

OSCCAR: EU project for future vehicle occupant safety takes off



The brand new EU Horizon 2020 research project “OSCCAR - Future Occupant Safety for Crashes in Cars” - develops a novel approach to radically improve the safety for all occupants involved in future vehicle accidents.

Highly automated vehicles will offer new, more comfortable sitting positions that consequently will be in need for advanced and novel restraint systems in order to best possible protect all occupants in future accident scenarios.

OSCCAR will therefor develop new advanced occupant protection principles and contribute to the improvement of diverse, omnidirectional, biofidelic and robust human body models (HBMs). These virtual, human-like (biofidelic) models form the basis for digital homologation necessities for coming vehicles. OSCCAR project joins an international partner consortium striving to establish an integrated, simulation assessment framework for complex scenarios. Its ambition is to pave the way for virtual-testing-based homologation. This includes the development of an exploitation strategy towards large scale implementation of virtual testing methods.

The OSCCAR project assembles 21 partners, including 19 from Europe and 2 from China. The project is coordinated by Virtual Vehicle Research Center in Graz/Austria and will run for 3 years, from June 2018 until May 2021.

www.osccarproject.eu

About OSCCAR:

A new generation of vehicles based on connectivity and high automation (**highly automated vehicles**, HAVs) will soon be present on our roads - promising fewer accidents and increased safety levels. At the same time, novel safety challenges need to be addressed. These include new, currently unknown accident scenarios resulting from future mixed traffic where HAVs and conventional driven vehicles share the same infrastructure and roads. HAV technology will allow the vehicle to become a platform for the occupants, and hereby especially the “driver”. They can use their travel time for other, not driving related activities. Comfort and convenience enhancing features, such as relaxed sitting positions, rotated seats and even reclined sleeping positions will be available in future autonomously driven vehicles. These aspects will definitely increase the attractiveness of HAVs but require the development of more advanced safety systems for the new sitting positions like seat belts and air-bags that are currently neither considered nor homologated.

The highest benefit of vehicle safety resulting from automated driving can only be achieved if occupant protection systems are also adapted accordingly. Current hardware-based testing methods and tools will no longer be sufficient to handle the **high complexity of future accident scenarios**. This also applies to the areas of design, development, **assessment** and **homologation** of advanced safety systems for HAVs. Thus **improved virtual testing methods** will be needed to supplement the development of HAVs. An important emerging design tool for **virtual testing (VT)** and homologation are **advanced biofidelic, omnidirectional human body models (HBMs)**. HBMs will be able to assess the safety of new sitting positions for representative occupant populations.

HBMs have the potential to provide benefits for the design of traditional non-HAVs by taking into account the **heterogeneity of occupant population**. As HBMs are not a simulation model of a conventional Crash Test Dummy test device, but of a real human, containing bones, muscle, organs, etc. it is possible to scale them. They are therefore able to depict the characteristics of “a broad occupant population. Moreover, they allow to study injury mechanisms on a very detailed level, necessary for upcoming new restraint systems in the context of automated driving.

The OSCCAR project will provide the necessary virtual simulation tools for the development and assessment of advanced automated vehicle safety systems. Supported by a close **international collaboration** with North American and Asian partners, OSCCAR will lay the foundation for **future harmonized virtual testing** of advanced vehicle protection systems and the **homologation of future sitting positions**.

OSCCAR Key Objectives:

- Understanding **future accident scenarios involving passenger cars**
- Demonstration of **new advanced occupant protection** principles and concepts
- Contribution to the development of **diverse, omnidirectional, biofidelic and robust HBMs**
- Establishment of an **integrated, virtual assessment framework**
- Contribution to the **standardization of virtual testing procedures**
- Development of an **exploitation strategy** towards large scale **implementation of virtual testing methods**

OSCCAR Key Figures:

Coordinator: VIRTUAL VEHICLE Research Center (Austria)

21 Partners from 8 countries (AT, BE, CN, DE, ES, FR, NL, SE)

- 4 OEMs
- 6 Tier suppliers
- 4 Research organizations
- 7 Universities

9 associated partners from Europe, Canada, Japan, South Korea, USA

Available resources:

- 7.5 Million € Budget

Project run time: From June 1, 2018 to Mai 31, 2021

Partners:



The international OSCCAR consortium is composed of 21 partners from Europe and China:

- VIRTUAL VEHICLE Research Center (ViF)
- AUTOLIV DEVELOPMENT AB (ADS)
- BUNDESANSTALT FUER STRASSENWESEN (BAST)
- ROBERT BOSCH GMBH (BOSCH)
- CHALMERS TEKNISKA HOEGSKOLA AB (CHALMERS)
- DAIMLER AG (DAIMLER)
- ESI GROUP (ESI)
- IDIADA AUTOMOTIVE TECHNOLOGY SA (IDIADA)
- LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN (LMU)
- RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN (RWTH)
- SIEMENS INDUSTRY SOFTWARE NV (SISW)
- TASS INTERNATIONAL SOFTWARE AND SERVICES BV (TASS)
- TOYOTA MOTOR EUROPE (TME)
- TECHNISCHE UNIVERSITAET GRAZ (TUG)
- UNIVERSITE DE STRASBOURG (UNISTRA)
- UNIVERSITAET STUTTART (USTUTT)
- VOLVO PERSONVAGNAR AB (VOLVO)
- VOLKSWAGEN AG (VW)
- ZF (ZF)
- TSINGHUA UNIVERSITY (TSINGH)
- CHINA AUTOMOTIVE TECHNOLOGY AND RESEARCH CENTER (CATARC)

+ 10 associated partners:

University of Waterloo, Wake Forest University, Wayne State University, Medical College of Wisconsin, University of Virginia, Hongik University, JARI, CLEPA, EARPA, EUCAR

OSCCAR Team of Researchers and Industry:



The 2-day OSCCAR Kick-off event took place on June 18th - 19th in Graz / Austria

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 768947

