive".
- Distraction Trend:** A line graph showing distraction levels over time, with a y-axis labeled "Levels" ranging from 1 to 5.
- Camera View:** Displays a real-time video feed of a driver's face with yellow bounding boxes for facial features. It includes sensor data: Roll: -0.96 deg, Pitch: -4.20 deg, Yaw: 3.32 deg, Dist: 653.03 mm. Status indicators show "Presence: Alive", "Alert: Engaged", "Learn Time: 0.000 s", and "Reco Time: 0.052 s".
- Controls:** A panel with various checkboxes and buttons for adjusting the simulation and monitoring parameters.
- Face Recognition:** A section for identifying the driver, showing fields for Name (RANO), Age (33), Gender (Male), and an Enrollment button.
- Vehicle Speed:** A speedometer at the bottom right.

Pillar 4

STATE ADAPTIVE HMI: HUMAN-IN-THE-LOOP



Haptic seat



HMI on nomadic device

- INFO
- MEDIA
- SETTINGS
- NAVI**
- PHONE



MENU SW Woods Chapel Rd Arrival 14:32

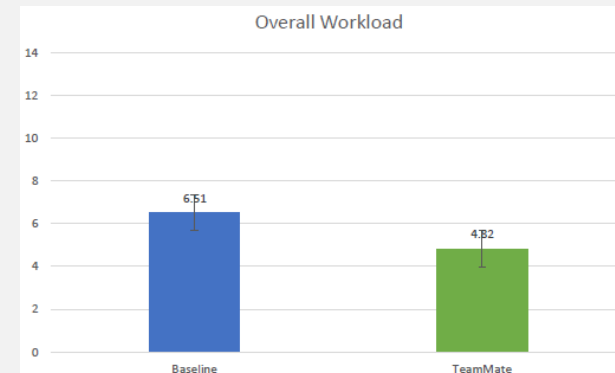
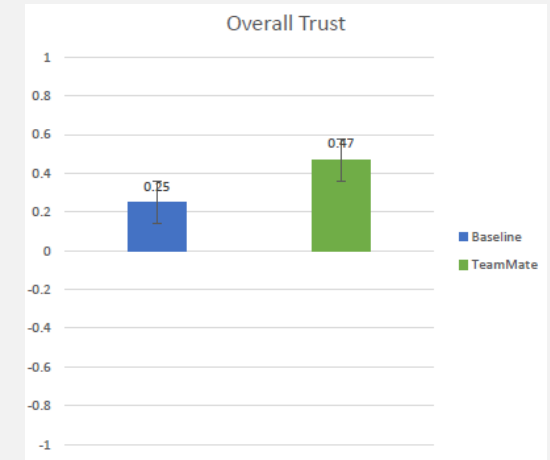
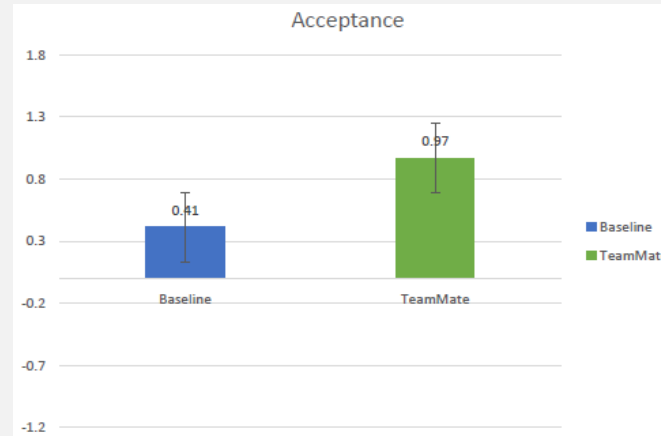
AUTOMATED



Distance
163 km
Driving range
356 km
Time of travel
02:45 h
Consumption
02:45 l/h

1° EVALUATION RESULTS AT DRIVING SIMULATOR

Experiment with 20 subjects
(9 males, 11 females)





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