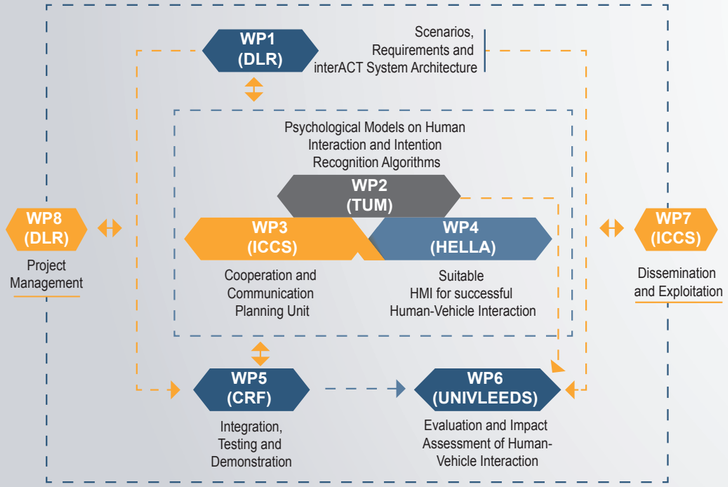
What is the interACT approach?

The main assumptions of the interACT approach are that the interaction between the AV, the on-board user, and other road users will only be safe and widely accepted if:

- The interaction of the AV with other road users conforms to expectations of the on-board user and other road users, and is predominantly based on established human-human interaction in mixed traffic situations.
- The AV understands the intention of the on-board user and that of other road users, can predict their behaviour, and allows for real cooperation by taking their behaviour into account.
- The AV selects and implements safe manoeuvres only.

To support this overall approach, the work of the interACT project team is structured into 6 technical and 2 management-related Workpackages.



Expected impact

Raising awareness for the integration of AVs in mixed traffic environments

interACT will evaluate, demonstrate and disseminate its project results in two demonstrator vehicles and several research simulators to raise awareness of any solutions that allow the safe, cooperative, and intuitive integration of AVs in mixed traffic environments.

Increasing road safety

interACT will contribute to road safety by significantly improving the awareness of on-board users and other traffic participants of the AV's intentions and manoeuvres when interacting in mixed urban settings.

Improving validation procedures for Automated Vehicles

The validation procedure will consider a) methodologies to test and assess cooperation and safe interaction between an AV, the on-board user, and other road users, and b) provide novel on-the-fly techniques for manoeuvre and trajectory planning that drastically reduce the need for testing all varieties of situations.

Increasing user-acceptance and ease-of use of AVs

The project considers user-requirements and user-expectations throughout the whole design process. Thus, AVs using the interACT solutions will receive higher ratings than other AV solutions, from both on-board users and other traffic participants in relation to intuitive driving behaviour, acceptance, and trust.

Supporting the leadership position of the European vehicle industry

The interACT project will enable its industrial partners to fully exploit project findings, increasing the potential safety benefits, sales, and adoption of AVs. With leading manufacturers such as BMW, BOSCH, CRF, and HELLA on board, the project has the ability to ensure that results are integrated at a fast pace, allowing Europe to remain at the forefront of this type of research.

interACT

Designing cooperative interaction of automated vehicles with other road users in mixed traffic environments

www.interact-roadautomation.eu

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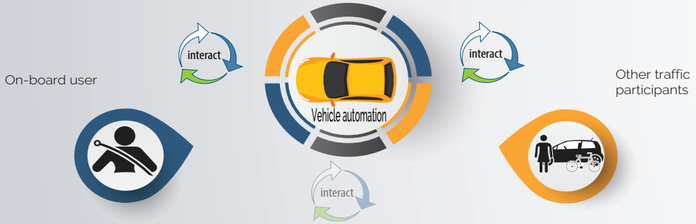
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 723395.

What is the interACT project about?

As Automated Vehicles (AVs) will be deployed in mixed traffic, they need to interact safely and efficiently with other traffic participants. The interACT project will be working towards the safe integration of AVs into mixed traffic environments. In order to do so, interACT will analyse todays' human-human interaction strategies, and implement and evaluate solutions for safe, cooperative, and intuitive interactions between AVs and both their on-board driver and other traffic participants.

Situation Today

Future situation: Automated vehicles in mixed traffic enviroments



Across three European countries (Germany, Greece, & the UK), data will be collected about how human traffic participants interact in real traffic conditions. Specific situations will be identified to enable meaningful comparisons. This data will inform the development of interaction models that identify the main communication needs of road users in future traffic scenarios incorporating AVs. These interaction models will then be used to improve software algorithms and sensor capabilities for recognising the intentions of surrounding road users, and predicting their behaviours, enabling real cooperation between AVs and other road users. On the vehicle side, the AV itself will be controlled by a newly developed Cooperation and Communication Planning Unit that integrates the planning algorithms, provides synchronized and integrated interaction protocols for the AV, and includes a safety layer that is based on an easy-to-verify software with novel methods for fail-safe trajectory planning. In addition, the interACT project team will use a user-centred design process to develop, implement and evaluate novel Human-Machine Interaction elements for communicating with surrounding road users.

interACT results will be demonstrated using driving and pedestrian simulators and two vehicle demonstrators.

What will interACT deliver?

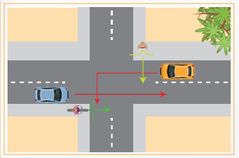
The challenge

Automated Vehicles need to communicate their intentions to other road users and on-board users

The enablers

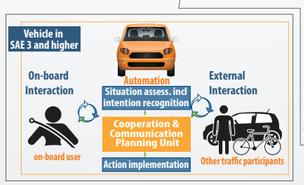
Evaluation methodology for assessing the quality of cooperation

Psychological models of human interaction behavior



Improved algorithms for intention recognition and behaviour prediction

Novel HMI elements



Cooperation and Communication Planning Unit including fail-safe trajectory planning

interACT at a glance

Partners

Deutsches Zentrum für Luft- und Raumfahrt
German Aerospace Center
DLR *Germany*

BMW GROUP *Germany*

CRF *Italy*

HELLA *Germany*

ICCS *Greece*

BOSCH
Invented for life
Bosch *Germany*

Technical University of Munich
TUM *Germany*

UNIVERSITY OF LEEDS
UNIVLEEDS *UK*

Project facts

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