This project has received funding from the European Union’s Horizon 2020 research and innovation programme.
TransAID
« Transition Areas for Infrastructure Assisted Driving »

European H2020-MG-2014-2015 project
- ART-05-2016 - Automated Road Transport
- Period: 01-09-2017 ~ 31-08-2020
- Budget: € 3,836,353
- 7 partners + 12 associated partners

Main objective:
To develop and demonstrate
- infrastructure-assisted traffic management procedures,
- protocols and
- guidelines
for smooth coexistence between automated, connected and conventional vehicles especially at Transition Areas.
Definition: “Transition Areas”

“Transition Areas” are areas on the road where many highly automated vehicles (blue) are changing their level of automation due to various reasons.
Definition: ToC, TOR & MRM

- **ToC**: Transition of Control
- **TOR**: Take Over Request
- **MRM**: Minimum Risk Maneuver

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Objectives

1) Evaluation and **modelling of current automation prototypes** and their drivers’ behaviour.

2) **Assessment of the impact of Transition Areas** on traffic safety and efficiency. Generate requirements on enhanced traffic management procedures.

3) Development of **infrastructure-assisted management procedures and protocols** to control connected, automated and conventional vehicles at Transition Areas.

4) Definition of **V2X message sets** and communication protocols for the cooperation between connected/automated vehicles and the road infrastructure.

5) Development of procedures to enhance the **detection of conventional vehicles** and obstacles on the roads and to inform/influence conventional vehicles.

6) **Integration, test and evaluation** of the TransAID infrastructure-assisted traffic management protocols and procedures in a **simulation** environment. Validation and demonstration of them by means of **real world** prototypes at test sites.

7) Provision of a **guideline/roadmap** to stakeholders regarding the requirements on traffic infrastructure and traffic management in order to cope with Transition Areas considering mixed traffic.
Troublesome first steps: Scenario and timeline definition

Performed literature studies, expert interviews and stakeholder workshops with mentimeter surveys

→ Various parameters (environmental causes, vehicle behaviour, HMI, driver reaction, time ...)

→ only limited data available
Scenarios

Prevent ToC/MRM
- Providing path information
- Temporarily change lane category
- Cooperative lane changes
- Speed & Distance information
- Temporal traffic separation

Manage or support ToC/MRM
- Find safe spot for stopping without harming traffic

Distribute (in time and space) ToC/MRM
- Distribute transitions of control to flatten effects

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Objectives #1 & #2: Modelling and First Impact Assessment

1. Modelling of AV/CAV behaviour
   - Longitudinal Control (ACC, C-ACC)
   - Lateral Control (Lane Keeping, Lane Change)
   - Transition of Control

2. Impact Assessment
Objectives #3, #4 & #5:
Management procedures, message sets & obstacle detection

Approach: standard-compliant, backward compatibility and interoperability.

- Providing path information
- Temporarily change lane category
- Cooperative lane changes
- Speed & Distance information
- Temporal traffic separation
- Find safe spot for stopping without harming traffic
- Distribute transitions of control to flatten effects

Extensions needed:
- CAM
- DENM

Proposal:
- MCM
- CPM

Optimization:
- MAPEM
- IVIM

Detection of obstacles & Sensor data sharing

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Objective #6: Test & Evaluation in Simulation & Real World

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Objective #7: Roadmap/Guideline development

Stakeholder consultation results
Mentimeter survey results
Simulation results
Real-world feasibility results
Communication standardization

Roadmap & Guidelines for stakeholders (road authorities, cities, OEMs, standardization bodies, legislation entities...)

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Approach: Intermediary Service

Service Providers: OEMs & in-car solutions
- Disengagements
- Traffic Information
- Road Status

Traffic Information

Road Authorities: central & decentral
- Traffic Measures
- New & Changed TAs
- Requirements
- Mandate
- Policy
- Road Works

Intermediary Service

Weather

Road Side Infrastructure

Automation-ready networks
Smooth introduction of automated vehicles
Less congestion
Lower emissions
More safety
Better comfort

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Thanks for listening!

Please join us at our final event!

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