



European
Commission



EU Road Safety: Towards “Vision Zero”

Contributions of Horizon 2020 projects
managed by CINEA

Horizon Europe Transport

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European Climate, Infrastructure and Environment Executive Agency (CINEA)
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Print	ISBN 978-92-9208-142-3	doi: 10.2840/853053	EF-05-22-354-EN-C
PDF	ISBN 978-92-9208-143-0	doi: 10.2840/701809	EF-05-22-354-EN-N

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Disclaimer

This document calls for a new approach to safe mobility to be achieved by 2030: one rooted in safety as a core value, and not one in which safety may come second to factors such as cost, speed, aesthetics, or profits. It draws on work done in the past few years by the H2020 funded projects. The contents of the document follow closely the main research priorities and results from the projects funded by CINEA, the European Climate, Innovation and Networks Executive Agency.

Foreword



I am pleased to introduce this brochure on road safety, which highlights an important area of our work in CINEA, the European Climate, Environment and Infrastructure Executive Agency.

Road transport is the most widely used means of travel in the EU. It is also essential to the economy in terms of its contribution to GDP, as the only mode of transport to interconnect all European businesses and people. Though its benefits are undeniable, we also know that road transport is the leading cause of accidents, serious injuries from collisions and premature deaths in Europe.

That is why transport safety and security is one of the ten key areas for action of the [Sustainable and Smart Mobility Strategy](#) adopted by the European Commission in 2020. The EU's long-term goal is to move as close as possible to zero fatalities in road transport by 2050 ("Vision Zero").

CINEA plays an important role in achieving the Commission's road safety goals and objectives through its implementation of a number of relevant EU funding programmes. These include the EU research & innovation

programme, Horizon 2020, its successor, Horizon Europe, and the EU infrastructure programme, Connecting Europe Facility (CEF). A growing number of road safety projects are funded under these programmes, which are managed by CINEA throughout their lifecycle, from idea to implementation.

The total EU contribution towards Horizon 2020 road safety projects managed by CINEA is more than EUR 120 million. This brochure presents a comprehensive overview of these projects that develop, test and exploit innovative solutions for a safer road transport. The selected projects cover domains such as infrastructure, vehicle improvements, human factors and machine interaction, user protection and accidentology. This is all making a significant contribution to the EU's "Vision Zero" strategy.

I hope that you will find this brochure informative and interesting.

Dirk Beckers
CINEA Director

Introduction

Competitive and sustainable road transport is a vital component of our everyday lives. It forms the backbone of the modern economy and facilitates the mobility, logistics, and delivery needs within and around the European Union (EU). Ensuring the safety and security of the road transport system is therefore of paramount importance.

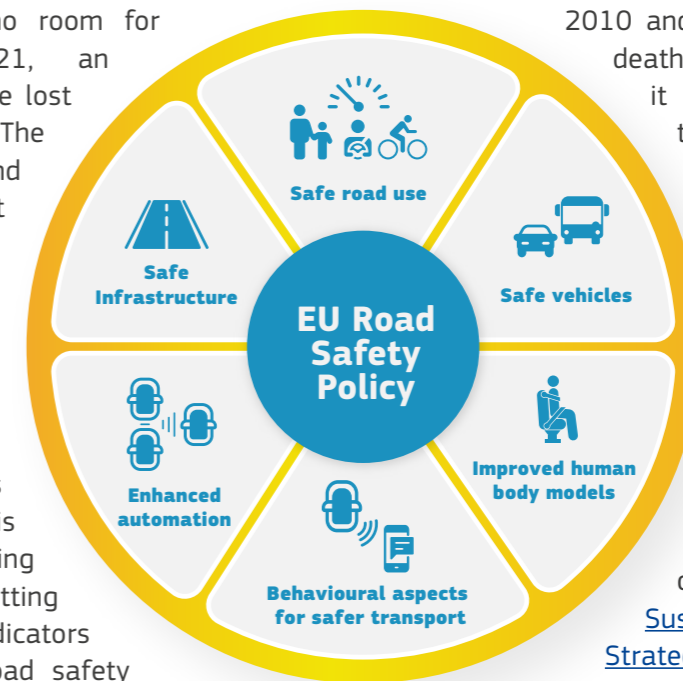
While European roads are the safest in the world, with 44 road deaths per one million inhabitants¹, there is no room for complacency. In 2021, an estimated 19 800 people lost their lives on EU roads². The number of deaths and injuries is a significant source of concern and entails considerable economic costs.

This is why the EU has pledged to achieve zero road fatalities by 2050. "Vision Zero" is the EU's strategy for reaching this reduction over the coming decades. This includes setting out key performance indicators relating to the main road safety challenges to be tackled, namely:

- Safe infrastructure;
- Safe vehicles;
- Safe road use, including speeding, alcohol, distraction and the use of protective equipment, and;
- Fast and effective post-crash care.

As an intermediary step, the EU has set itself a 50% reduction target for road deaths, and, for the first time, serious injuries, by 2030. This was set out in the Commission's [Strategic Action Plan on Road Safety](#) and [EU Road Safety Policy Framework 2021-2030](#). All the projects presented in this brochure are contributing to achieving those goals.

The EU is already a world leader in reducing road traffic deaths and serious injuries. Between 2010 and 2020, the number of road deaths dropped by 36%. However, it fell short of achieving the target of 50% fewer deaths that had been set for that decade, and more needs to be done. The European Commission is working to deliver all elements of its 2019 Road Safety Policy Framework by promoting the "safe system" of safer vehicles, safer infrastructure, safer road users and better post-crash care and by implementing its [Sustainable and Smart Mobility Strategy](#).



EU Commissioner for Transport, Adina Vălean, said:

"Although the EU has the safest roads in the world, we still have a long way to go to eliminate deaths on our roads. At the EU level we will endeavour through financing, legislation and outreach to help deliver the 'safe system' of safer infrastructure, safer vehicles, safer road use and better post-crash care. But this is a shared responsibility with Member States, the industry and road users. Every death and serious injury on our roads is avoidable."

¹ Source: CARE (EU Road accidents database) and Commission estimates. Population data from Eurostat.

² Source: CARE (EU Road accidents database) and European Commission estimates.

Safe infrastructure



SafeStrip

Safe and green Sensor Technologies for self-explaining and forgiving Road Interactive aPplications

SAFE STRIP had a challenging task: to introduce a disruptive technology that would achieve the implementation of novel and cost-effective Cooperative Intelligent Transport Systems (C-ITS) applications. This had to be done by exploiting the existing road infrastructure – specifically through low cost and energy strips markers installed on the road pavement, integrating sensorial and communication networks.

C-ITS safety services, real-time predictive road maintenance and value-added services (parking, replacement of Variable Message Sign Boards (VMS) and toll stations and parking) were designed for all vehicle generations (non-equipped, C-ITS equipped, automated).

SAFE STRIP provided the relevant integrated cooperative solution, which interfaces with the drivers through mobile and on-board applications and provides them with support and warnings for all types of services.

Static data combine with real life traffic and environmental data, which is dynamically communicated by the “strips” that are installed on top of the pavement (10mm protrusion) without further interventions. SAFE STRIP has undergone an iterative validation over a two-year lifetime of autonomous operation, and conducted pilot tests with users in Greece, Italy and Spain.



COORDINATOR

EUROPEAN ROAD TRANSPORT TELEMATICS IMPLEMENTATION COORDINATION ORGANISATION - INTELLIGENT TRANSPORT SYSTEMS & SERVICES EUROPE

PROJECT DURATION

1 May 2017 to 31 August 2020

EU FUNDING

EUR 4,595,814

WEBSITE

<https://safestrip.eu/>

COORDINATOR

UNION INTERNATIONALE DES CHEMINS DE FER

PROJECT DURATION

1 May 2017 to 30 April 2020

EU FUNDING

EUR 4,888,927

WEBSITE

<http://www.safer-lc.eu/>

SAFER LC

A toolbox to save lives at Europe's level crossings

Collisions at level crossings account for a high number of fatalities and serious injuries among road users and lead to major disruptions of railway operations in Europe. On average, six people are killed and another six seriously injured every week on level crossings across Europe.

The EU-funded SAFER-LC project, coordinated by the International Union of Railways, brought together a consortium of 17 partners from 10 countries. The team directed two streams of research, one focused on technical solutions such as smart communications between vehicle and infrastructure and another on human-centred low-cost solutions to encourage safer road user behaviour.

The final project outcome is a toolbox made freely available online to road and rail infrastructure

managers, researchers, policymakers and civil groups at <https://toolbox.safer-lc.eu/>. The toolbox offers about 50 promising solutions that can be targeted at different types of level crossing. These solutions can be as simple as speed bumps before a crossing, paint or optical effects that slow drivers. Each solution is published alongside its practicalities, supporting evidence, financial cost, examples of use, expected effects and side effects, and links to other sites.

This way of providing safety guidance through a user-friendly interface can help decision-makers choose the most adapted solution for their own challenges, country, or cultural context.



HANDSHAKE

Inspiring a shift to everyday cycling

HANDSHAKE helped cities become more liveable places by improving conditions for cycling as an everyday mode of transport. With a focus on infrastructure, urban space management and communication, the project identified innovation in areas such as bike sharing, modelling, socio-economic assessment and governance.

Composed of thirteen cities, **HANDSHAKE** aspired to encourage a European transition to two wheels by sharing and inspiring cycling excellence. By harnessing the expertise of three world-renowned Cycling Capitals - Copenhagen, Amsterdam and Munich - ten Future Cycling Capitals were supported in their uptake of cycling solutions.

The cities have logged a range of statistics during the project, including number of fatal bicycle accidents and number injuries of per 100 km cycled. With a full data picture spanning four years by the end of the

project, this information will shape cycling policy.

To learn more, see the **HANDSHAKE self-assessment tool**, which allows cities to analyse their cycling policy - including its focus on road safety - using a survey. Survey results are being used to inform the Cycling Community of Practice (CCoP), a website planned to follow the completion of the project, which aims to support local governments in the development of their cycling plans.

HANDSHAKE is a H2020-funded project under the **CIVITAS Initiative**, running from September 2018 to August 2022.



COORDINATOR

ISTITUTO DI STUDI PER L'INTEGRAZIONE DEI SISTEMI (I.S.I.S) - SOCIETA' COOPERATIVA

PROJECT DURATION

1 September 2018 to 31 August 2022

EU FUNDING

EUR 4,859,094

WEBSITE

<https://handshakecycling.eu/>

© HANDSHAKE

MORE

Multi-modal Optimisation of Road-space in Europe

On busy streets, users compete for limited space, creating a variety of street-level problems. Besides road safety, these include congestion, carbon emissions, air quality, and the need to improve economic vitality, social cohesion and liveability. Design and regulatory solutions should aim at contributing to multiple objectives.

MORE considered all street user needs simultaneously, rather than one mode at a time - recognising that streets fulfil both 'movement' and 'place' functions in a complex 'ecosystem'.

Road safety is addressed in a number of ways. For pedestrians, it is necessary to ensure footways are of sufficient width (depending on flows), well lit and of good quality, so that they are fully inclusive for all

members of society. To enhance safety, design lines should be taken into account, for example, ensuring safe crossing points in the vicinity of bus/tram stops. Cycles and various forms of micro-mobility require dedicated, protected lanes on busier streets and enforced speed limits (30 kph or less) on quieter streets, where separate infrastructure is not provided.

Street space allocation can be contentious, and **MORE** has developed physical and digital methods to enable co-creation of new designs, with local stakeholders.

COORDINATOR
UNIVERSITY COLLEGE LONDON

PROJECT DURATION
1 September 2018 to 28 February 2022

EU FUNDING
EUR 5,537,114

WEBSITE
<https://www.roadspace.eu/>



© MORE

Safe road use



inDEV

In-Depth Investigation of accident causation for Vulnerable road users

The goal of InDeV was to put together a practical methodology for road safety professionals for studying safety of cyclists and pedestrians in traffic. The methods included a wide palette from accident report analysis to behavioural and observational studies as well as road safety inspections. A specific topic of interest for the project was surrogate measures of safety (also known as traffic conflicts or almost-accidents) — events that possess significant similarities to real accidents but are much easier to observe and study. The work included development of advanced video analysis software able to recognise the motion and interactions of road users in video recording; it also included further work on the theoretical foundations of the method, such as the development of causal and

statistical models relating traffic conflicts to accidents, search for most suitable traffic conflict metrics and definitions that take into account the vulnerability of cyclists and pedestrians and methods for conversion of the observed conflicts into expected number of accidents.

The project also worked with analysis of the socio-economic costs related to cyclist/pedestrian accidents, particularly how their under-reporting leads to underestimation of the problem scale and imbalanced decisions that tend to favour motor traffic occupants.

Driving under the influence of drugs or alcohol is extremely dangerous, increasing the risk of traffic accidents or fatality. Driver fatigue is another major cause of road accidents. This is why testing a driver's fitness is important. In this context, the PANACEA project is designing, developing and testing a holistic pre-, during and roadside monitoring and assessment system for driving ability.

The solution will reliably and efficiently assess the physical, cognitive, and physiological Fitness-to-Drive of commercial drivers in separate pilot sites:

- Sweden: with bus drivers and shuttle operators;
- Greece and Austria: with taxi drivers and delivery service riders;
- Spain: with electric dustbin and coach drivers, and;
- Norway: real-life roadside assessment performed by police officers.

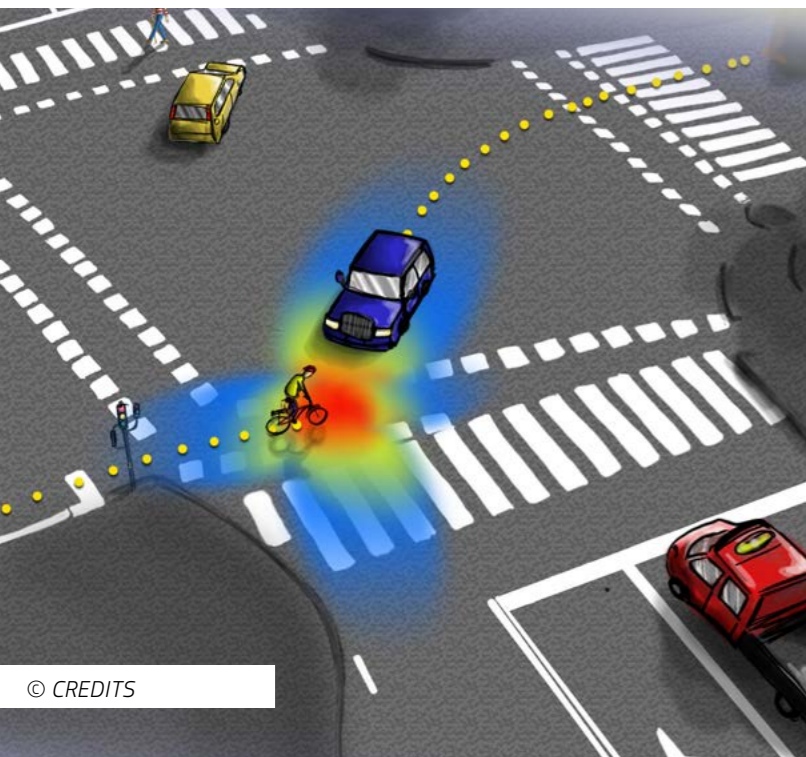
PANACEA

New fitness tests for drivers

In the case of impairment, a complementary cloud-based countermeasures and coaching tool will deploy appropriate solutions to drivers, operators, and enforcement agencies through mobile and web applications.

A literature review for each impairment addressed has been conducted, followed by benchmarking and gap analyses to identify the key competitors and gaps that need to be closed in relevant markets, research and legislation.

Interviews and focus groups took place and questionnaires were given to drivers, riders and stakeholders to gather the main user needs and requirements. These activities led to the definition and development of the implementation and user testing scenarios and scripts along with the first version of the PANACEA architecture.



COORDINATOR

LUNDS UNIVERSITET

PROJECT DURATION

1 May 2015 to 31 October 2018

EU FUNDING

EUR 4,900,000

WEBSITE

<https://cordis.europa.eu/project/id/635895>

COORDINATOR

STATENS VAG- OCH
TRANSPORTFORSKNINGSINSTITUT

PROJECT DURATION

1 May 2021 to 30 April 2024

EU FUNDING

EUR 3,498,466

WEBSITE

<https://panacea-project.eu>



FitDrive

Monitoring devices for overall FITness of Drivers

FITDrive is implementing new toolkits and methodologies for monitoring and evaluating driving performance, cognitive load, physical or mental fatigue and reaction time, providing information to drivers, intelligent road systems, and police roadside controls.

The project is focused on professional drivers and their “fitness to drive” status. A new monitoring AI-based system will profile the driving behaviour of a specific user after one month of driving; then it will be able to detect anomalous behaviour (with respect to the profiled one) and to provide early warnings. Further research efforts will try to associate different kind of anomalies to the most probable specific causes such as alcohol, drugs or fatigue. The toolkit will be

completed by a drug screening device based on saliva samples capable of giving reliable results in less than two minutes.

The system can be used by road patrols to speed up and increase efficiency of roadside controls through a device able to read in contactless mode the “warnings” issued by the system and select those drivers having shown a recent anomalous behaviour.



COORDINATOR

FUNDACION INSTITUTO TECNOLOGICO DE CASTILLA Y LEON

PROJECT DURATION

1 September 2021 to 28 February 2025

EU FUNDING

EUR 3,489,865

WEBSITE

<https://www.fitdrive.eu/>

SafetyCube

A European Road Safety Decision Support System

The primary goal of [SafetyCube](#) was to develop an innovative road safety Decision Support System (DSS) that will enable policy-makers and stakeholders to select and implement the most appropriate and cost-effective strategies to reduce casualties of all road user types in Europe and worldwide.

This resulted in the [European Road Safety Decision Support System \(DSS\)](#) produced within the SafetyCube project. The SafetyCube DSS is the only system worldwide that provides quantitative interactive information on a large list of road accident risk factors and road safety countermeasures, while extensively covering behaviour, infrastructure, vehicle and post-crash care.

The DSS breakthrough lies in suggesting targeted interventions addressing the specified risk factors from a long list of safety measures, making it a uniquely useful tool for all road safety decision-

makers. The DSS was designed and developed through extensive meta-research and in close consultation with numerous road safety stakeholders.

It is populated with more than 1,200 road safety studies (featuring more than 7,000 quantified relationships), selected and analysed via a common methodology. Concise and reader-friendly synopses, together with targeted cost-benefit evaluations and related analytical background information, are additional highly valuable features. A user-friendly interface provides a powerful and flexible search engine, which allows the user to access the individual studies and related documentation. Today, SafetyCube DSS is the global reference system for road safety decision support.

COORDINATOR

Loughborough University, UK

PROJECT DURATION

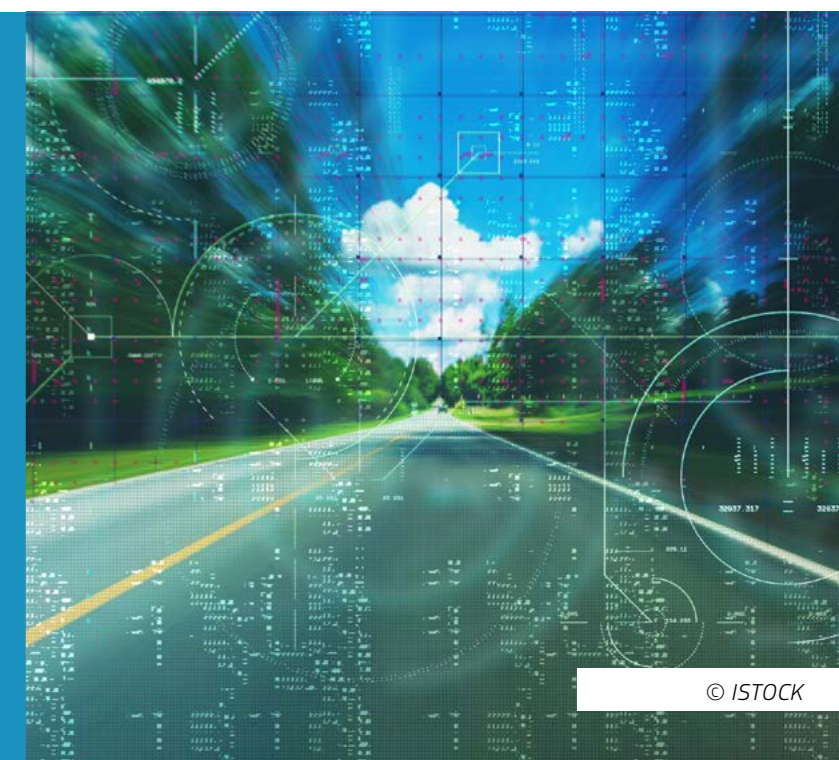
1 May 2015 to 30 April 2018

EU FUNDING

EUR 5,790,111

WEBSITE

<https://www.roadsafety-dss.eu/>



Safe vehicles



SAFE-Up

Proactively protecting people inside and outside of the vehicle

SAFE-UP is contributing to the EU's [Vision Zero](#) by understanding and reducing road crashes through vehicle automation, connectivity, and improved occupant protection. The project is proactively developing active and passive safety systems for future autonomous vehicles (AVs) and analysing safety-critical scenarios in highly automated and mixed-traffic environments. The partners have developed realistic road user models (for pedestrians, cyclists, AVs, human drivers, and powered-two-wheelers), and new safety metrics to detect safety-critical scenarios, which have been integrated into the Aimsun Next simulation platform.

SAFE-UP's novel systems will be integrated into four demonstrators:

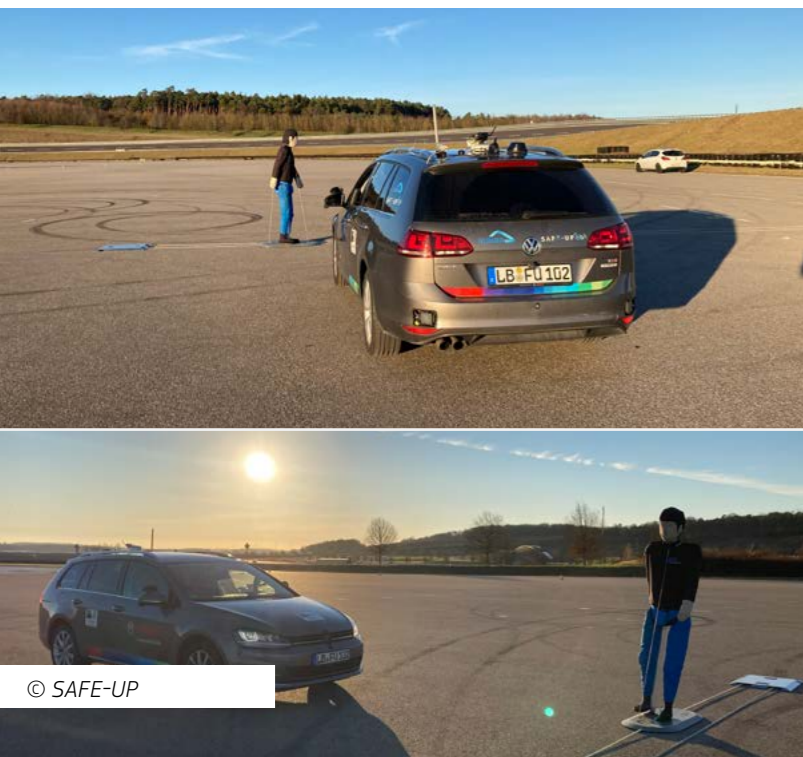
1. New passive system with restraint and monitoring technologies for new seating positions,
2. In-vehicle active system for enhanced VRU detection in bad weather,

3. Advanced intervention functions to avoid critical events, and
4. Safety solution based on V2X to enable timely warning provisions.

Scenarios to test the demos are being defined and all will undergo final testing.

New seating positions have also been defined for Level 3 and Level 4 autonomous vehicles and a new adaptive restraint system will be assessed through simulation and sled testing to evaluate the occupant protection performance.

Training and awareness strategies to transfer knowledge to both technical audiences and the general public are being established, and infographics based on EU crash data can already be found on the SAFE-UP website: www.safe-up.eu.



COORDINATOR

IDIADA AUTOMOTIVE TECHNOLOGY SA

PROJECT DURATION

1 June 2020 to 31 May 2023

EU FUNDING

EUR 7,999,670

WEBSITE

<https://www.safe-up.eu/>

© SAFE-UP

PROSPECT

PROactive Safety for PEdestrians and CyclisTs

The main objective of the PROSPECT was to lay the foundations for next-generation Vulnerable Road User (VRU) active safety systems for cars in order to significantly reduce crashes, mainly in intersections. The project finished in October 2018, and its results had tangible implications for policies and regulations for understanding the real-world benefit of new Advanced driver-assistance system (ADAS) functions and systems. Some of the achievements include:

- Progress in defining test and assessment methods for Euro NCAP consumer testing Advanced Emergency Braking (AEB) VRU systems.
- Successful implementation of PROSPECT results by standardisation bodies, improved, reliability and performance of new safety systems among car manufacturers, and the implementation of new generation AEB/AES (Advanced Encryption Standard) systems.
- The results of the benefit assessment carried

out in PROSPECT, assumed an increasing market penetration of the developed systems and its user acceptance, in which the annual number of lives saved in EU28 increased from an estimate of 79-95 in 2025 to 280-336 in 2030, while the corresponding estimates for the reduction of seriously injured were 439-697 in 2025 and 1558-2474 in 2030. Accordingly, the socio-economic benefit of PROSPECT systems increased from 203-296 million euros in 2025 to monetary values exceeding 878- 1280 million euros from 2030 on.

COORDINATOR

IDIADA AUTOMOTIVE TECHNOLOGY SA

PROJECT DURATION

1 May 2015 to 31 October 2018

EU FUNDING

EUR 6,931,978

WEBSITE

<https://www.applusidiada.com/global/en/about-us/innovation/prospect>



© PROSPECT

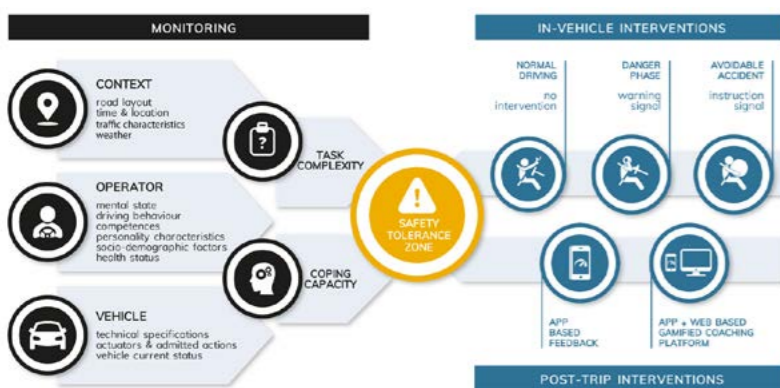
i-dreams

Safety tolerance zone calculation and interventions for driver-vehicle-environment interactions under challenging conditions

i-DREAMS aims to set up a technology platform to develop, test and validate a 'Safety Tolerance Zone' (STZ) to prevent drivers from getting too close to the boundaries of unsafe operation. The i-DREAMS technology consists of an integrated suite of driver-vehicle-environment sensors that can be retrofitted in vehicles (bus, truck, car). When the system detects that the boundaries of safe operation are reached, real-time adaptive in-vehicle interventions aim to bring the driver back into the STZ. After the trip, the driver is also coached by means of the i-DREAMS smartphone app making use of modern techniques of gamification.

With data collection still ongoing, more than 1.7 million kilometers of trips and 171,000 hours of driving and

human factors data have already been collected, making i-DREAMS one of the largest international naturalistic driving studies. Initial results from private and professional drivers show positive safety impacts: drivers spend more time in the safe area of the STZ and the number of risky events per 100km driven decreases. The gamification techniques in the smartphone app also involve drivers to take up goals, improve their knowledge and change their attitudes and behavior towards safer driving.



MEDIATOR

MEDIating between Driver and Intelligent Automated Transport systems on Our Roads

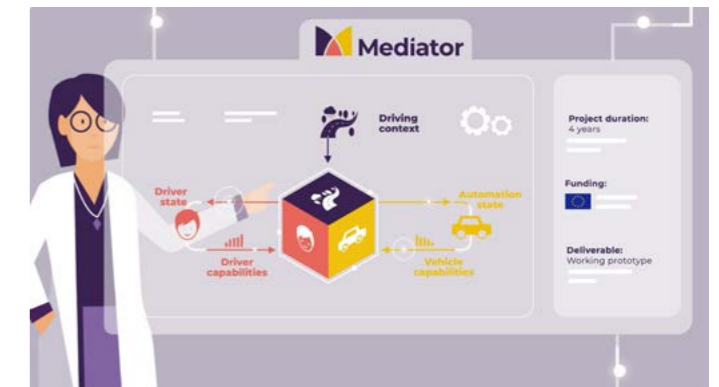
Automated transport technology is developing rapidly for all transport modes, with huge safety potential, also for road transport. The transition to full vehicle automation, however, brings new risks, such as mode confusion, overreliance, reduced situational awareness and degraded human performance due to work underload. Moreover, the automated system may not (yet) function reliably in all situations.

The MEDIATOR project is developing an intelligent, user-centred, self-learning support system, based on in-depth knowledge on human factors. This Mediator system mediates between human driving and automated driving in the SAE Levels 0 to 4. As such, it will help to realise the potential safety benefits of vehicle automation.

MEDIATOR developed new methods and prototypes for measuring driver and automation states in diverse contexts, applying the latest artificial intelligence techniques. In addition, MEDIATOR developed a user centred HMI design embracing a holistic design

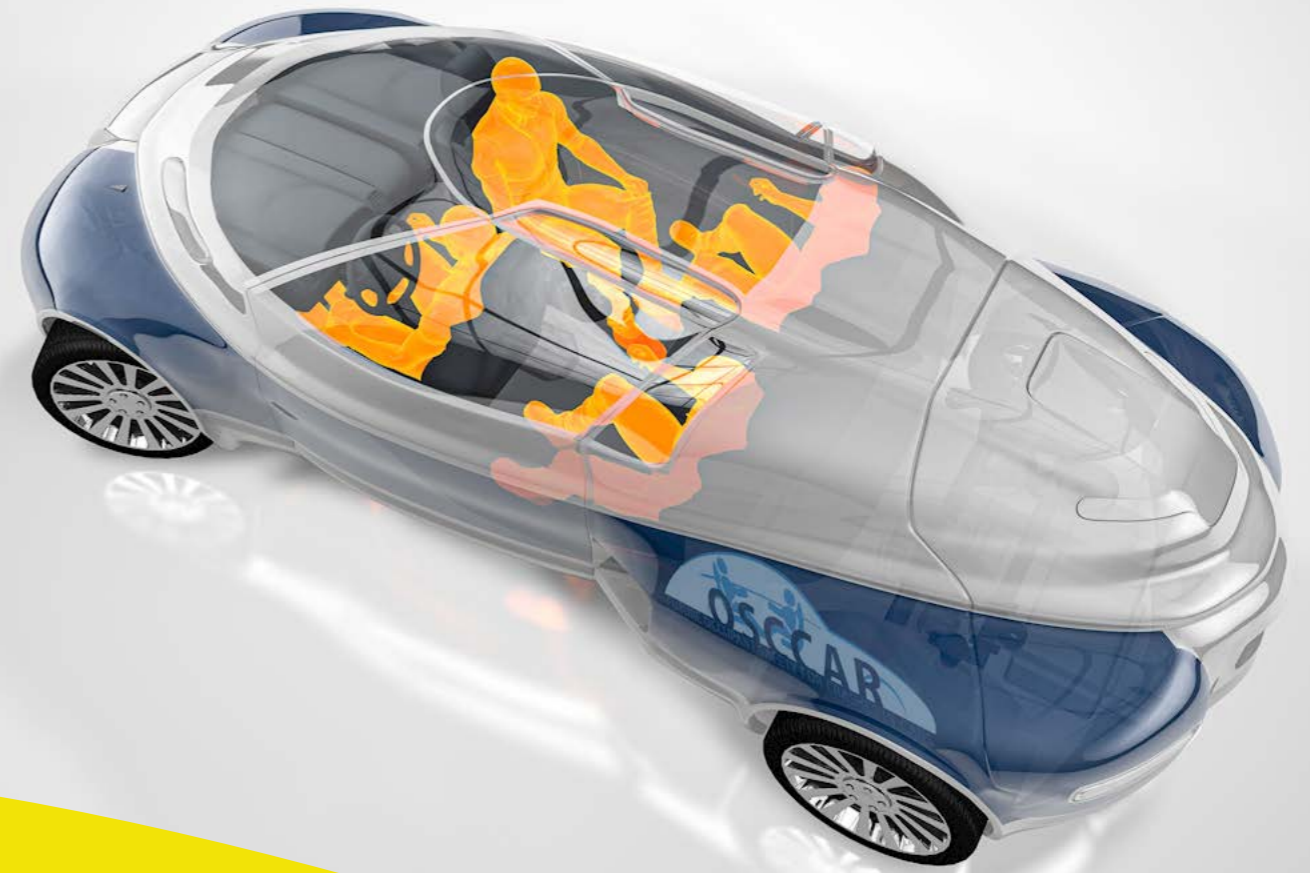
approach. All of this resulted in five different prototypes that are currently being tested in several simulator and on-road trials.

Based on the test results, the potential safety benefits and other related societal benefits of the Mediator system will be estimated, and guidelines, protocols and recommendations that help further exploitation of the Mediator system and similar support systems will be defined.



<p>COORDINATOR UNIVERSITEIT HASSELT</p> <p>PROJECT DURATION 1 May 2019 to 30 April 2023</p> <p>EU FUNDING EUR 6,265,344</p> <p>WEBSITE https://idreamsproject.eu/wp/</p>	<p>COORDINATOR STICHTING WETENSCHAPPELIJK ONDERZOEK VERKEERSVEILIGHEID</p> <p>PROJECT DURATION 1 May 2019 to 30 April 2023</p> <p>EU FUNDING EUR 6,461,615</p> <p>WEBSITE https://mediatorproject.eu/</p>
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Improved human body models



Virtual

Open access virtual testing protocols for enhanced road users safety

In the assessment of road user and vehicle occupant safety, physical testing is limited to a few scenarios. Virtual Testing (VT) offers an opportunity to advance transport safety by introducing additional test cases. Furthermore, in the assessment of road user safety a representation of the female part of the population, in the same manner as the male part of the population, has not been available.

The objective of the VIRTUAL project is to provide tools such as finite element models, guidelines and a corresponding platform to foster the uptake of Virtual Testing and by that enhance the safety assessment for both female and male vehicle occupants and vulnerable road users.

The project has established a VT platform, OpenVT. This provides open-source human body models, the VIVA+ models. They address both an average female and male, seated and standing, as well as a car seat, generic vehicle and tram front models (see picture).

The tool chain from virtual to physical testing has been illustrated in the low severity impact case where the seat evaluation tool was developed. The newly established organisation OVTO will run the OpenVT platform in the future and govern the evolution of the results of the VIRTUAL project after its completion.



COORDINATOR

STATENS VAG- OCH
TRANSPORTFORSKNINGSINSTITUT

PROJECT DURATION

1 June 2018 to 30 November 2022

EU FUNDING

EUR 6,997,844

WEBSITE

<https://projectvirtual.eu/>

SENIORS

Safety ENhanced Innovations for Older Road userS (SENIORS)

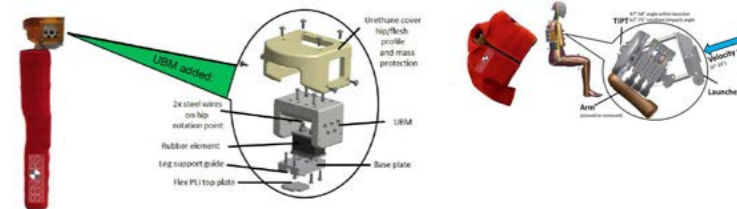
In the context of a European ageing society, SENIORS aimed to improve the safe mobility of the elderly. SENIORS investigated and assessed the potential reduction and mitigation of injuries occurring during crashes. Test and assessment procedures and tools were proposed to increase the level of road safety especially for older car occupants, pedestrians and cyclists. These will impose new challenges to passive vehicle safety systems, also leading to the introduction of enhanced, adaptive restraint systems and the improvement of vulnerable road user-friendly vehicle frontends.

Older vehicle occupants have a higher risk of injury than younger occupants, particularly in the thoracic region, even at lower accident speeds. Improved injury criteria were therefore developed for the THOR frontal impact dummy. This was done using a new simulation-based approach based on comparative computer simulations of a human and a dummy model. By

simulating various loading conditions, the results measured in the dummy model could be compared with the probability of injury to human ribs in order to optimize the injury criteria in the area relevant to older road users.

The introduction of a new frontal impact test with reduced impact speed was proposed to encourage the introduction of modern occupant restraint systems, especially beneficial for the elderly (e.g. by means of enhanced, adaptive restraint systems).

The protection of the thorax of pedestrians or cyclists is currently not part of any consumer information programme or legislation. Therefore, a thorax injury prediction tool (TIPT) was developed and implemented within a component test and assessment procedure.



COORDINATOR

BUNDESANSTALT FUER STRASSENWESEN

PROJECT DURATION

1 June 2015 to 31 May 2018

EU FUNDING

EUR 2,885,587

WEBSITE

<https://cordis.europa.eu/project/id/636136>



OSCCAR

Future Occupant Safety for Crashes in Cars

The future highly automated vehicle, with comfort and convenience enhancing features such as relaxed seating positions in reclined and rotated seats, requires the development of more advanced and novel restraint systems. By partnering with vehicle manufacturers, TIER suppliers and research entities, the EU Horizon 2020 funded research project OSCCAR, could apply a comprehensive, integrated approach for the development of future advanced occupant protection.

Critical future accident scenarios were identified, concepts for occupant protection were developed, human body models (HBMs) were further developed, thus allowing for continuous assessment of complex accident scenarios, taking occupant heterogeneity like gender, age, size and weight into account. This paves the way for applicable Virtual Testing, allowing for a dedicated and individual increase in occupant safety.

The joint research could raise awareness for future vehicle safety needs and will contribute to the reduction of the number of road fatalities, the severity of injuries and the number of injured persons

The consortium is proud to present more than 30 high-quality publications and 20+ public deliverables. OSCCAR also provides a large set of open access data and models for further use. All datasets, publication and public deliverables are linked on the OSCCAR webpage: <https://www.osccarproject.eu/media/>



COORDINATOR

VIRTUAL VEHICLE RESEARCH GMBH

PROJECT DURATION

1 June 2018 to 30 November 2021

EU FUNDING

EUR 6,989,395

WEBSITE

<http://www.osccarproject.eu/>

Behavioural aspects for safer transport



MeBeSafe

Measures for Behaving Safely in Traffic

Navigating in traffic is a well-trained process. When performing actions repeatedly, behaviour becomes more automatic. MeBeSafe successfully aimed at changing habitual traffic behaviour. One way to do this is to use “nudging”: make the safest choice the easiest, while still preserving road users’ freedom of action.

MeBeSafe directed driver attention to potential hazards by projecting a green line onto the windshield appearing to follow the road. A dent in the line indicates the direction from which a cyclist is possibly approaching.

Drivers may be unaware when driving at inappropriate speed. By placing lights at ground level on both roadsides, either statically illuminated or appearing to “move” towards the driver, MeBeSafe created the illusion of going faster than drivers actually are.

Cyclists might adopt inappropriate speed. Flat stripes running across the road getting progressively closer together can help to slow them down. Users perceive to be going faster and faster, causing cyclists to slow down.

Car drivers can drive too close to other cars. The project developed two designs aimed to nudge drivers into using Adaptive Cruise Control (ACC) to prevent close following.

Finally, MeBeSafe has developed the DriveMate app, which measures the driving behaviour of truck drivers by in-phone sensors and provides feedback and coaching material, while ensuring data protection.



COORDINATOR

RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN

PROJECT DURATION

1 May 2017 to 31 October 2020

EU FUNDING

EUR 7,136,979

WEBSITE

<http://www.mebesafe.eu/>

SimuSafe

Simulation of Behavioural Aspects for Safer Transport

Improving road safety means understanding the individual and collective behaviour of actors involved (drivers, two wheelers, pedestrians) and their interaction between themselves and safety-related systems and services.

The goal of the SimuSafe project was to evaluate road user simulators as tools for studying traffic safety, based on these objectives:

1. Develop road user behavioural models based on data collection
2. Multi-user, multi-agent simulation reproducing these models
3. Societal Impact: initial steps towards standardisation, safety devices and novel training modules

Road user behaviour was modelled after holistic data collection in three complementary pilots. It included vulnerable road users: scooters, bicycles and

pedestrian simulators, in addition to cars. The models were used in the simulators making simulated traffic behaving more realistically. Multiple users joined in the same environment enabling riskless interactions.

Results show that:

- simulators generate extra workload, while lower perception of risk leads to more speeding.
- gender and age are important factors for behaviour in traffic. Car drivers are the most distracted, while bicycle riders and pedestrians violate traffic rules more.

SimuSafe also performed studies leading to specific recommendations on simulator use for driving training programmes. Study and design for future safety devices responding to driver and rider behaviour were initiated during the project.

Publications and datasets are published with open access in the Zenodo community.

COORDINATOR

FUNDACION INSTITUTO TECNOLOGICO DE CASTILLA Y LEON

PROJECT DURATION

1 June 2017 to 31 May 2021

EU FUNDING

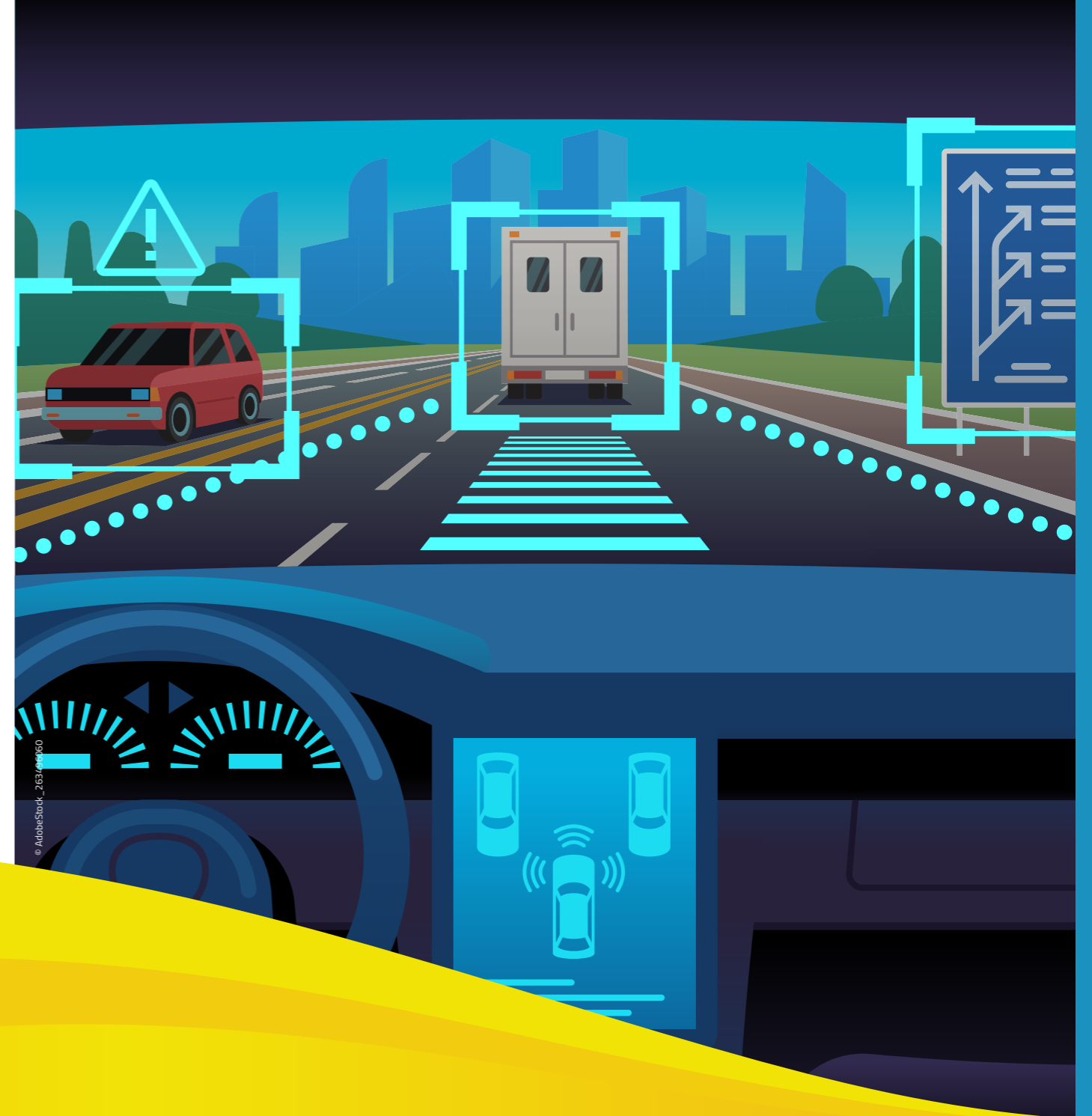
EUR 7,991,600

WEBSITE

<https://simusafe.eu/>



Enhanced automation



HADRIAN

Holistic Approach for Driver Role Integration and Automation Allocation for European Mobility Needs

The HADRIAN project investigates how Automated Driving (AD) can be shaped to better meet the needs of human drivers and increase safety and acceptance. In the project, 16 European partners are collaborating on multiple methods to improve AD. As a first step, to facilitate the direct interactions with AD, multi-modal human-computer interfaces are developed that adapt to the driver state. Critical information is presented via head-up display, ambient lighting, sounds,

haptic steering wheel feedback, and a rotating seat. Secondly, to reduce the load of the human driver to resolve situations that the AD vehicle cannot handle by itself, the project investigates methods to increase the availability, predictability, and continuity of AD by linking information from the road infrastructure directly to the AD vehicle. And thirdly, to increase the driver's competences and skills to use AD vehicles, they receive adaptive tutoring feedback about how to better use the AD functions in the vehicle.

The project is currently finishing its final studies and is preparing for field demonstrations in autumn of 2022.



COORDINATOR

VIRTUAL VEHICLE RESEARCH GMBH

PROJECT DURATION

1 December 2019 to 31 May 2023

EU FUNDING

EUR 7,995,989

WEBSITE

<http://www.hadrianproject.eu/>

COORDINATOR

algoWatt SpA

PROJECT DURATION

1 May 2019 to 31 July 2022

EU FUNDING

EUR 3,920,000

WEBSITE

<https://h2020-trustonomy.eu/>

TRUSTONOMY

Building Acceptance and Trust in Autonomous Mobility

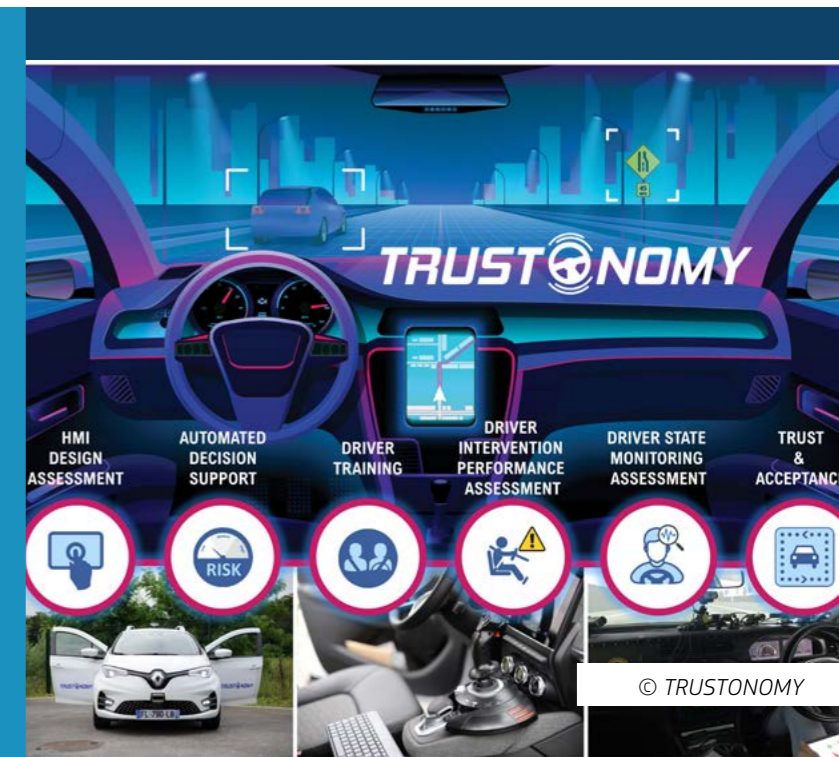
Automated driving raises several challenges, from evaluating the driver's ability to intervene in a driver-vehicle interaction, adequate driving training, ethical and legal perspectives up to properly designed Human-Machine Interfaces (HMI).

All these factors encompass a trust dimension that is crucial for the successful interplay between human drivers and increasingly automated driving systems and vehicles. TRUSTONOMY investigated relevant methodologies, approaches and technologies in autonomous driving and Request-to-Intervene scenarios, thus enabling and fostering increased safety, trust and acceptance of automated vehicles.

The project encompassed frameworks for the technical assessment of driver state monitoring systems and HMI designs, for automated decision support and for driver's intervention performance assessment. It also covered more human-centred aspects like the

development of novel training tools and curricula for drivers and psychological studies around the experience of trust and its dynamic evolution while travelling and interacting with an automated vehicle.

The research included driving simulators and real vehicles in four pilots across five countries and seven locations, considering differentiated key aspects such as types of users, road transport modes (private cars, public transport and trucks), driving conditions and environments.



CINEA in Brief

The European Climate, Infrastructure and Environment Executive Agency has been established by the European Commission to implement parts of EU funding programmes for transport, energy, climate action, environment and maritime fisheries and aquaculture.

CINEA has a multinational team, organised in four departments.

Seven European Commission's Directorates-General oversee CINEA's activities:

- » DG Mobility & Transport (MOVE)
- » DG Energy (ENER)
- » DG Research & Innovation (RTD)
- » DG Climate Action (CLIMA)
- » DG Environment (ENV)
- » DG Maritime Affairs and Fisheries (MARE)
- » DG Regional and Urban Policy (REGIO)

Providing added value to beneficiaries

CINEA's long-standing experience in programme management provides the beneficiaries with:

- » Simplified access to EU funding opportunities
- » Promotion of project results and achievements for increased visibility of EU actions and promotion of the programmes
- » Guidance and technical support in project management, financial engineering, public procurement, and environmental legislation in close collaboration with beneficiaries
- » Streamlined and harmonised procedures for a better use of EU funds and maximised programme efficiency, such as shorter payment times and faster response rate
- » Efficient evaluation procedures, user friendly and transparent call documentation, and customised IT tools to support applicants.

Supporting the European Commission

The Agency is also supporting the policy makers and the European Commission with:

- » Relevant feedback on programme implementation as input to policymaking
- » Developing synergies between programmes to bridge the gap between R&I results and infrastructure development
- » Bringing innovative ideas, concepts and products to implementation
- » Building significant economies of scale

BY 2027
**+500
STAFF**

BUDGET
2021 - 2027
**EUR 58
BILLION**

CURRENTLY
MANAGING
**3,200
PROJECTS**

