European R&D activities

• The EC supports research centres and Industry towards the development and deployment of Connected Automation in our roads through its past FPs and H2020 R&D programs

• Several ongoing initiatives (and new projects to come) will tackle the automation challenges including:
  • Validation and evaluation of automated vehicles is one of them and plays an important role in R&D
  • Demonstrators, pilots, naturalistic studies and FOTs are key for the validation and assessment of these technologies in order to successfully bring them to market
  • Support actions to coordinate these activities at European and leverage international cooperation and harmonisation
AdaptIVe develops various automated driving functions for daily traffic by dynamically adapting the level of automation to situation and driver status.

Further, the project addresses legal issues that might impact successful market introduction.
Partners:
ICCS (coordinator) / ARMINES / BroadBit Energy Technologies / Fiat Research Center / BaseLabs / EPFL / Hitachi Europe / Technical University of Dresden / Scania CV AB

**Beyond pure sensor-based automation:** to enable the **convergence** of vehicle automation with cooperative V2X communications and decentralized maneuvering control algorithms focusing on:

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Use Case</th>
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<tbody>
<tr>
<td>Urban</td>
<td>• Safe car-following</td>
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<td></td>
<td>• Urban intersection management</td>
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<tr>
<td>High-way</td>
<td>• Convoy creation</td>
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<td>• Vehicle merging with convoy</td>
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<td>• Collaborative lane change (automated and manually-driven vehicles)</td>
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</tbody>
</table>
eUropean naturalistic Driving and Riding for Infrastructure & Vehicle safety and Environment

MAIN RESEARCH AREAS
- Crash causation and risk
- Everyday driving
- Distraction and inattention
- Pedestrians and cyclists
- Motorcycle behaviour
- Eco-driving

ANALYSES
- Pre-processing and data enrichment
- Preliminary Analyses Plan
- Safety Critical Events

DATA SHARING AND DATA PROTECTION
- Data available for post project research
- Data access for non-partners
- The Data Protection Concept (DPC)
Large scale European Naturalistic Driving study

- Natural behaviour in natural surrounding
  - No experimental interventions
  - Insight look over the shoulder of the driver

- Allows to study exposure, prevalence and risk

- Direct observation of conflicts and (near) crashes
  - Exact and detailed information what preceded
  - No bias by post-hoc reporting

Person cars
- 120 in total
- France, Germany, Poland, UK
  - 30 vehicles per country

PTW’s
- 40 in total
- 15 vehicles in Austria
- 25 vehicles in Spain

Trucks
- 50 in total
- Netherlands
COMPANION

COoperative dynamic forMation of Platoons for sAfe and eNergy-optImized gOods transportatioN

Objective
Develop automated co-operative mobility technologies for the creation, coordination and operation of heavy-duty vehicle platooning, in order to improve fuel efficiency and safety for goods transport.

Development and validation of
- Off-board system for optimal platoon coordination
- On-board system for coordinated platooning
- Multimodal on-board and off-board user interfaces
- Proposal of legal solutions and standards to advance large-scale adoption of platooning
- Demonstration of platooning operations on European roads in multiple countries
Demonstration in European roads
Speed up real-life implementation and interoperability of wireless communication based automated driving accomplished by joint development and demonstration!

Development
- Environmental perception, actuation and interaction
- Wireless communication
- Guaranteed safety
- Mixed-traffic operation

Demonstrating it in a multi-vendor challenge: the 2nd GCDC
- Accelerate multi-vendor solutions, based on an interoperable architecture
- Accelerate standardization, verification and validation tools & methods
- Enhance governmental & public awareness
iGAME – GCDC 2016

- 11 teams:
  - 8 passenger cars / 2 trucks / 1 experimental vehicle
  - +2 benchmark vehicles from the organisation

- One week preparations …
- … followed by a weekend multiple executions of the scenarios

- Safety: All teams passed several tests to guarantee a safe competition
  - Driver as the last safety mechanism
  - Dedicated safety workshop in IDIADA PG

- Judging: Participants were quantitatively rated on
  - Individual performance
  - Group performance

GCDC 2016 The final event

WINNER GCDC 2016
Halmstad University
PROSPECT aims to significantly improve the effectiveness of active VRU safety systems compared to those currently on the market

- By better understanding and expanding relevant VRU scenarios
- Improving overall system performance
- Proposing new validation methodologies
Better understanding of relevant VRU scenarios

PROSPECT requires an early and in-depth understanding of the prevalence and underlying characteristics of vehicle-to-VRU accidents within the European Union:

- Macro statistical and in-depth accident analysis:
  - National statistics from specific countries.
  - CARE analysis for weighting to EU level.
  - Detailed understanding from GIDAS & IGLAD
- Naturalistic urban observations with large number of VRUs:
  - Hotspots monitoring in different EU cities.
AUTOmated driving Progressed by Internet Of Things

AUTOPILOT brings IoT into the automotive world to transform connected vehicles into highly and fully automated vehicles. An IoT open vehicle platform and an IoT architecture will be developed based on the existing and forthcoming standards as well as open source and vendor solutions.

Objectives

- Call: H2020-IoT-01-2016 Pilot 5
- Innovation Action
- Coordinator: ERTICO
- 43 Partners
- Approx. 25 M€ (20 M€ funding)
AUTOPILLOT use Cases

- Urban Driving
- Highway pilot
- Automated Valet Parking
- Platooning

Validation at IDIADA proving grounds

Deployment in different sites

- Dutch Pilot Site (Brainport)
- Finnish Pilot Site (Tampere)
- French Pilot Site (Versailles)
- Italian Pilot Site (Florence-Livorno)
- Spanish Pilot Site (Vigo)
FOT-Net Data is a 3-year support action project with main objectives to:

- Support efficient sharing and re-use of FOT datasets
- Develop and promote a framework for sharing data
- Build a detailed catalogue of available data and tools
- Operate an international networking platform for FOT activities

January 2014 – December 2016
Budget €1.8m, EU funding €1.4m
Consortium: VTT, ERTICO, SAFER, IKA, CTAG, UNIVLEEDS, CEESAR, DAIMLER and 23 associated partners
Published a Data Sharing Framework that provides guidelines for FOTs, addressing e.g.

- Legal topics such as test user consent forms, participants’ privacy and topics to include in data sharing agreements
- Documentation of key information from FOT execution and collected datasets, ensuring that the datasets can be reused
- Financial models for upkeeping datasets and arranging support for new analysts
- Recommendations for data protection
Information on available FOT data and tools

- New FOT Data Catalogue to promote available datasets
- Updated FOT and tools catalogues at [wiki.fot-net.eu](http://wiki.fot-net.eu)

FOT network operation

- A series of international meetings, workshops and webinars. Topics e.g. big data, C-ITS and automated driving
- Events organized in collaboration with USDOT, Japanese ministry, big data project EUDAT and our 31 partners
- Dissemination support to FOT activities, two newsletters / year
- Update of FESTA methodology by the end of 2016
Support action to accelerate the European deployment of connected and automated driving

Objectives (among others)

- Support international cooperation
- Support Strategic alignment of national action plans
- Actively support ART pilots and test beds
- Facilitate exchange of data, experience and knowledge from pilots
- Foster a common evaluation framework across ART projects

- Task 2.4 - Strategic alignment of national action plans
- Task 3.3 - FOT-Net Training and Support Programme for automation pilots and FOTs
- Task 3.4 - Guidance on national testing regulations
- WP4 – Different activities on support of data exchange between pilots, FOTs and demonstrator

November 2016 – October 2018
EU Funding €3M
Resources: 248.5 PM
Consortium: ERTICO, TNO, RWS, IKA, UNIVLEEDS, BMW, VOLVO, IDIADA, VTT… up to 37 beneficiaries
15 associated partners
ART.02: Automation pilots for passenger cars

- Test enabling technologies for automation level 3 (and also level 4)
- Evaluate the benefits in Field Operational Tests (FOTs) for passenger cars in at least 3 countries → Cross border should be considered in highways
- Active involvement of all stakeholders
- Automation pilots for all driving situations (i.e. from highway to urban)
- Common data sharing frameworks

ART.03: Multi-Brand platooning in real traffic conditions

- To develop, test and validate platooning concepts, technologies and functionalities and to demonstrate the robustness of multi-brand platooning
- On a real corridor use case (which preferably goes across national borders).
Álvaro Arrúe
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Thank you very much for your kind attention